



RICE
UNIVERSITY

**GENERAL ANNOUNCEMENTS
2005-2006**



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William Marsh Rice University

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Please address all correspondence to the appropriate office or department followed by the university mailing address given above.

Admission, Catalogs, Applications

Office of Admission

109 Lovett Hall; 713-348-7423

Business Matters

Office of the Cashier

110 Allen Center; 713-348-4946

Career Services, Part-time
Employment off Campus

Career Services Center

Rice Memorial Center; 713-348-4055

Credits, Transcripts

Office of the Registrar

116 Allen Center; 713-348-4999

Financial Aid, Scholarships,
Part-time Employment on Campus

Student Financial Services

116 Allen Center; 713-348-4958

Graduate Study

Chair of the appropriate

department (see pages 59-63)

Undergraduate and
Undergraduate Curricula

Office of the Dean of Undergraduates

101 Lovett Hall; 713-348-4996

Rice University is committed to equal opportunity in education and employment. It is the policy of Rice University to attract qualified individuals of diverse backgrounds to its faculty, staff, and student body. Accordingly, Rice University does not discriminate against any individual on the basis of race, color, religion, sex, sexual orientation, national or ethnic origin, age, disability, or veteran status in its admissions, its educational programs, or employment of faculty or staff. In employment, the university seeks to recruit, hire, and advance women, members of minority groups, individuals with disabilities, Vietnam-era veterans, and special disabled veterans.

RICE UNIVERSITY
GENERAL ANNOUNCEMENTS
2005-2006



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RICE

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MESSAGE FROM THE PRESIDENT

What makes Rice extraordinary? In less than 100 years, it has achieved a position among America's great research universities. Even in that category, it is distinctive: Rice is a small great university. That is, while smaller than most, Rice is able to compete with the best in the nation, indeed, in the world. Our comparative advantages lie in our relatively small size, our emphasis on undergraduate education, our identification of important but focused areas of strength, the relative ease by which we can foster interdisciplinary study, and our possibilities for teaching and research excellence across the range of human knowledge and endeavor. All this resides in an extraordinarily beautiful, coherent, and tree-lined campus located in the heart of the cultural district of the nation's fourth-largest city and just three miles from its downtown.

General Announcements guides you through Rice University's diverse academic offerings, taught by an enormously talented faculty. It further serves as a guide for the rules and responsibilities that govern both undergraduate and graduate student life in our community.

Rice, said founding president Edgar Odell Lovett, would "set no upper limit on its educational endeavor." We remain intent on that ambition.

David W. Leebron
President
William Marsh Rice University

ACADEMIC CALENDAR 2005–2006

FALL 2005

| | |
|--|--|
| Monday, August 1 | Deadline: Tuition due for entering freshmen |
| Wednesday, August 10 | Deadline: Tuition due for returning undergraduate students |
| Sunday, August 14 (through Friday, August 19) | Orientation week for new students |
| Monday, August 15 | Deadline: Tuition due for graduate students |
| Friday, August 19 | Credit balance checks available to students |
| Monday, August 22 | First day of classes |
| Friday, September 2 | Deadline: Last day to add courses without a fee Deadline: Last day to add a course without obtaining instructors permission Deadline: Last day to withdraw with a 100% refund of tuition and fees Deadline: Last Day to drop to part-time with a 100% refund of tuition |
| Monday, September 5 | Labor Day (holiday—no classes) |
| Friday, September 9 | Deadline: Last day to withdraw with a 70% refund of tuition |
| Friday, September 16 | Deadline: Last day to complete late registration or add courses Deadline: Last day to drop courses without a fee Deadline: Last day to designate a course as “Audit” or vice versa Deadline: Last day anticipated aid for fall shows as a credit on student accounts Deadline: Last day to withdraw with a 60% refund of tuition |
| Friday, September 23 | Deadline: Last day to convert a “Pass/Fail” to an earned letter grade for courses taken in spring 2005 Deadline: Last day for instructors to submit final grades to clear “Incompletes” for courses taken in spring 2005 Deadline: Last day to withdraw with a 50% refund of tuition |
| Friday, September 30 | Deadline: Last day to withdraw with a 40% refund of tuition |
| Friday, October 7 | Deadline: Mid-semester grades for first-year undergraduate students due Deadline: College course plans due to Dean of Undergraduates Deadline: Last day to withdraw with a 30% refund of tuition |

| | |
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| Monday, October 10 (through Tuesday, October 11) | Midterm Recess |
| Wednesday, October 12 | All classes normally held on Monday meet; all Wednesday classes canceled (to equalize holidays by days of the week during the semester) |
| Friday, October 14..... | Deadline: Last day to withdraw with a 20% refund of tuition |
| Friday, October 21 | Deadline: Last day to withdraw with a 10% refund of tuition |
| Friday, October 28..... | Deadline: Last day to drop courses for all graduate students and “returning” undergraduate students with a \$10.00 fee Deadline: Last day to designate a course as “Pass/Fail” |
| Monday, October 31 | Deadline: Last day to file an application for a May 2006 conferral of degree with the Office of the Registrar Deadline: Last day to file an application for January 2006 conferral of degree with the Office of the Registrar |
| Tuesday, November 1 | Deadline: Last day to file the following in the Office of Graduate Studies for January 2006 degree conferral: <ul style="list-style-type: none"> • Thesis master’s candidacy petitions • Certification of non-thesis master’s • Form for automatic master’s • PhD candidacy petitions |
| Monday, November 14 (through Friday, November 18) | Spring 2006 registration for currently enrolled undergraduate, graduate and fifth-year students Registration for SELF-scheduled final exams for undergraduate courses |
| Tuesday, November 15..... | Deadline: Last day to complete financial aid application for fall 2005 |
| Friday, November 18 at 5:00 P.M. | Deadline: Last day to register for spring 2006 without \$60 “failure to register” fee Deadline: Last day to register for SELF-scheduled final exams for undergraduate courses |
| Thursday, November 24 (through Friday, November 25) | Thanksgiving Recess (holiday—no classes) |
| Thursday, December 1..... | Deadline: Last day to complete loan applications for fall 2005 |
| Friday, December 2 | Last day of classes Deadline: (for fall 2005 matriculants only) Last day to drop courses—students must go to the Office of the Registrar by 5:00 P.M. Deadline: For a January 2006 conferral of degree, students must submit theses to the Office of Graduate Studies by 12:00 noon Deadline: All Faculty Evaluations are due to the Office of the Registrar by 5:00 P.M. |

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| Saturday, December 3 (through Wednesday, December 14) | SELF-scheduled exams for undergraduate courses |
| Wednesday, December 7 (through Wednesday, December 14) | Scheduled FINAL exams for undergraduate courses |
| Wednesday, December 14 at 5:00 P.M. | Deadline: All take home final examinations are due |
| Wednesday, December 21 at 12:00 NOON | Deadline: All final grades are due to the Office of the Registrar |

SPRING 2006

| | |
|--------------------------------------|--|
| Thursday, January 5 | Deadline: Tuition due for all students |
| Thursday, January 10 | Credit balance checks available to students |
| Wednesday, January 11 | First day of classes |
| Monday, January 16 | Martin Luther King, Jr. Day (holiday–no classes) |
| Wednesday, January 18 | All classes normally held on Monday meet; all Wednesday classes canceled (to equalize holidays by days of the week during the semester) |
| Friday, January 20 at 5:00 P.M. | Deadline: Last day to resolve grades of “Other” from fall 2005 |
| Friday, January 27 | Deadline: Last day to add courses without a fee |
| | Deadline: Last day to add a course without obtaining instructor’s permission |
| | Deadline: Last day to withdraw with a 100% refund of tuition and fees |
| | Deadline: Last day to drop to part-time status with 100% refund of tuition |
| Wednesday, February 1 | Deadline: Last day to file the following in the Office of Graduate Studies for a May 2006 conferral of degree: <ul style="list-style-type: none"> • Thesis master’s candidacy petitions • Certification for non-thesis master’s • Form for automatic master’s • PhD candidacy petitions |
| Friday, February 3 | Deadline: Last day to withdraw with a 70% refund of tuition |
| Friday, February 10 | Deadline: Last day to complete late registration or add course(s) |
| | Deadline: Last day to drop courses without a fee |
| | Deadline: Last day to designate a course as “Audit” or vice versa |
| | Deadline: Last day to withdraw with a 60% refund of tuition |
| | Deadline: Last day anticipated aid for spring shows as credit on student accounts |
| Wednesday, February 15 | Financial aid application materials available to returning students to apply for need-based aid for 2006–2007 |
| Friday, February 17 | Deadline: Last day for students to convert a “Pass/Fail” to an earned letter grade for courses taken in fall 2005 |

| | |
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| | Deadline: Last day for instructors to submit final grades to clear “Incompletes” for courses taken in fall 2005 |
| | Deadline: Last day to withdraw with a 50% refund of tuition |
| Friday, February 24..... | Deadline: Last day to withdraw with a 40% refund of tuition |
| Friday, March 3 | Deadline: Mid-semester grades for first-year undergraduate students are due |
| | Deadline: College course plans are due to the Dean of Undergraduates |
| | Deadline: Last day to withdraw with a 30% refund of tuition |
| Friday, March 10 | Deadline: Last day to withdraw with a 20% refund of tuition |
| Monday, March 13 (through Friday, March 17) | Spring Break (no classes) |
| Friday, March 17 | Deadline: Last day to withdraw with a 10% refund of tuition |
| Friday, March 24 | Deadline: Sophomores must file a Declaration of Major form with the Office of the Registrar |
| Friday, March 31 | Deadline: Last day to drop course(s) for all graduate students and “returning” undergraduate students with a \$10.00 fee |
| | Deadline: Last day to designate a course as “Pass/Fail” |
| | Deadline: Last day to complete financial aid applications for spring 2006 |
| | Summer School financial aid application available |
| Thursday, April 7 (through Friday, April 8) | Spring Recess (no classes) |
| Friday, April 14..... | Deadline: Last day to complete loan applications for spring 2006 |
| | Priority Deadline: For returning and graduate students to submit financial aid applications for 2006–2007 |
| Monday, April 17 (through Friday, April 21) | Register for self-scheduled final exams for undergraduate courses |
| | Fall 2006 registration begins for currently enrolled undergraduate, graduate and fifth-year students |
| Friday, April 21 at 5:00 P.M..... | Deadline: Last day to register for Fall 2006 without a \$60 “failure to register” fee |
| | Deadline: Last day to register for SELF-scheduled final exams for undergraduate courses |
| Thursday, April 27 | Last day of classes except for lab courses and seminars that meet once a week |

Deadline: (for spring 2006 undergraduate matriculants only) Last day to drop courses

Deadline: For a May 2006 conferral of degree, students must submit theses to the Office of Graduate Studies **by 12:00 noon**

Deadline: All Faculty Evaluations are due to the Office of the Registrar **by 5:00 P.M.**

Friday, April 28..... Last day of class for lab courses and seminars that meet only on Friday.

Saturday, April 29
(through Thursday, May 4 at 12:00 noon) **All degree candidates:** All SELF-scheduled, scheduled final, and take-home exams must be completed

Saturday, April 29
(through Wednesday, May 10)..... **All non-graduating students:** SELF-scheduled exams for undergraduate courses

Monday, May 1 **Deadline:** For financial aid application for early summer session

Wednesday, May 3
(through Wednesday, May 10)..... **All non-graduating students:** Scheduled FINAL exams for undergraduate courses

Saturday, May 6 at 9:00 A.M. **Deadline:** Grades for all degree candidates are due in the Office of the Registrar

Saturday, May 13 **Ninety-Third Commencement**

Monday, May 15 **Deadline:** For financial aid application for general summer session

Wednesday, May 17 at 9:00 A.M. **Deadline:** All grades for non-graduating students are due in the Office of the Registrar

Friday, June 9 **Deadline:** Last day to resolve grades of "Other" from spring 2006

SUMMER 2006

Early Session (May 16–June 2)

Friday, March 31 Summer term financial aid applications available

Wednesday, April 19 **Deadline:** For early application discount (by 2:30 P.M.)

Monday, May 1 **Deadline:** To submit financial aid applications

Friday, May 5 **Deadline:** For application to Early Session courses (by 2:30 P.M.)

Tuesday, May 9 Admission status emailed

Online registration for Rice students begins

Monday, May 15 **Registration:** 9:00 A.M. – 1:00 P.M. for visiting students

Deadline: For final tuition payment

Tuesday, May 16 **First day of classes—Early Session**

Thursday, May 18 **Deadline:** For adding courses (by 3:00 P.M.)

Deadline: For late registration (by 3:00 P.M.)

| | |
|----------------------|---|
| Monday, May 22 | Deadline: For visiting and Class III students to submit official transcripts (must be received by this date) Deadline: For dropping courses without academic penalty (by 3:00 P.M.) Deadline: For designating “Pass/Fail” option (by 3:00 P.M.) Deadline: For submitting refund requests (must be received by this date). Please see section on Withdrawal Penalty and Tuition Refund. |
| Monday, May 29 | University holiday |
| Friday, June 2 | Last day of classes—Early Session |
| Tuesday, June 6..... | Deadline: For completion of all Early Session course work, including final examinations. Exam schedule determined by instructor. |
| Friday, June 9 | Deadline: For submitting grades to the School of Continuing Studies Summer School Office (by 3:00 P.M.) |

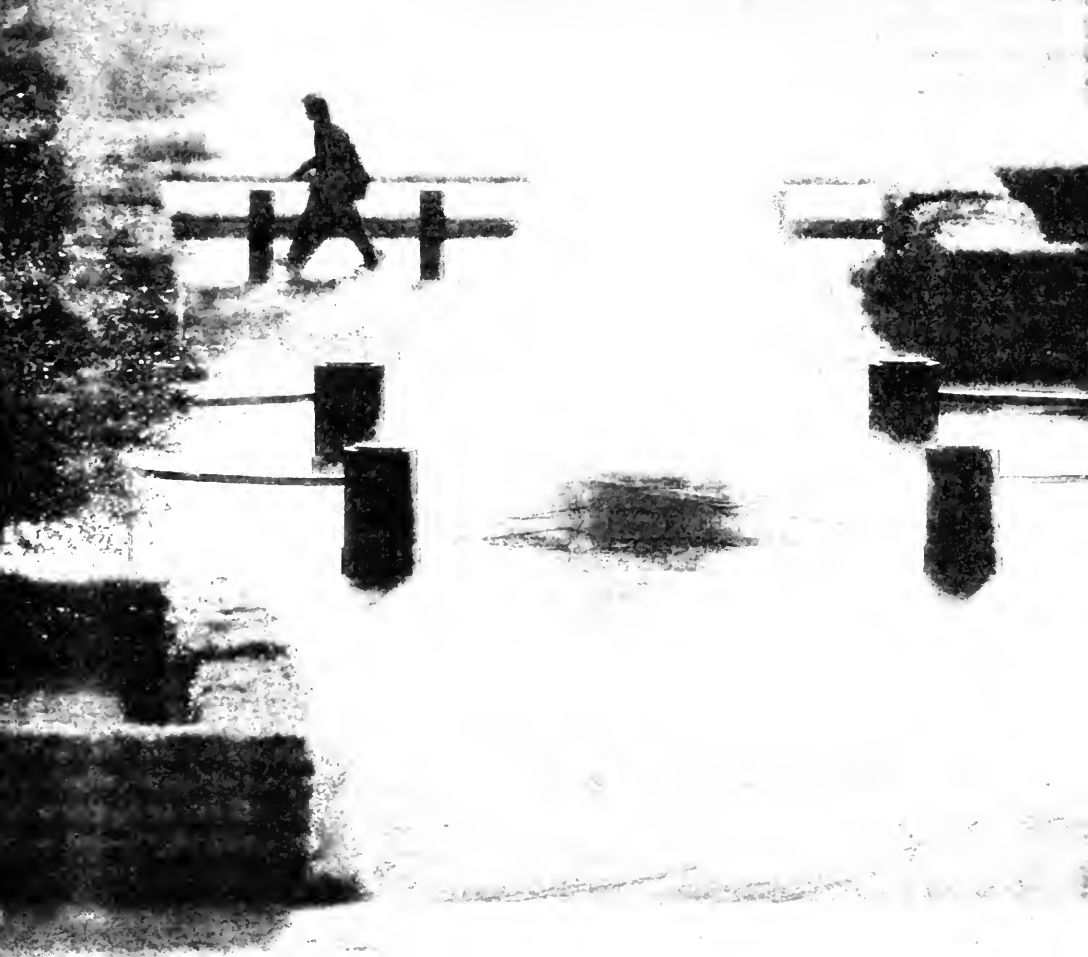
SUMMER 2006

General Session (June 5–July 28)

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|---------------------------------------|---|
| Friday, March 31 | Summer term financial aid applications available |
| Wednesday, April 19 | Deadline: For early application discount (by 2:30 P.M.) |
| Tuesday, May 9 | Online registration for Rice students begins |
| Monday, May 15 | Deadline: For financial aid application for General Summer Session |
| Friday, May 19 | Deadline: For application to General Session courses (by 2:30 P.M.) |
| Thursday, May 25 | Admission status emailed |
| Monday, May 29 | University holiday |
| Friday, June 2 | Registration, 9:00 A.M. – 1:00 P.M. for visiting students Deadline: For final tuition payment |
| Monday, June 5..... | First day of classes—General Session |
| One week after first class..... | Deadline: For dropping courses without academic penalty (no refunds after June 19th) (by 3:00 P.M.) Deadline: For designating “Pass/Fail” option (by 3:00 P.M.) |
| Monday, June 12..... | Deadline: For adding courses (by 3:00 P.M.) Deadline: For late registration (by 3:00 P.M.) |
| Monday, June 19..... | Deadline: For visiting and Class III students to submit official transcripts (must be received by this date) Deadline: For submitting refund requests (must be received by this day.) Please see section on Withdrawal Penalty and Tuition Refund. |
| Monday, July 3 & Tuesday July 4 | University holidays |

| | |
|-------------------------|--|
| Friday, July 28..... | Last day of classes—General Session |
| Tuesday, August 1 | Deadline: For completion of all General Session course work, including final examinations |
| Friday, August 4 | Deadline: For submitting grades to School of Continuing Studies Summer School Office (by 3:00 P.M.) |
| Friday, August 11 | Final grades for Early and General Summer terms mailed to visiting students from the Office of the Registrar |

THE
UNIVERSITY AND
THE CAMPUS



THE UNIVERSITY AND CAMPUS

Rice is a private, independent university dedicated to the “advancement of letters, science, and art.” Occupying a distinctive, tree-shaded, nearly 300-acre campus only a few miles from downtown Houston, Rice attracts a diverse group of highly talented students with a range of academic studies that includes humanities, social sciences, natural sciences, engineering, architecture, music, and business management (graduate study only). The school offers students the advantage of forging close relationships with members of the faculty and the option of tailoring graduate and undergraduate studies to specific interests. Students each year are drawn to this coed, nonsectarian university by the creative approaches it historically has taken to higher education.

One of the unique features of Rice is its residential colleges. Before matriculating, each of the university’s 2,933 undergraduates becomes a member of one of nine residential colleges, each of which has its own dining hall, public rooms, and dorm on campus. Because each student is randomly assigned to one of the colleges and maintains membership in the same college throughout the undergraduate years, the colleges are enriched by the diversity of their students’ backgrounds, academic interests and experiences, talents, and goals. A faculty master is assigned to each college and lives in an adjacent house and helps cultivate a variety of cultural and intellectual interests among the students, as well as supporting an effective system of self-government. Other faculty or members of the community serve as associates to individual colleges. The experience of college residence is indispensable to conveying the rich flavor of academic life at Rice, allowing students to combine their usual studies with an array of social events, intramural sports, student plays, lecture series, innovative college-designed courses, and active roles in student government.

Graduate students come to Rice for the chance to work closely with eminent professors and researchers who are seeking to extend the horizons of current knowledge. Although most of Rice’s 1,922 graduate students live off campus, taking advantage of the city’s readily available and affordable housing, space also is available in the university-owned Graduate Apartments. Graduate students have a voice in the university community through the Graduate Student Association, which organizes and funds regular social events.

Rice offers students the pleasures and challenges of academic life within the peaceful enclosure of a campus widely acclaimed for its beauty. Campus buildings, including an extensive computer center and the 2.3 million-volume Fondren Library, form graceful groupings under spreading live oaks. Recent additions include the architecturally stunning Anne and Charles Duncan Hall, a state-of-the-art building for computational engineering; James A. Baker III Hall, which houses the Institute for Public Policy and the School of Social Sciences; and E. Dell Butcher Hall, home to the Center for Nanoscale Science and Technology. Additionally, Rice boasts the largest open-air stadium in the city.

Rice students also enjoy all the commercial and cultural advantages of a major metropolitan center. The school maintains extensive technological links to the area’s many colleges and universities, the acclaimed Texas Medical Center, and other resources. And both students and faculty enjoy Houston’s panoply of cultural offerings, from opera to blues clubs and from a renowned collection of post-impressionist art to alternative art spaces. Rice and Houston together provide an ideal learning and living environment.

BOARD OF TRUSTEES

TRUSTEES

James W. Crownover, *Chair*
 J. D. Bucky Allshouse
 D. Kent Anderson
 Teveia Rose Barnes
 Alfredo Brener
 Vicki Bretthauer
 Robert T. Brockman
 Albert Y. Chao
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 Bruce W. Dunlevie
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 K. Terry Koonce
 Michael R. Lynch
 Steven L. Miller
 M. Kenneth Oshman
 Marc Shapiro
 William N. Sick
 L. E. Simmons

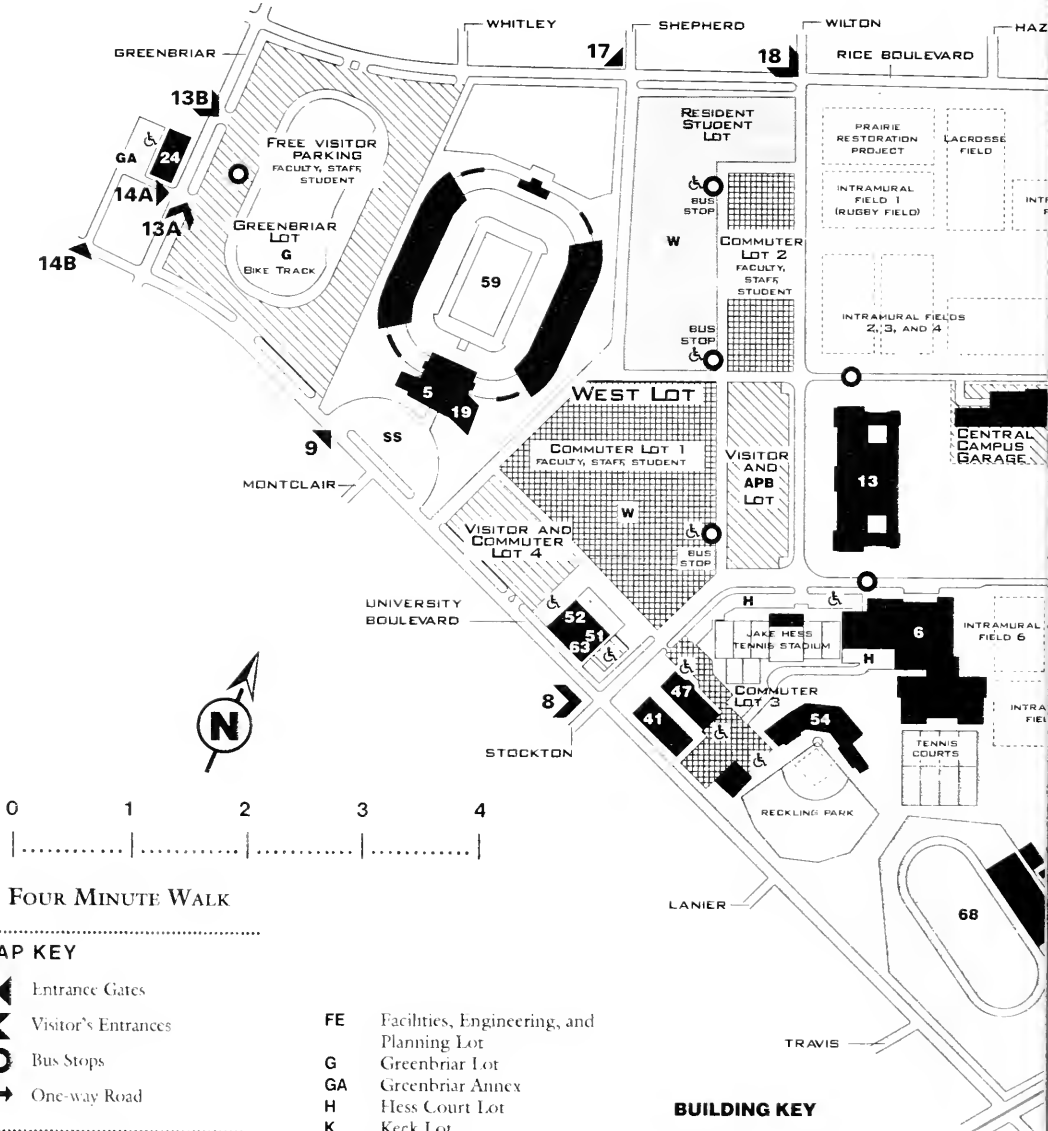
TRUSTEES EMERITI

Josephine E. Abercrombie
 J. Evans Attwell
 James A. Baker, III
 E. William Barnett
 Raymond Brochstein
 Harry J. Chavanne
 Janice G. Doty
 Charles W. Duncan, Jr.
 Matt F. Gorges
 C. M. Hudspeth
 Lee Hage Jamail
 Edward W. Kelley, Jr.
 Albert N. Kidd
 Cindy Lindsay
 Frederick R. Lummis, Jr.
 Robert R. Maxfield
 Burton J. McMurtry
 Robert C. McNair
 Ralph S. O'Connor
 Bob Parks
 W. Bernard Pieper
 Harry M. Reasoner
 Karen Hess Rogers
 Jack T. Trotter

TRUSTEE ADVISERS

Judy Ley Allen
 Richard A. Chapman
 Stephen C. Cook
 Thomas H. Cruikshank
 J. Thomas Eubank
 William S. Farish, III
 Catherine Coburn Hannah
 Joyce Pounds Hardy-McDonald
 Gerald D. Hines
 William P. Hobby
 T. Robert Jones
 Baine P. Kerr
 William F. Kieschnick
 Neal T. Lacey, Jr.
 Jerry McCleskey
 J. W. McLean
 G. Walter McReynolds
 James R. Meyers
 Pat H. Moore
 S. I. Morris
 Paula Meredith Mosle
 J. Howard Rambin
 David L. Rooke
 Frank B. Ryan
 Louisa Stude Sarofim
 Gus A. Schill, Jr.
 Stephen J. Shaper
 Stephen B. Smith
 Louis D. Spaw, Jr.
 Selby W. Sullivan
 Helen Saba Worden

RICE UNIVERSITY CAMPUS MAP



FOUR MINUTE WALK

MAP KEY

- Entrance Gates
- Visitor's Entrances
- Bus Stops
- One-way Road

PARKING KEY

- Faculty/Staff Parking
- Resident Student Parking
- Commuter Parking
- Visitor Parking (I free lot G)
- Accessible Parking

PARKING LOTS:

- A Abercrombie Lot
- APB Alice Pratt Brown Hall Lot
- B Baker College-Housing & Dining Lot
- BG Biology-Geology Lot
- C Campanile Lot
- CG Central Campus Garage (Paid)

- FE Facilities, Engineering, and Planning Lot
- G Greenbriar Lot
- GA Greenbriar Annex
- H Hess Court Lot
- K Keck Lot
- L Lovett Lot
- M Main Street Lot
- N North Lot
- NC North Colleges Residents Lot
- SC South Colleges Residents Lot
- SS South Stadium Lot
- W West Lot

PARKING RATES:

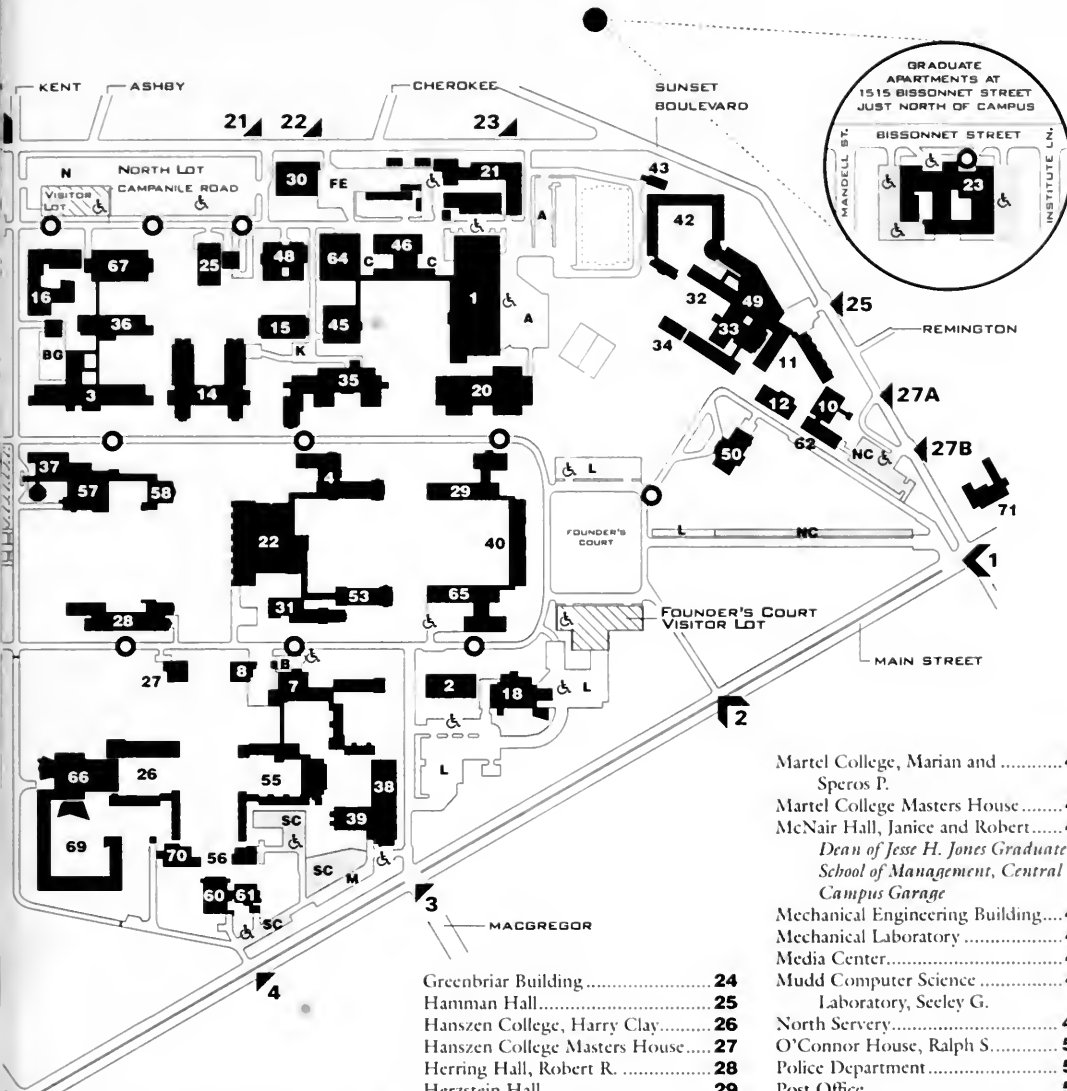
West of Entrance 18: \$1.00 each
40 minutes, \$9.00 daily maximum
East of Entrance 18: \$1.00 each
20 minutes, \$9.00 daily maximum

PAYMENT METHODS:

Central Campus Garage: cash or credit card.
Founder's Court, North, and West Lots Visitor Section: credit card.

BUILDING KEY

- Abercrombie Engineering 1
Laboratory
- Admission Office: See Lovett Hall
- Allen Center for Business Activities ... 2
President, Provost, Registrar, Cashier, Controller, Human Resources, Vice President for Finance and Administration, Vice President for Public Affairs, Vice President for Resource Development
- Anderson Biological Laboratories,..... 3
M.D.
- Anderson Hall, M.D. 4
Dean of Architecture
- Athletic Offices 5
- Autry Court and Gymnasium 6
- Baker College, James A. 7
- Baker College Masters House 8



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Dean of Social Sciences, Director of Baker Institute for Public Policy
- Brown College, Margaret Root.....10
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GENERAL
INFORMATION FOR
ALL STUDENTS



STUDENT RESPONSIBILITY

The university expects all Rice students to exercise personal responsibility over their actions. Their behavior should reflect a respect for the law and for their contractual obligations, a consideration for the rights of others, and shared standards of considerate and ethical behavior.

Students are responsible for knowing and following all information, policies, and procedures listed in this *General Announcements*. Questions should be directed to the appropriate office or administrator.

Rice encourages self-discipline, recognizing that effective student government, including judicial processes, and the integrity of the honor system depend on the willingness of all students to meet community standards of conduct.

The university, however, reserves the right to insist on the withdrawal of any student whose conduct it judges to be clearly detrimental to the best interests of either the student or the university. The appropriate authorities take such action only after careful consideration.

No individual or group may use the name of the university or one of its colleges without prior approval of the university or the college.

THE HONOR SYSTEM

The honor system, one of the oldest and proudest traditions at Rice, is administered by the Honor Council, whose student members are elected each year by the student body. Adopted by a student vote in 1916, the honor system has remained essentially the same since that time but for changes in the procedures and membership of the Honor Council.

Students take all written examinations and complete any specifically designated assignments under the honor system. By committing themselves to the honor system, all students accept responsibility for assuring the integrity of the examinations and assignments conducted under it. The Honor Council is responsible for investigating reported violations and for conducting a hearing when the facts warrant. The assistant dean of Student Judicial Programs, who reviews the results of the investigations and hearing, considers the council's recommendations when issuing penalties.

The Honor Council conducts an ongoing program to acquaint new students and faculty with the honor system. The Honor Code and other related information and resources are located at the homepage of the Honor Council: <http://www.ruf.rice.edu/~honor/>.

THE CODE OF STUDENT CONDUCT

With regard to nonacademic disciplinary matters, the assistant dean of Student Judicial Programs and the University Court—a court of student peers—enforce the Code of Student Conduct that governs the administration of student order and discipline. The Code of Student Conduct applies to all undergraduate students, transfer students, graduate students, and professional students registered at Rice University, as well as to visiting students, Class III students, second degree students, and auditors from the time they arrive on campus for orientation until they have completed their studies or degrees and physically left campus. Organizations also are subject to this Code. All enrolled students also are subject to Rice University policies, rules, and regulations. The assistant dean of Student Judicial Programs oversees the judicial system under the auspices of the Office of the Dean of Undergraduates, who has general authority over the student disciplinary system. The Code of Student Conduct

and other related information and resources are located at the homepage of the University Court: <http://www.ruf.rice.edu/~ucourt/table.html>.

FACULTY GRADING GUIDELINES

The Committee on Examinations and Standing has drawn up the following guidelines on grading. Additional information is available on pages 28–33.

- The evaluation of the student's performance in a course and a decision on the appropriate grade is the responsibility of the designated instructor or instructors in the course.
- No student should be given an extension of time or opportunities to improve a grade that are not available to all members of the class, except for verified illness or justified absence from campus. Students who have three scheduled final examinations in two consecutive calendar days may, however, take one of the examinations at another time. Except for scheduled exams, no course assignments may be due between the last day of classes and the last day of the final examination period.
- Students in independent study courses are not to be allowed an extension beyond the time when grades are due. Faculty are to submit grades at the end of the semester for such students based on work completed during the semester. The instructor directing the independent study assumes responsibility with the student for ensuring that the work undertaken is appropriate to the span of a semester and for determining the degree credit to be received.
- The basis for grading and the expectations on all written assignments or tests should be clearly explained to the class in advance, preferably in writing at the beginning of the semester. The instructor should explain clearly which assignments or homework are covered by the honor system and which are not. To prevent allegations of plagiarism on written assignments, students should be warned that all direct and indirect quotations from other sources should be properly acknowledged. The instructor should explain the extent to which the student's paper is expected to be independent of the references and clearly distinguishable from them.
- Instructors should be willing to give any student an explanation of his or her grade as consistent with the grading for the rest of the class. For this reason, the committee urges the faculty to preserve all examinations and written material not returned to students, as well as grade records, for at least the following semester so that students may, if they wish, review with their instructor the basis for the grade received.
- Instructors may not change a semester grade after the grade sheet has been submitted to the registrar, except when there is a clerical error in calculating the grade. This is a long-standing university rule of which the faculty are reminded by the registrar at the end of each semester. It is designed in part to protect the faculty from student pressure for grade changes. All other grade changes, including retroactive change to *withdrawal* or *incomplete*, must be approved by the Committee on Examinations and Standing on the basis of a written petition from the student and on information from the instructor.
- There is no university requirement that a final examination be given in a course. It is university policy that final examinations that cover more than the material since the last examination, that are the only exam in the course, or that are comprehensive of the entire course may be given only during the final examination period. Such examinations may not, for example, be labeled "tests" and administered during the last week of classes. Final

examinations are normally of 3-hour duration. Faculty who, under exceptional circumstances, wish to give longer examinations may do so only if the exam is scheduled as take-home. Under no circumstances may final exams exceed five hours. The “due date” for all take-home final exams is the end of the examination period.

- First-year students receive mid-semester grades around the eighth week of the fall and spring semesters so that they can, if advisable, enroll in tutoring or drop a class for which they may not be prepared. Faculty who teach first-year students in any of their classes will be asked to submit grades of standing for these students during the seventh week of the semester and should schedule the grading of tests, quizzes, or homework assignments accordingly. These grades are not recorded on the student’s transcript nor calculated in the grade point average, but they are important indicators for students and their faculty advisers.
- Departments using teaching associates, adjunct professors, or visiting faculty of any kind should make sure these teachers are familiar with Rice grading procedures. A regular faculty member who is well-versed in the grading guidelines should be assigned to assist such instructors.

The chair of the Committee on Examinations and Standing or the Office of the Dean of Undergraduates will be glad to advise any faculty member faced with exceptional circumstances that may justify special consideration. Students may petition the committee concerning the application of these guidelines. Suspected or possible violations of the honor system should be submitted to the Honor Council

STUDENT HEALTH AND COUNSELING SERVICES

STUDENT HEALTH FEE

By paying an annual student health service fee, all students gain access to both the Student Health Service and the Rice Counseling Center. Detailed information on the care and services each provide is available from both centers.

STUDENT HEALTH SERVICE

The student Health Service, an outpatient primary care clinic, is located in the Rich Health and Wellness Center in the former Brown College commons. Two primary care physicians and two nurses staff the clinic.

Clinic hours are from 8:30 A.M. to 5:00 P.M., Monday through Friday, during fall and spring semesters. For after-hours and weekend medical care, students may choose among a number of local hospitals. Students must pay for all medical care outside the clinic’s purview, including blood tests, x-rays, and outside physician consultations. Should such medical care be necessary, students are urged to review their insurance coverage and pick the best available option.

In serious emergencies, students should call the Student Health Service (713-348-4966) during work hours) or the Rice University Police Department (713-348-6000).

The clinic is open full time from the first day of Orientation Week until the day before commencement. It is closed during the Christmas break and Thanksgiving. The clinic is also open for reduced hours during the summer months.

The Student Health Service provides the following:

- Primary care for illness and injury with referrals to specialists when needed
- Maintenance of health records for all students
- Immunizations

- Contraceptive counseling and routine Pap smears
- Allergy shots (students must provide serum after a specialist allergy workup)
- Physical examinations (e.g., for employment, transfer to another school, or scholarship expeditions)

Confidentiality—The Student Health Service physician–patient relationship is a confidential one, and medical records will not be released except as required by law, or when the patient poses a significant risk to herself or himself or another person.

Health Insurance—All Rice students must have health insurance of their choice, and must enter details of their health insurance online at <http://studenthealthinsurance.rice.edu> by August 15. Failure to do so will result in automatic billing for insurance. Students may purchase insurance through the university, as described online. Dependent coverage is also available. For questions about the Rice student health insurance plan, students should contact the Rice Counseling Center at rucc@rice.edu. Rice's group coverage for 2005–2006 is effective at 12:01 A.M. on August 15, 2005, and will terminate at 12:01 A.M. on August 15, 2006.

DISABILITY SUPPORT SERVICES

Located in the Ley Student Center, Disability Support Services coordinates campus services for individuals with documented disabilities. For academic accommodations, adaptive equipment, or disability-related housing needs, the Disability Support Services Office is the campus resource for all students with disabilities. Information is maintained on scholarships, internships, and other programs specific to students with disabilities. For more information, see the Disability Support Services website at <http://www.dss.rice.edu>. Students can schedule an appointment with the director of Disability Support Services by calling 713-348-5841.

RICE COUNSELING CENTER

Rice Counseling Center, in 301A Lovett Hall, addresses students' psychological needs with various programs and services. The center is open year-round except for scheduled holidays and occasional all-day staff retreats. Office hours for counseling and consultations are 8:30 A.M. to noon and 1:00 P.M. to 5:00 P.M., Monday through Friday. Students can make appointments by calling 713-348-4867 or by visiting the center. There are no costs for Counseling Center services.

Typically, most students who use the counseling services bring with them very common concerns: roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, difficulties adjusting to Rice, or confusion about personal goals, values, and identity. Counselors are equipped to handle a variety of issues, including substance abuse, eating disorders, sexual assault/abuse/date violence, depression, and the coming-out process. Rice Counseling Center offers both individual and group counseling as well as educational workshops and programs.

When students need prolonged or specialized counseling or treatment, counselors refer them to an outside provider. The students, or their health insurance, must pick up those costs. All students who have paid the Health Service Fee are eligible for initial assessment sessions, consultations, crisis intervention, and educational programming. Individual or group counseling may also be available, if appropriate.

The Rice Counseling Center provides the following services:

- Initial assessment
- Short-term individual and couples counseling
- Group therapy and support groups

- Medication consultations with the center's consulting psychiatrist for students in counseling at the center
- Other consultations (e.g., how to make a referral or how to respond to a friend in distress)
- Educational programming (e.g., various presentations on mental health issues)
- Crisis intervention on a walk-in emergency basis during regular office hours; students may call 713-348-4867 for assistance with emergencies after hours or on weekends

THE WELLNESS CENTER

The Wellness Center is located in the Rich Health and Wellness Center. The center works with Student Health Services and the Rice Counseling Center to encourage and reinforce behaviors in students that promote a higher quality of health and well-being. Key target areas include prevention of substance abuse and misuse, unplanned pregnancies and sexually transmitted diseases, sexual assault and harassment, promotion of good nutrition and a healthy body image, disease prevention, management of time and stress to decrease depression, and improvement in the overall wellness of students. The Wellness Center offers educational material and programs, web-based information, audio-visual and print materials, many free health supplies, and free, confidential consultations and referrals for students. Nutritional counseling, massage therapy, and acupuncture also are available in the center. There are fees for some services. Call 713-348-5194 for an appointment.

College Assistance Peer Program (CAPP)—Students who have been carefully selected and trained in listening skills and mental-health education serve in this peer education program as supportive listeners and referral sources for other students. They also assist the center with its educational programming.

Students with Disabilities—Because students who have physical limitations may find it difficult to reach the Rice Counseling Center's third-floor location in Lovett Hall, staff will arrange to see those students in a more accessible location on campus. Students should call the center to make these arrangements.

Confidentiality—Counseling services are confidential: information about a student is not released without that student's written permission. By state law, confidentiality does not extend to circumstances where (1) there is risk of imminent harm to the student or others; (2) the counselor has reason to believe that a child or an elderly or handicapped person is, or is in danger of, being abused or neglected; (3) a court order is issued to release information; (4) the student is involved in a criminal lawsuit; or (5) the counselor suspects that the student has been the victim of sexual exploitation by a former health provider during the course of treatment with that provider.

INFORMATION FOR UNDERGRADUATE STUDENTS



INTRODUCTION

The undergraduate experience at Rice is one of intense personal interactions. The close sense of community created by individual placement in residential colleges is extended to warm intellectual and personal relationships with members of the Rice faculty. “Behind the hedges,” the beautifully designed, spacious campus is small enough to encourage a sense of belonging even as students engage with the lively cultural currents of one of the country’s largest cities.

The academic philosophy at Rice is to offer students beginning their college studies both a grounding in the broad fields of general knowledge and the chance to concentrate on very specific academic and research interests. By completing the required distribution courses, all students gain an understanding of the literature, arts, and philosophy essential to any civilization, a broad historical introduction to thought about human society, and a basic familiarity with the scientific principles underlying physics, chemistry, and mathematics. Building on this firm foundation, students then concentrate on studies in their major areas of interest.

Rice University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (SACS), the recognized regional accrediting body in the eleven U.S. Southern states.

Rice grants the two undergraduate degrees, the Bachelor of Arts (BA) and the Bachelor of Science (BS), in a range of majors. The majority of undergraduates earn the BA degree. The BS degree is offered in some science fields and in various fields of engineering accredited by the Accreditation Board for Engineering and Technology (ABET). Undergraduates may major in any of the numerous fields provided by the various schools of architecture, humanities, music, social sciences, science, and engineering. To accommodate the full range of individual student interests, specific interdepartmental majors are also available, as are selectively approved area majors. In certain departments, students also have the option of overlapping the upper-level course work of their undergraduate degree with those basic requirements necessary to earn a higher degree in the field, considerably reducing the time required to complete their graduate studies. The Shepherd School of Music offers a joint degree in music (BMus/MMus) that may be completed with a fifth year of study.

Through Rice’s Education Certification Program, students interested in teaching in secondary schools may complete a program of teacher training, leading to certification in the state of Texas, together with the BA degree. Students interested in satisfying the requirements for admission to medical, dental, or law school should consult with the Office of Academic Advising for completing these programs in conjunction with the various majors.

GRADUATION REQUIREMENTS

DEGREE REQUIREMENTS FOR ALL BACHELOR’S DEGREES

Students are responsible for making certain that their plan of study meets all degree and major requirements. To graduate from Rice University, all students must:

- Be registered at Rice full time for at least four full fall and/or spring semesters
- Complete the requirements of at least one major degree program
- Complete at least 120 semester hours (some degree programs require more than 120 hours)
- Complete at least 60 semester hours at Rice University

- Complete at least 48 hours of all *degree* work in upper-level courses (at the 300 level or higher)
- Complete more than half of the upper-level courses in *degree* work at Rice
- Complete more than half of the upper-level courses in their *major* work at Rice (certain departments may specify a higher proportion)
- Complete all Rice courses satisfying *degree* requirements with a cumulative grade point average of at least 1.67 or higher
- Complete all Rice courses that satisfy *major* requirements (as designated by the department) with a cumulative grade point average of at least 2.00 or higher
- Satisfy the English composition requirement (see below)
- Satisfy the Lifetime Physical Activity Program (LPAP) requirement (see below)
- Complete courses to satisfy the Distribution Requirements (see below)
- Otherwise be a student in good academic and disciplinary standing and not under investigation

To satisfy the English composition requirement, students must pass an English composition examination given during Orientation Week. Those receiving grades of “not satisfactory” on the exam must complete ENGL 103, *Introduction to Argumentation and Academic Writing*, a one-semester course carrying degree credit.

To satisfy the LPAP requirement, students must complete 2 different noncredit courses in LPAP. Students with disabilities may make special arrangements to satisfy this requirement.

In order to earn a second degree, students must fulfill the requirements outlined on page 25.

DISTRIBUTION REQUIREMENTS

Each student is required to complete at least 12 semester hours of designated distribution courses in each of Groups I, II, and III. The 12 hours in each group must include courses in at least two departments in that group. (Divisional or interdisciplinary designations, e.g., HUMA or NSCI, count as departments for this purpose.) Interdivisional courses approved for distribution credit may count toward the 12 semester hours in any relevant group; however, students may not count any one such course toward the 12 required hours in more than one group, and may count no more than one such course toward the 12 required hours in any one group.

Students must complete the distribution requirements in each group by taking courses that are designated as a distribution course at the time of course registration, as published in that semester’s *Course Offerings*. Courses taken outside of Rice and transferred in can be used to satisfy distribution requirements, assuming they are on the list of approved and designated distribution courses at the time they were taken. Completed courses taken prior to matriculation are subject to the list of designated distribution courses at the time of matriculation.

The distribution system presupposes that every Rice student should receive a broad education along with training in an academic specialty. This goal is achieved by courses that are broad based, accessible to nonmajors, and representative of the knowledge, intellectual skills, and habits of thought that are most characteristic of a discipline or of inquiry across disciplines.

Group I—These courses have one or more of the following goals. They develop students’ critical and aesthetic understanding of texts and the arts; they lead students to the analytical examination of ideas and values; they introduce students to

the variety of approaches and methods with which different disciplines approach intellectual problems; and they engage students with works of culture that have intellectual importance by virtue of the ideas they express, their historical influence, their mode of expression, or their critical engagement with established cultural assumptions and traditions.

Group II—Three types of courses fulfill this requirement. The first are introductory courses which address the problems, methodologies, and substance of different disciplines in the social sciences. The second are departmental courses that draw upon at least two or more disciplines in the social sciences or that cover topics of central importance to a social science discipline. The third are interdisciplinary courses team-taught by faculty from two or more disciplines.

Group III—These courses provide explicit exposure to the scientific method or to theorem development, develop analytical thinking skills and emphasize quantitative analysis, and expose students to subject matter in the various disciplines of science and engineering.

BACHELOR OF ARTS

The specific requirements of individual majors leading to the Bachelor of Arts degree vary widely. No department may specify more than 80 semester hours (required courses, prerequisites, and related laboratories included) for the Bachelor of Arts.

In addition to meeting the degree requirements for all bachelor's degrees, to qualify for the Bachelor of Arts, students in all fields except architecture must complete at least 60 hours in course work outside the major, and students in architecture must complete at least 36 hours in course work outside the major.

BACHELOR OF SCIENCE IN THE SCHOOL OF NATURAL SCIENCES

The Bachelor of Science degree is offered in astrophysics, biochemistry and cell biology, chemistry, chemical physics, earth science, ecology and evolutionary biology, and physics. The specific degree requirements vary from field to field and differ from those of the Bachelor of Arts in that there are greater technical requirements. No department may specify more than 80 semester hours (required courses, prerequisites, and related laboratories included) for the Bachelor of Science. To earn a BS degree in one of these fields, students must complete at least 60 hours in course work outside the major.

BACHELOR OF SCIENCE DEGREES IN ENGINEERING:

BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING (BSCHE), CIVIL ENGINEERING (BSCE), COMPUTER SCIENCE (BSCS), ELECTRICAL ENGINEERING (BSEE), MATERIALS SCIENCE (BSMS), MECHANICAL ENGINEERING (BSME), AND BIOENGINEERING (BSB)

The Bachelor of Science degree in a given engineering field is distinct from the Bachelor of Arts degree in that it must meet greater technical requirements. In establishing a departmental major for the degree of bachelor of science in civil engineering, electrical engineering, materials science, and mechanical engineering, the department may specify no more than 92 semester hours (required courses, prerequisites, and related laboratories included). In establishing the departmental major for the BS in chemical engineering, the department may specify no more than 100 semester hours (required courses, prerequisites, and related laboratories included). The bioengineering department specifies 94 semester hours for the BS degree (required courses, prerequisites, and related laboratories included). To earn a BS degree, students must meet the following minimum semester hour requirements in course work:

- All majors except chemical engineering and computer science—a total of at least 134 hours
- Chemical engineering majors—a total of at least 132 hours, depending on area, up to 137 hours
- Computer science majors—a total of at least 128 hours

OTHER BACHELOR'S DEGREES

The professional Bachelor of Architecture (BArch) degree requires a fifth year of study and a one-year preceptorship. The Bachelor of Fine Arts (BFA) degree requires a fifth year of concentrated study and advanced courses in addition to the core course requirements. The Bachelor of Music (BMus) degree requires advanced courses in aural skills in addition to the core music curriculum.

UNDERGRADUATE MAJORS

To receive a bachelor's degree, a student must complete the requirements for at least one major. Rice offers majors in many fields. Within some majors, students have the choice of a particular area of concentration. Students also may choose to fulfill the requirements for more than one major; such majors do not necessarily need to be in related fields. More detailed information on the departmental majors described below may be found in the Undergraduate Degree chart (pages 18–20), in the section “Departments and Interdisciplinary Programs” or by contacting the department. The process for declaring majors appears in the section Declaring Departmental Majors on page 23.

School of Architecture—Students admitted to the university as architecture majors must first complete 4 years of the BA program (architecture major) before applying to the BArch program in their senior year. If admitted, they are assigned a preceptorship with an architectural firm for a one-year period, after which they return to Rice to complete the BArch degree program.

George R. Brown School of Engineering—Rice offers majors in bioengineering, chemical engineering, civil engineering, computational and applied mathematics, computer science, electrical and computer engineering, environmental engineering sciences, mechanical engineering, materials science and engineering, and statistics. These programs lead to either the BA or the BS degree and may qualify students for further graduate study.

School of Humanities—Students may declare majors in art history, classics, English, French studies, German and Slavic studies (includes Russian), Hispanic studies, history, kinesiology, linguistics, philosophy, religious studies, and visual arts. Interdisciplinary majors are available in ancient Mediterranean civilizations, Asian studies, medieval studies, and the study of women and gender, while an interdepartmental major in policy studies combines courses from the School of Humanities and the School of Social Sciences.

Shepherd School of Music—Music students may opt for either a BA or a Bachelor of Music (BMus) degree in performance, composition, music history, and music theory. Students who pass a special qualifying examination may elect an honors program that leads to the simultaneous awarding of the BMus and Master of Music (MMus) degrees after five years of study.

Wiess School of Natural Sciences—All natural sciences departments, including biochemistry and cell biology, chemistry, earth science, ecology and evolutionary biology, mathematics, and physics and astronomy offer programs leading to the BA degree. BS degrees are offered in some departments. Majors include astronomy, biochemistry, biology, biophysics, chemical physics, chemistry, earth science, mathematics, and physics. Students may also elect double majors combining one

of the programs in natural sciences with another science, a humanities discipline, or an engineering field.

School of Social Sciences—Rice offers majors in anthropology, economics, mathematical economic analysis, political science, psychology, and sociology. Both the interdepartmental policy studies major and the cognitive sciences majors include science, engineering, and humanities courses, while the managerial studies major incorporates course work in the Schools of Engineering and Management.

UNDERGRADUATE DEGREE CHART

| School Department | Undergraduate Degrees Offered | Additional Options or Areas of Concentration (within majors) |
|--|-------------------------------|--|
| SCHOOL OF ARCHITECTURE | | |
| | BA, BArch | BA majors in architecture and in architectural studies |
| GEORGE R. BROWN SCHOOL OF ENGINEERING | | |
| Bioengineering | BSB | Areas of concentration in cellular and molecular engineering, biomedical instrumentation and imaging, and biomaterials and biomechanics |
| Chemical and Biomolecular Engineering | BA, BSChE | Focus areas in bioengineering, environmental science and engineering, materials science and engineering, and computational engineering |
| Civil and Environmental Engineering | BA, BSCE | BA degree in civil engineering and environmental sciences BSCE with focus areas in environmental engineering sciences, hydrology and water resources, structural engineering and mechanics, and urban infrastructure and management |
| Computational and Applied Mathematics | BA | Numerical analysis, operations research, optimization, differential equations, and scientific computation |
| Computer Science | BA, BSCS | Areas of concentration in architecture, artificial intelligence, computational science, foundations, human-computer interaction, and software systems |
| Electrical and Computer Engineering | BA, BSSEE | Areas of concentration in bioengineering computer engineering; systems: control, communications, and signal processing; electronic circuits and devices; and quantum electronics and photonics |
| Mechanical Engineering | BA, BSME, BSMS | Mechanical engineering: areas of concentration and Materials Science in biomechanics, computational mechanics, fluid mechanics and thermal science, solid mechanics and materials, and system dynamics and control |

| | | |
|------------|----|--|
| Statistics | BA | Theoretical and applied training orientations; engineering, scientific, and business applications of probability and statistics; joint work in related departments |
|------------|----|--|

SCHOOL OF HUMANITIES

| | | |
|---------------------------|---------------------------------|--|
| Art History | BA | History of art |
| Classical Studies | BA | Classics, Greek, Latin |
| Education | No undergraduate degree offered | Leads to secondary teaching certificate in conjunction with BA in major field. See Education Certification |
| English | BA | |
| French Studies | BA | |
| German and Slavic Studies | BA | German and German cultural studies and Slavic studies (for existing majors) |
| Hispanic Studies | BA | Spanish and Latin American literature and Spanish Linguistics |
| History | BA | |
| Kinesiology | BA | Areas of concentration in exercise science, sports medicine, and sports management |
| Linguistics | BA | Areas of concentration in language, cognitive science, second language acquisition, and language, culture, and society |
| Philosophy | BA | |
| Religious Studies | BA | Areas of concentration in religious traditions and/or methodology |
| Visual Arts | BA, BFA | Studio art and special fifth-year courses for BFA candidates |

JESSE H. JONES GRADUATE SCHOOL OF MANAGEMENT

| | | |
|--|---------------------------------|--|
| | No undergraduate degree offered | Four accounting courses open to all undergraduate students |
|--|---------------------------------|--|

SHEPHERD SCHOOL OF MUSIC

| | | |
|--|----------|--|
| | BA, BMus | BA in music; BMus in composition, music history, music theory, and performance; joint BMus/MMus with fifth year of study |
|--|----------|--|

WIESS SCHOOL OF NATURAL SCIENCE

| | | |
|-------------------------------|--------|--|
| Biochemistry and Cell Biology | BA, BS | Part of an integrated biosciences curriculum |
| Chemistry | BA, BS | Chemical physics major offered jointly with the Department of Physics and Astronomy and resulting in a BS degree |
| Earth Science | BA, BS | Major tracks in geology, geophysics, geochemistry, and environmental earth science. |

| | | |
|----------------------------------|--------|--|
| Ecology and Evolutionary Biology | BA, BS | Part of an integrated biosciences curriculum |
| Mathematics | BA | 300-level courses oriented toward problem solving and applications and 400-level and above oriented toward theory and proofs; preparation for graduate studies or high school teaching or other areas; ample opportunity for double-majoring, especially with CAAM, COMP, ELEC, PHYS, or STAT; abundance of courses in analysis, topology, geometry, algebra, etc. |
| Physics and Astronomy | BA, BS | Majors in physics with specific options in applied physics, biophysics, computational physics, astrophysics, and astronomy; interdepartmental major in chemical physics |

SCHOOL OF SOCIAL SCIENCES

| | | |
|-------------------|----|--|
| Anthropology | BA | Areas of concentration in archaeology and social/cultural anthropology |
| Economics | BA | Majors in economics and in mathematical economic analysis, concentration in business economics |
| Political Science | BA | Areas of concentration in American, comparative, and international relations |
| Psychology | BA | |
| Sociology | BA | |

INTERDEPARTMENTAL MAJORS

| | | |
|-------------------------------------|---------------------------------|---|
| Area Majors | BA | Requires approval of two or more departments, the Office of Academic Advising, and the Committee on Undergraduate Curriculum (see page 24) |
| Ancient Mediterranean Civilizations | BA | Anthropology, classical studies, Greek, Latin, history, history of art, linguistics, philosophy, and religious studies |
| Asian Studies | BA | Anthropology, art, history of art, Hindi, history, humanities, linguistics, Chinese, Japanese, Korean, Sanskrit, political science, and religious studies |
| Cognitive Sciences | BA | Computer science, linguistics, neuroscience, philosophy, and psychology |
| Education Certification | No undergraduate degree offered | Leads to secondary teaching certificate in conjunction with BA in major field |
| Managerial Studies | BA | Accounting, economics, political science, and statistics |
| Medieval Studies | BA | History of art, classics, English, French, German, history, humanities, linguistics, Spanish, music, philosophy, political science, and religious studies |
| Policy Studies | BA | Environmental policy, government policy and management, healthcare policy and management, international affairs, law and justice, business policy and management, and urban and social change |
| Study of Women and Gender | BA | Anthropology, classics, English, French studies, German, Spanish, history, humanities, economics, political science, linguistics, music, psychology, philosophy, religious studies, and sociology |

TEACHER CERTIFICATION

Students in the teacher certification program earn Texas state teacher certification at the secondary level. Subjects include art, English, French, German, health science, history, Latin, life science, mathematics, physical education, physical science, Russian, science, social studies, and Spanish. For more information on teacher certification programs at the undergraduate and graduate levels, see Education Certification in the Departments and the Interdisciplinary Programs and Courses of Instruction sections.

STUDY ABROAD, EXCHANGE, AND WORK ABROAD PROGRAMS

Rice University provides students the opportunity to embark on a cultural learning experience by offering a variety of destinations and program options worldwide. Students can choose to study abroad with one of more than 500 affiliated programs. Some affiliates specialize in intensive language instruction, some in field research opportunities, and others in facilitating direct enrollment at universities around the world. Over a dozen direct exchange programs with internationally renowned universities allow Rice students to act as ambassadors abroad while providing the opportunity for a student from the host institution to study at Rice. Work programs allow students to travel to another country and work during or after their time at Rice. Experiences range from casual jobs to professional internships.

Each year more than 200 undergraduates from across the disciplines study abroad and then apply the transfer credit toward their degrees. The study abroad advisors, in cooperation with the faculty advisors in each department, assist students in identifying the best programs for their individual interests and academic needs. To assure proper enrollment, transfer of credits and financial aid, students planning to study abroad must make their arrangements through the Department of International Programs. This includes arranging prior approval for transfer credit through the relevant academic department(s) and the registrar.

Detailed information on affiliated programs, including application forms, is available from the Department of International Programs (first floor, Ley Student Center) or online at abroad.rice.edu.

ACADEMIC REGULATIONS

All undergraduate students are subject to the academic regulations of the university. Students are responsible for making certain they meet all departmental and university requirements and academic deadlines. The Committee on Examinations and Standing administers the rules described below. Under unusual or mitigating circumstances, students may submit a written petition requesting special consideration to the committee. Students should address all correspondence to the committee in care of the Office of the Dean of Undergraduates.

REGISTRATION

Currently enrolled students register in April for the fall semester and in November for the spring semester. Student registration is prioritized based on the hours earned and in progress. Entering students complete their registration during Orientation Week before classes begin in August. Undergraduate students are required to obtain a Registration/Add/Drop PIN in order to register for classes. To receive this PIN students must meet with their divisional or major advisor to discuss their courses for the upcoming semester. The first Registration/Add/Drop PIN for each semester is valid from the registration period through the end of the second week of classes. The second Registration/Add/Drop for each semester is valid from the beginning of the third week of classes through the drop deadline. Registration/Add/Drop PIN validity dates can be found in the Academic Calendar.

To be properly registered, new students must complete, sign, and return a matriculation card. New students may not register or attend classes until they return a properly completed health data form and meet immunization and TB screening requirements. Immunizations required for admission are diphtheria/tetanus, measles, rubella, and mumps, with immunizations against hepatitis B and chicken pox recommended. The Mantoux tuberculin skin test is also required. A late fee of \$30 is charged for failure to submit a fully completed health data form by the required date. Each year, the Office of the Registrar publishes the specific deadlines for the semesters of that year.

Unless students elect a special payment plan, they must pay all tuition and fees for the fall semester by the end of the second week in August and for the spring semester by the end of the first week in January. Any student not registered as of the last day to add classes or any student who is in arrears or becomes in arrears after the last day to add classes will be withdrawn from the university by default. Withdrawn students may not be allowed to receive credit for the withdrawn semester.

Appeals to this policy must be addressed to the dean of undergraduates. If readmitted, students must petition the Committee on Examinations and Standing to late add classes and must pay a late registration fee of \$110. Additionally, students who are readmitted after being withdrawn for nonpayment will be assessed a \$300 readmission fee.

Drop/Add—During the first two weeks of the semester, students may add or drop courses without penalty. After the second week of the semester, the following conditions apply for adds and drops:

Undergraduate students in their first semester at Rice:

- Must obtain instructor's permission and have a valid Registration/Add/Drop PIN to add a course in the third or fourth week of classes (a \$10 fee will be assessed)
- May not add courses after the fourth week of classes, except with the approval of the Committee on Examinations and Standing (a \$50 fee will be assessed)
- May drop courses up to the last day of classes with a valid Registration/Add/Drop PIN (a \$10 fee will be assessed for courses dropped between week four and week 14*)

All other students:

- Must obtain instructor's permission and have a valid Registration, Add/Drop PIN to add a course in the third or fourth week of classes (a \$10 fee will be assessed)
- May not add courses after the fourth week of classes, except with the approval of the Committee on Examinations and Standing (a \$50 fee will be assessed)
- May drop courses after the fourth week up to the end of the tenth week of classes with a valid Registration/Add/Drop PIN required (a \$10 fee will be assessed for courses dropped between week four and week ten*)
- May not drop courses after the end of the tenth week of classes, except with the approval of the Committee on Examinations and Standing (a \$50 fee will be assessed)

For courses with start and end dates not coinciding with the normal Rice semester calendar, otherwise known as partial term courses, the registrar will consult with the instructor and set:

- The add deadline approximately one-third of the way into the course
- The drop deadline approximately two-thirds of the way into the course
- The add/drop deadline for these partial-term courses will be posted on the Registrar's web site.

Students may not drop courses where the Honor Council has ruled a loss of credit.

**Note:* Weeks are defined as academic instruction; thus, midterm recess is not included in this calculation.

Course Load—Students at Rice normally enroll for 15 to 17 semester hours each semester. For most students, this allows them to complete the requirements for graduation in 8 semesters. Students must secure permission in writing from the Office of the Dean of Undergraduates before registering for courses, if they want to:

- Register for or add to more than 20 credits
- Register for or drop below 12 credits
- Register concurrently at another university

No student may receive credit for more than 20 credits in a semester, including courses taken elsewhere, without this prior written approval.

Students should also be aware that the registrar's office must report a student's part-time status to various groups, such as loan agencies, scholarship foundations, insurance companies, etc. It is in the student's best interest to determine if he or she will be affected in any way by part-time status.

REPEATED COURSES

Students may repeat courses previously taken, but the record of the first attempt (and grade) remains on the transcript, and both grades are included in term and cumulative grade point average calculations. In most cases, if students repeat courses previously passed, credit is awarded only once. For example, a student took HIST 117 and received a grade of B. The student repeated HIST 117 and received a grade of A. Both grades—the A and B—appear on the transcript and are included in his/her GPA; however, he/she only receives three credits toward his/her degree. On the transcript, a repeated course is indicated by one of the following values:

I - Included in GPA and earned hours

A - Included in GPA, but excluded from earned hours

Some Rice University courses may be repeated for credit. They are specifically noted in the Schedule of Courses each semester. If a course may be repeated for credit, each grade appears on the permanent record and is included in the grade point average.

Students may not repeat courses for which they have received either advanced placement or transfer credit. Credit will not be counted twice for students who repeat these types of courses.

Students may not receive credit for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken at the same time. If the course is not repeatable, students may not receive credit for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken in different semesters.

DECLARING DEPARTMENTAL MAJORS

Students declare their major using a Declaration of Major form. The department chair or designee must sign the form acknowledging the declaration. The department will counsel the student about the requirements that must be met to complete the

major and the likelihood the student will be able to meet them. If the department believes a student is not well prepared for success in its major, it may express its reservations on the form. No department or program may, however, refuse to admit an undergraduate as a major, with the exception of the School of Architecture and the Shepherd School of Music or in the case of limitations of resources. In such cases, departments must publish criteria they will use to limit the number of majors together with their major requirements.

Students must declare a major during the spring of their sophomore year. They will not be permitted to register for the fall semester of the junior year without having declared a major. The major declaration deadline is listed in the Academic Calendar for each year.

Students are free to declare a major at any time before this deadline and are always free to change their major by completing the appropriate form. However, such a change may entail one or more additional semesters at the university. Area majors are an exception to this rule and must be declared by the fourth semester before graduation (see Area Majors below).

Once a student declares a major, the title of the major is noted on the student's transcript, and a faculty adviser in the major department is assigned. Students and their advisers should regularly review progress towards their degrees. Introductory courses taken before formal designation of a major may be counted in fulfilling the major requirements.

For information on the specific requirements for any major, students should consult the departmental listings and seek the advice of the faculty member who is the designated major advisor. It is the responsibility of the student to meet regularly with their advisors to review progress toward their degrees.

AREA MAJORS

Should the traditional departmental majors or programs not meet their exact needs, students may develop an area major closer to their particular interests and career goals. Area majors differ from double majors in that the latter must conform to the requirements of both departments while the former is a single major: It may combine courses from two or more departments, but it maintains its own specific major requirements. Area majors are limited by the available academic resources and must be distinct from other majors offered at Rice. Students who elect to declare an area major may not use it to form a double major, and they must still meet all the other university graduation requirements.

Students are usually the ones to initiate an area major, working it out in conjunction with the Office of Academic Advising and with faculty advisers from each of the departments involved. After designing a comprehensive and substantial course of study and deciding on an appropriate title, all parties sign off on the plan. The chairs of the involved departments and the Committee on the Undergraduate Curriculum determines final approval. At that point, the Office of Academic Advising officially certifies the approved plan to the registrar and goes on to oversee the major on behalf of the faculty advisers. Any change in the proposed requirements requires the approval of both the faculty advisers and the Committee on the Undergraduate Curriculum.

Students may not propose an area major if they are within three semesters of graduation unless the Committee on Examinations and Standing rules that exceptional circumstances warrant this action. Under no circumstances may students declare an area major in their final semester before graduation.

SECOND FOUR-YEAR BACHELOR'S DEGREE

Currently enrolled undergraduates, Rice graduates with a bachelor's degree, and graduates from other universities with a bachelor's degree have the option of earning a *second* four-year bachelor's degree at Rice in a different discipline. This degree must be a different bachelor's degree from the one already held; for example, the holder of a BA degree may pursue course work leading to the BS or BMus degree. Rice students should note that they can apply courses they completed at Rice as Class III students to the second degree only with the approval of the major department for that degree. (Class III students are students who already have college degrees and are taking courses for credit outside of a Rice degree program.)

Students Already Enrolled at Rice—To earn a second four-year bachelor's degree, also known as a *dual degree*, currently enrolled undergraduates who have not yet completed their first bachelor's degree must:

- Be accepted for the second major by the major department
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice beyond the hours required for their first degree (these hours are applied to the second degree)

Students seeking admission to this program should complete an application for a second degree with the office of the registrar. The application should include a written statement identifying both proposed majors and specifying an approved course program for each. It should also contain an outline from the chair or undergraduate adviser of each department involved, indicating that the proposed course program satisfies all major degree requirements.

Students with a Bachelor's Degree from Rice—Rice graduates who wish to earn a different four-year bachelor's degree must:

- Be accepted for the major by the major department
- Fulfill all requirements for the second degree
- Complete at least 30 additional semester hours at Rice beyond their first bachelor's degree (these hours are applied to the second degree)
- Attend Rice full time for at least two semesters during the fall and/or spring terms beyond their first bachelor's degree

The entire undergraduate record for these students continues cumulatively. Those seeking admission to this program should complete an application for a second degree with the office of the registrar. The application should include a written statement specifying the proposed major and course program for the second degree, a supporting letter from the chair of the major department, and an explanation of the student's reasons for seeking a second degree.

Students with a Bachelor's Degree from Another School—Other graduates who wish to earn a four-year bachelor's degree in a different major from Rice must:

- Fulfill all requirements for the second degree
- Complete at least 60 semester hours at Rice (these hours are applied to their Rice degree)
- Attend Rice full time for at least four fall and/or spring semesters

Interested students should apply for admission through the Office of Admission. See page 43 for details on application requirements for Second Degree Students.

Financial Aid and Housing—Students seeking information about financial aid available to participants in the second degree program should contact the Office

of Student Financial Services. Students admitted to the second degree program may request assignment to a college, but they will have lower priority for on-campus housing than students enrolled for a first four-year bachelor's program. This means that housing will probably not be available.

HONORS PROGRAMS

To enroll in the two-semester **Rice Undergraduate Scholars Program**, students register for HONS 470–471 *Proposal Development and Research*. This program is for juniors and seniors in all disciplines who are considering graduate study and an academic career after graduation. Students enroll in the program plan and execute independent research under the supervision of a sponsoring faculty member (they may apply for funding to cover expenses related to their projects). They meet once a week to discuss each other's work and to hear a range of presentations on life in academia. Students may apply in the spring of each year. For more information, contact the program's faculty co-director.

Individual departments may offer undergraduates the option of honors program enrollment. These programs enable students to receive advanced training or to deepen their understanding of a given discipline through an intensive program of independent supervised research. Customary procedure is for students to submit a proposed project to their department's Undergraduate Committee, which helps them rework it, as needed, into a substantial but feasible proposal. Once accepted, students are assigned a faculty adviser to guide their research. The project concludes in an honors thesis, which the adviser and two readers evaluate, and an oral examination. Departments also use honors programs to formally recognize students who have shown outstanding work through their individual projects. Acceptance into a departmental honors program is at the discretion of the faculty. For specific requirements and procedures, students should contact the individual departments.

TRANSFER CREDIT

Courses taken at another college or university that are appropriate to the Rice curriculum may be approved for transfer credit toward a Rice undergraduate degree. This includes credit for summer school courses not taken at Rice, though no more than 14 semester hours of transfer credit taken in summer schools other than Rice may be applied to any Rice degree. Students must have taken the course at a U.S. academic institution accredited by a regional accrediting agency or with a study abroad program approved by the Department of International Programs and must have earned a grade of C- or the equivalent or better. Students may not transfer courses taken pass/fail or on a similar basis at other institutions. Courses that meet these requirements will be transferred to Rice by the Office of the Registrar as general credit with the designation TRAN. The Office of the Registrar will distinguish between credits that are upper-level and credits that are not upper level. TRAN credit will count toward the general hours needed for graduation under university requirements and for upper-level credit needed if it is designated by the Office of the Registrar as upper-level credit.

The Office of the Registrar, in conjunction with the academic departments, determines whether courses are appropriate for transfer to Rice as Rice equivalent courses. Individual departments may place additional restrictions on particular courses and/or institutions. Similarly, various majors and degree programs may limit the amount of transfer credit that students may apply to them. If courses transferred to Rice as TRAN credit are subsequently granted Rice equivalent course credit by

the Office of the Registrar and academic department, the TRAN credit is reduced by the number of credit hours of the Rice equivalent course. The Rice equivalent course is then listed on the student's transcript and satisfies the university and major requirements the Rice course satisfies. Courses may be evaluated for transfer directly as Rice equivalent courses, if appropriate, if the student completes the forms required by the Office of the Registrar. Students also may have to obtain departmental approval.

Because of these restrictions, students are strongly advised to seek prior approval from the registrar for courses for which students plan to receive Rice equivalent credit. The Office of the Registrar may require that students secure approval from the major department to receive Rice equivalent credit. Without prior approval, students cannot be certain that credit taken at another institution will be transferred as a Rice equivalent course and therefore count for major distribution or specific university requirements.

If approved, the equivalent Rice course or the general TRAN credit, as the case may be, is entered on the student's record *after* the Office of the Registrar receives an official transcript from the other college or university. For credits obtained while studying abroad, the Office of the Registrar also must receive the necessary approval paperwork from Rice International Programs before transfer credit may be granted. Students may appeal to Rice International Programs to have credit granted from nonapproved study abroad programs. Such appeals generally should be justified by the curricular needs of the student. In addition, credit from non-U.S. degree-granting universities not part of a study abroad program must be approved by Rice International Programs. Credit is generally determined on a pro rata basis. No grade is entered, and transferred courses have no effect on a student's Rice grade point average.

Students with much transfer credit should be aware of the general graduation requirements (listed on pages 33) that they must complete at least 60 semester hours at Rice, complete more than half of their upper-level degree work and more than half of their upper-level major work at Rice (students also should check their specific departmental major requirements).

EXCUSED ABSENCES

Students are expected to be in attendance at all of the classes for which they are registered during the entire course of the academic semester for which they are enrolled. The university understands, however, that students participating in university-sponsored extracurricular activities may, on rare occasions, need to miss a class session during the semester. As a matter of course, students should inform their instructors in advance of absences resulting from participation in university-sponsored activities, and faculty normally will give a reasonable opportunity to make up work missed on such occasions.

During the last week of classes, from Monday through Saturday, university-sponsored events at which student attendance is required may be rescheduled in or outside of Houston as long as no more than one day of classes and one night would be spent out of Houston from the previous Sunday night through Friday afternoon. Events scheduled on Saturday may involve travel on Friday evening and on Sunday. However, no event may be scheduled on Sunday and thereafter until the conclusion of the final examination period. Exceptions may be authorized only by the Committee on Examinations and Standing.

Absences for activities other than university-sponsored events may be negotiated on an informal basis between the student and the faculty member. Alternatively,

absences may be formally excused on a case-by-case basis if a petition explaining the nature of the event, accompanied by suitable documentation, is submitted to the Committee on Examinations and Standing at least two weeks before the event.

FINAL EXAMINATIONS

Most courses include final examinations, but the decision to give a final exam as a required part of the course rests with the instructor and the department. All tests and examinations are conducted under the honor system (see page 8).

Examinations are considered final examinations when they:

- Cover more than the material learned since the last test, or
- Are the only exam in the course, or
- Require comprehensive knowledge of the entire course

Such exams may be given only during the final examination period.

No student should be given an extension of time or opportunities to improve a grade that are not available to all members of the class, except for verified illness or justified absence from campus. However, students who have three scheduled final examinations in two consecutive calendar days may take one of the examinations at another time.

Final examinations are normally three hours long. When instructors, for exceptional reasons, wish to give a longer examination, they schedule it as a take-home exam; even then, they may not exceed five hours. The “due date” for all take-home final exams is the end of the final examination period; in fact, except for scheduled exams, no course assignments may be due between the last day of classes and the last day of the final examination period.

GRADES (See also Faculty Grading Guidelines on pages 9–10.)

The Pass/Fail Option—Undergraduates may register for courses on a pass/fail basis. Students:

- May not take more than 1 course as pass/fail per semester for each full year of residence (students studying in off-campus programs through Rice are considered to be in residence for the purpose of this rule)
- May not take more than 4 courses total as pass/fail (even if they are in a five-year degree program)
- May not take more than a total of 14 semester hours total as pass/fail
- May register for only 1 course as pass/fail in a semester
- May not take as pass/fail those courses specifically required for the major or courses falling within the major department or major area. If students take such courses pass/fail, the registrar will replace the P with the grade earned during the final degree audit.
- Must file the proper form for a course to be taken pass/fail no later than the posted deadline, usually the end of the 10th week of the semester

Students may convert a pass/fail course to a graded course by filing the proper form with the registrar. The deadline is by the end of the fifth week of the following semester.

Students should be aware that while a grade of P does not affect their grade point average, a grade of F is counted as a failure and is included into their GPA. Students who take a course during the Rice summer session as pass/fail should also be aware that this counts toward their allowable total of 4 courses.

Grade Symbols—Instructors are required to report a grade for all students (except auditors) whose names appear on the class list. They grade their students using the following conventional symbols: **A+**, **A**, **A-**, **B+**, **B**, **B-**, **C+**, **C**, **C-**, **D+**, **D**, **D-**, **F**. Students successfully completing a course pass/fail receive a **P**, and failure to complete the course successfully is indicated by an **F**. A **P** does not affect the grade point average. Completion of the English composition requirement is denoted by a grade of **E**.

Satisfactory/unsatisfactory courses are those that do not use traditional grading procedures. Such courses or labs are designated by the instructor. Students successfully completing a course satisfactory/fail receive an **S**; failure to complete the course successfully is indicated by an **F**. While an **S** does not affect the grade point average, an **F** does.

Grade Designations—Under certain circumstances, special designations accompany the student's grade. These designations do not affect the grade point average. The special designations include the following:

INC (“Incomplete”)—Instructors report this designation to the registrar when a student fails to complete a course because of verified illness or other circumstances beyond the student's control that occur during the semester. Students must complete the work, and instructors must submit a revised grade, by the end of the fifth week of the next semester; otherwise, the Office of the Registrar records the grade originally submitted. Students with an “incomplete” must be certain that tests, papers, and other materials affecting their grade or essential to completing a course requirement are delivered *by hand* to the appropriate professor or office with ample time for the instructor to grade the documents and submit the final grade to the Office of the Registrar by the deadline. Loss or lateness because of mail service is not an acceptable excuse for failing to meet academic deadlines. A student who receives two or more “incompletes” in a semester may not enroll in the next semester for more than 14 semester hours. Students should also be aware that they may be placed on probation or suspension when the “incomplete” is changed to a grade, either by an instructor or by default.

OT (“Other”)—Instructors report this designation to the Office of the Registrar when a student fails to appear for the final examination after completing all the other work for the course. Students must resolve the matter, and instructors must submit a revised grade, by the end of the first week of the spring semester or by the end of the fourth week after Commencement, whichever is applicable. If the Office of the Registrar does not receive a revised grade, the original grade submitted is recorded. A designation of “Other” is also used if an accusation has been made to the Honor Council. Students should be aware that they may be placed on probation or suspension when the “Other” is changed to a grade, either by an instructor or by default.

W (“Official Withdrawal from University”)—Students who officially withdraw from the university during the last five weeks of the semester will receive a final grade of “W” for each course in which they were enrolled at the time of withdrawal. In addition, the professors of those students who withdraw during that time will submit a grade based on the student's academic achievement at the time of withdrawal to the Office of the Registrar.

Students who officially withdraw from the university before the last five weeks of the semester will not receive the grade of “W” for any courses in which they were enrolled for that semester. These courses will not be included on the official transcript.

W (“Late Drop with Approval”)—A student who receives approval from the Committee on Examinations and Standing to drop a course after the designated drop deadline will receive a grade of “W” for that course. When requests for late drops are denied by the Committee, the registrar records the submitted grade.

If a student drops a class before the designated drop deadline for the semester, the course will not be included on his/her official transcript. Students in their first semester at Rice may drop a class up until the last day of classes, and the course will not be included on the student’s official transcript.

NG (“No Grade”)—This designation indicates that the instructor failed to report grades for the enrolled students in their class(es). Instructors are responsible for resolving this situation as quickly as possible.

NC (“No Credit”)—This designation signals that no credit was granted for the course. It is only used for people auditing the course.

Grade Points—To compute grade point average, letter grades are assigned numeric values as follows:

| GRADE | GRADE POINTS | GRADE | GRADE POINTS |
|-------|--------------|-------|--------------|
| A+ | 4.33 | C+ | 2.33 |
| A | 4.00 | C | 2.00 |
| A- | 3.67 | C- | 1.67 |
| B+ | 3.33 | D+ | 1.33 |
| B | 3.00 | D | 1.00 |
| B- | 2.67 | D- | 0.67 |
| | | F | 0.00 |

Grade Point Average Calculation—For each course, the credit hours attempted and the points for the grade earned are multiplied. The points for each course are added together, and the sum is divided by the total credit hours attempted. Grade point averages are noted each semester on the student’s official transcripts.

President’s Honor Roll—This honor roll, published each semester, recognizes outstanding students. To be eligible, students must have earned grades in a total of 12 or more semester hours without receiving a grade of F. (Pass/Fail courses may not be counted.) Approximately the top 30 percent of undergraduates receive recognition each semester. While undergraduates enrolled in a four-year bachelor’s degree program are always eligible for the President’s Honor Roll, students enrolled in five-year bachelor’s or master’s programs are eligible only during their first 8 semesters.

ACADEMIC DISCIPLINE AND OTHER DISCIPLINARY MATTERS

Academic Probation—Students are placed on academic probation at the end of any semester if:

- Their grade point average for that semester is less than 1.67, or
- Their cumulative grade point average is less than 1.67 (this requirement is waived if the grade point average for that semester is at least 2.00)

The period of probation extends to the end of the next semester in which the student is enrolled. Students on probation (academic or other disciplinary matters) may not be candidates for, or hold, any elected or appointed office, nor are they allowed to enroll in more than 17 semester hours.

Academic Suspension—Students are suspended from the university at the end of any semester if:

- They earn grades that will place them on academic probation a third time, or
- They have a grade point average for the semester that is less than 1.00 (exceptions are made for students completing their first semester at Rice)

Students readmitted after a period of academic suspension will be suspended again, in any succeeding semester, if:

- Their cumulative grade point average is less than 1.67, or
- Their semester grade point average is less than 2.00

The first suspension period is normally one semester; the second suspension period is at least two semesters. Students are not readmitted after a third suspension.

Students who are going to be suspended for academic performance are notified by the registrar after all final grades have been received and posted to their record. Suspension is lifted the first day of class of the semester when the student returns to the university. When students serve the nominal term of suspension but do not intend to return to Rice, suspension is lifted after permission from the Committee on Examinations and Standing is granted.

For students facing a first or second academic suspension who verify with the registrar and their department that they will complete their degree requirements in one semester if allowed to return, may have their suspension reduced to probation. Students may invoke this ruling only once for a given academic degree plan.

Students who graduate at the end of a semester under academic circumstances that would normally place them on probation or suspension will not have the terms “academic probation” or “suspension” placed on their transcript for that semester.

Disciplinary Probation and Suspension—The assistant dean of student judicial programs may place students on probation or suspension for an honor system violation or for other disciplinary or code of conduct reasons. Students who are on disciplinary suspension, under investigation for disciplinary violations, or who have disciplinary proceedings pending against them (including for an honor system or code of conduct violation) may not receive their degree even if they have met all academic requirements for graduation. Students who are suspended must leave the university within 48 hours of being informed of the dean’s decision, though in cases of unusual hardship, the college master and assistant dean of student judicial programs may extend the deadline up to one week. Any tuition refund will be prorated from the official date of suspension, which is determined by the registrar. While on disciplinary suspension or probation, students may not run for, or hold, any elective or appointed office in any official Rice organization, nor may they serve as Orientation Week advisers once they return to the university following a suspension. Participation in student activities on and off campus and use of Rice facilities, including the student center, the colleges, the playing fields, the gym, and the computer labs, are limited to *enrolled* students.

Readmission after Suspension—Students seeking readmission after **academic suspension** should address a letter of petition to the Committee on Examinations and Standing, in care of the Office of the Dean of Undergraduates, which must be received by July 1 for readmission in the fall semester and December 1 for readmission in the spring semester. The petition must include two supporting letters from persons for whom the student has worked during the suspension period as a student or an employee. The petition must also include an academic program approved by the Office of Academic Advising. If the problems causing the previous difficulty appear to be resolved, the student generally is readmitted. Students returning from

academic suspension must maintain regular contact with the Office of Academic Advising throughout the semester. In some instances, the committee may postpone approval of readmission or rule that suspension is permanent.

Students seeking readmission after leaving the university because of **disciplinary actions (including honor system or code of conduct actions) or other non-academic action** should submit a petition in writing for review by the Assistant Dean of Student Judicial Programs.

Rice Summer School—Although it may do so at its discretion, the Office of the Registrar does not normally place on probation or suspension students who perform poorly in the Rice Summer School. Students should be aware, however, that Rice Summer School grades are included in their grade point averages.

WITHDRAWALS AND LEAVES

Voluntary Withdrawal and Readmission—Students may withdraw voluntarily from the university at any time during the semester up until the last day of classes. Students wishing to withdraw should inform their college master in person and give written notification to the Office of the Dean of Undergraduates, who notifies other offices of the university as necessary. Students who fail to give notice of withdrawal should expect to receive failing grades.

If they are in good academic standing at the time of their withdrawal, students may be considered for readmission after they submit a written application to the Office of the Dean of Undergraduates. That application must include an academic program approved by the Office of Academic Advising. If students withdraw within five weeks of the last day of classes, they must submit the written application to the dean of undergraduates who, at his discretion, will submit it to the Committee on Examinations and Standing. The petition should include two supporting letters and must also include an academic plan approved by the Office of Academic Advising. If students withdraw within five weeks of the last day of classes, the Committee on Examinations and Standing takes into account their grades (which reflects their performance up to the day of withdrawal) when ruling on their readmission. Students whose grades would have led to suspension had they not withdrawn are treated, for purposes of readmission, as if they had been suspended. If students voluntarily withdraw for major medical or psychological/psychiatric reasons, however, they must meet the readmission conditions for a medical or involuntary withdrawal.

Involuntary Withdrawal—The university may insist on a student's involuntary withdrawal if, in the judgment of the dean of undergraduates, the student:

- Poses a threat to the lives or safety of him/herself or other members of the Rice community
- Has a medical or a psychological condition which is likely to be exacerbated by the academic and/or living environment and the student's ability to address it effectively
- Has a medical condition or demonstrates behavior that seriously interferes with the education of other members of the Rice community

Students should submit written petitions for readmission after medical or involuntary withdrawal to the Office of the Dean of Undergraduates. This petition must include documentation of treatment provided and students must have an interview with the director of the Rice Counseling Center or Student Health Services or their designees. The petition must also include an academic plan approved by the Office of Academic Advising.

Students who withdraw for psychological reasons within the last five weeks of the fall semester will not be able to petition for readmission for the spring semester immediately following the semester from which they withdrew. They can appeal no later than June 1 to be considered for readmission for the upcoming fall semester.

Unauthorized Withdrawal—Students who leave the university without first obtaining permission to withdraw are considered to have resigned. Although students who resign are not normally considered for readmission, they may submit a petition to the Committee on Examinations and Standing, in care of the Office of the Dean of Undergraduates, for readmission

Leave of Absence—Students may request a leave of absence from the university by applying in writing to the Office of the Dean of Undergraduates at any time before the first day of classes in the semester for which they are requesting leave. A leave of absence taken after the first day of classes is considered a voluntary withdrawal.

To gain readmission following an approved leave of absence of not more than four semesters, students must notify the Office of the Dean of Undergraduates at least one month before the beginning of the semester that they intend to end their leave. The student must also include an academic plan approved by the Office of Academic Advising. After a leave of more than four semesters, they should apply in writing to the Committee on Examinations and Standing.

Approval of a leave of absence is always contingent on the student's satisfactory completion of course work in the semester preceding the leave. Students performing poorly may have their approved leave converted to suspension.

Military Leave of Absence—Students who require a leave of absence because of being called to active military duty should contact the Office of the Dean of Undergraduates.

APPLICABLE ACADEMIC GRADUATION REQUIREMENTS

Students enrolled in four- (or five-) year bachelor's programs may decide whether to follow the graduation requirements in effect when they first registered at Rice or those in effect when they graduate. If they graduate more than seven (or eight) years after their initial registration, students must graduate under the regulations in effect at the time of their last readmission or those in effect when they graduate. Also, departments may review courses completed in a major more than seven (or eight) years before the student's anticipated graduation. If the department concludes that a course no longer satisfies the requirements of the major, it is not credited toward the major program, although it remains on the student's record.

Departmental major requirements may vary from year to year during the period between a student's matriculation and graduation. The department may, at its discretion, make any of these variations available to a student for completion of the major requirements. If a new degree program or major is created during the student's time at Rice, the new program will be available to a student as if the program appeared in the General Announcements at the time of matriculation.

NAME CHANGES

To comply with a number of government agencies' reporting requirements, the university must record the name of each student who is a U.S. citizen as the student's name appears on his or her Social Security card. Students who need to change their names on Rice University records and who are U.S. citizens must notify the Office of the Registrar and present a Social Security card, marriage license, divorce decree, or

court order and picture identification when submitting the form. After the change is implemented, the name on the Rice University transcript will read as printed on the supporting document(s).

CHANGE IN REGISTRATION

The academic calendar lists deadlines for dropping or adding a class or section. This schedule is binding for all students. Adding or dropping a course, including transferring from one section to another or changing credit status in a course must be accomplished through completion of the appropriate forms and submission to the Office of the Registrar. Changing a course to/from audit must be done within the first four weeks of the semester. Students can request exceptions to these deadlines by petitioning the Committee on Examinations and Standing.

TRANSCRIPT POLICIES

Transcripts are issued only at the request of the student. Transcript requests should be made at least three working days before the desired date of issue. A \$5 fee per transcript must be received before a transcript is issued.

Transcripts that have been presented for admission or evaluation of credit become a part of the student's permanent record and are not reissued. Transcripts from other institutions, if needed, must be sent to Rice University directly from the original issuing institution.

STUDENT RECORDS

Rice University assures the confidentiality of student educational records in accordance with state and federal laws, including the Family Educational Rights and Privacy Act. Student academic records are maintained primarily in the Office of the Registrar and in the academic department of the student's major, as well as various other offices around campus. All students have the right to review their records to determine their content and accuracy, to consent to disclosures of personally identifiable information as defined by law, and to file complaints with the Department of Education.

RELEASE OF STUDENT INFORMATION FROM EDUCATIONAL RECORDS

The disclosure or publication of student information is governed by policies of Rice University and the Family Educational Rights and Privacy Act.

A student's consent is required for the disclosure or publication of any informational which is a) personally identifiable and b) a part of the educational record. However, certain exceptions to this general rule, both in types of information which can be disclosed and in access to that information, are allowed by the regulations of the Family Educational Rights and Privacy Act. Rice may allow access to personally identifiable information without a student's prior consent to its faculty or staff who legitimately require this information to perform their instructional, supervisory, advisory, or administrative duties.

In accordance with the law, a student's prior consent is not required for disclosure of portions of the educational record defined by the institution as directory information. The following directory information may be released by the university:

1. Name, local and permanent address, telephone and mobile number(s), campus email address(es), and instant messenger address(es)
2. Date, place of birth, and gender
3. Classification and major and minor fields of study

4. Participation in officially recognized activities and sports
5. Weight and height of members of athletic teams
6. Dates of attendance, degrees and awards received
7. The most recent previous educational agency or institution attended by the student
8. Photographic image

The information above, designated by the university as directory information, may be released or published by the university without a student's prior written consent unless exception is made in writing by the student or the parents of a dependent student. Students who prefer to avoid access to or release of directory information must notify the registrar in writing before the end of the second week of fall classes, and the university will withhold access to, or release of, directory information until further written instruction is received.

Students have a right to challenge the accuracy of their educational records and may file written requests to amend these records. The Office of the Registrar should be contacted for further information regarding the procedure to follow for questions or problems. Students have a right to file a complaint with the U.S. Department of Education concerning alleged failures by Rice University to comply with the requirements of FERPA. For more information regarding FERPA, please visit the U.S. Department of Education's website.

For complete information regarding Rice's policy on student education records, please contact:

Rice University Registrar
 Rice University
 Office of the Registrar - MS 57
 6100 Main Street
 Houston, TX 77005-1892
 Email: reg@rice.edu

VETERANS INFORMATION

At Rice University, the Office of Veterans Affairs is managed through the Office of the Registrar. This office assists all veterans and their dependents who wish to receive VA educational benefits. The office also provides personal counseling, fee deferments, tutorial assistance, and work-study jobs.

Veterans who are planning to attend the university should contact the Office of Veterans Affairs at least two months before the date of entry. Such time is required to expedite the processing of paperwork for educational allowances from the Veterans Administration.

For certification of benefits, the student must be enrolled according to the following schedule:

| | | | |
|----------------|------------|-------------------------|-----------|
| Full Time..... | 12 Credits | 1/2 Time..... | 6 Credits |
| 3/4 Time..... | 9 Credits | Less than 1/2 Time..... | 5 Credits |

For rate of monthly payment of educational allowances for veterans and dependents, please contact Office of Veterans Affairs.

For additional informational regarding other Veterans Educational Programs contact the Office of the Registrar at 713-348-4999 or registrar@rice.edu.

APPLICATION FOR GRADUATION

All students must complete and submit in a timely manner an Application for Graduation Form available in the Office of the Registrar. This form is required for

all students who plan to complete their degree requirements at the end of the fall or spring semester.

SUMMER SCHOOL FOR COLLEGE STUDENTS

Rice Summer School for College Students, administered by the School of Continuing Studies, offers courses for credit to Rice students, visiting undergraduates, graduate students, and Class III students (see pages 74-75). Two summer sessions are offered: in May and June-July. See Academic Calendar, pages vii-xii. Taking 6 to 8 semester hours in one session is considered a full load. Interested students should complete the application form found on the summer school website at <http://scs.rice.edu/summercredit>. Admission is automatic for any Rice undergraduate or graduate student in good standing. Visiting students in good standing should send official transcripts, including spring semester grades and a completed Dean of Students Recommendation form (mailed directly from their universities and colleges to the School of Continuing Studies), as well as the completed application. Acceptance in the Rice Summer School carries no implications for regular admission to Rice.

All applicants, including Rice students, should submit their applications to the Rice Summer School Office with the application fee and a tuition deposit. The remaining tuition is due in full at registration before the beginning of classes. Auditors of summer school courses, who are considered visiting students, must pay full tuition and fees. Limited financial aid in the form of private educational loans is available for Rice students only.

It is essential that students apply by the deadlines listed on the summer school website. Courses that do not generate enrollments sufficient to cover their costs may be canceled. Students may apply after the deadline (but before the start of classes) by paying a late fee.

For more information, including tuition and registration information, students should contact the Rice Summer School Office at 713-348-4803, via e-mail at scsummer@rice.edu, or online at <http://scs.rice.edu/summercredit/>.

ADMISSION OF NEW STUDENTS

Dating back to the founding of Rice University, our first president, Edgar Odell Lovett, mandated that we aspire to be a world-class university of the highest standing. Dr. Lovett challenged us “to assign no upper limit to our educational endeavor.” He envisioned students and faculty as a community of scholars, their minds exercised by spirited discourse (John Boles, *A University So Conceived: A Brief History of Rice*, pp 22-23, rev. ed. 1997). Therefore, as an integral part of the University’s mission, we seek a broadly diverse student body where educational diversity increases the intellectual vitality of education, scholarship, service, and communal life at Rice. We seek students, both undergraduate and graduate students, of keen intellect and diverse backgrounds who not only show potential for success at Rice, but who will contribute to the educational environment of those around them. Rice determines which group of applicants, considered individually and collectively, will take fullest advantage of what we have to offer, contribute most to the educational process at Rice, and be most successful in their chosen fields and in society in general. Our evaluation process employs many different means to identify these qualities in applicants. History shows that no single gauge can adequately predict a student’s preparedness for a successful career at Rice. For example, we are cautious in the use of standardized test scores to assess student preparedness and potential. An applicant is considered in competition with all other applicants. In making a deci-

sion to admit or award financial aid, we are careful not to ascribe too much value to any single metric, such as rank in class, grade-point average, the SAT/ACT or Graduate Record Exam.

We use a broader perspective that includes such qualitative factors as the overall strength and competitive ranking of a student's prior institution, the rigor of his or her particular course of study, letters of recommendation, essays, responses to application questions, and (where required) auditions and portfolios. Taken together with a student's academic record and test scores, these additional factors provide a sound basis to begin assessing the applicant's potential on all levels.

Beyond indicators of academic competence, we look for other qualities among applicants such as creativity, motivations, artistic talent, and leadership potential. We believe that students who possess these attributes in combination with strong academic potential will contribute to, and benefit from, a more vibrant, diverse educational atmosphere. Through their contributions and interactions with others, students will enrich the educational experience of all faculty and students. These qualities are not revealed in numerical measurements, but are manifest in the breadth of interests and the balance of activities in their lives.

Rice University strives to create on its campus a rich learning environment in which all students will meet individuals whose interests, talents, life-experience, beliefs, and world-views differ significantly from their own. We believe that an educated person is one who is at home in many different environments, at ease among people from many different cultures, and willing to test his or her views against those of others. Moreover, we recognize that in this or any university, learning about the world we live in is not by any means limited to the structured interaction between faculty and students in the classroom, but also occurs through informal dialogue between students outside the classroom.

To encourage our students' fullest possible exposure to the widest possible set of experiences, Rice seeks through its admissions policies to bring bright and promising students to the University from a range of socioeconomic, cultural, geographic and other backgrounds. We consider an applicant's race or ethnicity as a factor in the admission process and believe that racial and ethnic diversity is an important element of overall educational diversity. Though race or ethnicity is never the defining factor in an application or admissions decision, we do seek to enroll students from underrepresented groups in sufficient and meaningful numbers as to prevent their isolation and allow their diverse voices to be heard. We also seek students whose parents did not attend college, as well as students from families with a well-established history of college-level education. Rice places a premium on recruitment of students, regardless of their races or ethnicities, who have distinguished themselves through initiatives that build bridges between different cultural, racial and ethnic groups. In so doing, we endeavor to craft a residential community that fosters creative, inter-cultural interactions among students, a place where prejudices of all sorts are confronted squarely and dispelled.

In assessing how well an applicant can contribute to enlivening the learning environment at Rice, we also try to determine the relative challenges that he or she may have faced. For economically disadvantaged students, this may mean achieving a high level of scholastic distinction while holding down a job in high school. For a first generation student, it might mean achieving high standards for academic success within an environment relatively indifferent to intellectual attainment. Or it might mean overcoming a disability to excel in sports, music, or forensics. For students who do not have particular disadvantages, we also look at whether they chose a more challenging road than the normal path through high school.

This might mean an especially strenuous course of study, a prolonged, in-depth engagement in a school project, or a particularly creative and wide-ranging set of extracurricular activities.

Rice does not view offers of admission as entitlements based on grades and test scores. Our admission process combines an examination of academic ability with a flexible assessment of an applicant's talents, experiences and potential, including potential diversity contributions; it precludes any quick formula for admitting a given applicant or for giving preference to one particular set of qualifications without reference to the class as a whole. Rice is a highly selective institution, and receives many more applications from viable candidates than it has available spaces. An inevitable consequence of Rice's approach is that some highly accomplished students will not be admitted. However, by selecting a wide range of matriculants of all types, the admissions process seeks to enrich the learning environment at Rice, and thus improve the quality of a Rice education for all students.

Due to the nature of the Rice education, Rice enrolls undergraduate degree candidates on a full-time basis only. **First-year applicants, architecture applicants, and international students may apply for the fall semester only.** Other applicants may apply to enter either the fall or spring semester.

Applicants are selected on a competitive basis in six academic divisions: architecture, engineering, humanities, music, natural sciences, and social sciences. Candidates should give careful consideration to the category under which they wish to be considered. However, once enrolled, most students are able to move freely among most divisions after consultation with their advisers. Music students must pursue the music program for at least the first year before changing divisions. The Schools of Music and Architecture maintain limited enrollments; all majors are subject to faculty approval.

Those offered admission are expected to complete the remainder of their high school courses with the same superior performance that led to their admission.

FIRST-YEAR APPLICANTS

There are four areas of focus generally used in evaluation of first-year candidates for admission: scholastic record as reflected by the courses chosen and the quality of academic performance, recommendations from high school, the application presentation of personal information and essays, and standardized testing (the new SAT or the ACT with the writing test and two SAT Subject Tests).

The High School Record—Students must complete at least 16 college preparatory units as follows:

| | | | |
|----------------|---|--|---|
| English | 4 | Laboratory science (e.g., biology, chemistry, physics) | 2 |
| Social studies | 2 | A foreign language | 2 |
| Mathematics | 3 | Additional credits in any of the categories above | 3 |

The natural science and engineering divisions require trigonometry (pre-calculus) or other advanced mathematics courses and both chemistry and physics. Students may substitute a second year of chemistry or biology for physics.

Students admitted with academic deficiencies will be asked to complete the required work by taking high school or college-level courses during the summer before enrollment at Rice.

Note: Because of the admission competition to enter Rice, successful applicants generally have taken 20 or more college preparatory courses, many at the college level. Therefore, only those students who have more than 20 college preparatory courses may have the registrar consider for Rice credit their college courses taken in high school.

Transfer of Coursework Taken During High School—College-level courses taken during high school years may be considered for credit at Rice University on receipt of the following documentation:

1. An official transcript of all college courses sent directly from the college(s) attended. No college-level courses that appear only on the high school transcript will yield credits at Rice.
2. From each college attended, official verification that all courses were taken on the college campus, were taken together with students at that college, were taught by regular members of the college faculty, and were a part of the normal curriculum of the college. This type of documentation is normally obtained from the registrar's office of each college.
3. Official notification by letter from the high school principal or guidance counselor that the credit earned was not used to meet high school diploma requirements.

Recommendations—Candidates must submit evaluations from their guidance counselor and one teacher. The necessary forms are included in the application.

The Application—The application provides the committee with important information on the student's background and gives the applicant an opportunity to provide statements on his or her interests, experiences, and goals. Both the Rice application and the Common Application are accepted. *The application fee is \$50.* Students for whom this fee creates a hardship may apply for a waiver. Freshman applicants should provide proof of a fee waiver for the SAT I or ACT test or eligibility for the school lunch program. In any case, a letter from the student's high school counselor is required. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

Standardized Testing—The new SAT or the ACT with the writing test and two SAT Subject Tests are required for admission. All applicants must submit two SAT Subject Tests in fields related to the candidate's proposed division of study.

These exams are administered by the College Board and the American College Testing Program. Bulletins and test registration forms are available from high school counseling offices. The applicant is responsible for arranging to take the tests, and official score reports must be submitted before the student can be considered for admission. The College Board code for Rice is 6609. The ACT code is 4152.

Personal Interview—Although a personal interview is *not a requirement*, we *recommend* an interview for first-year applicants as an excellent opportunity to discuss the applicant's interests, needs, and questions. On-campus interviews are conducted by the admission staff and a select group of Rice senior students. Also, off-campus interviews are conducted throughout the United States by Rice alumni. Please consult the university websites or the application packet, or call the admission office for details.

Music Audition—Candidates to the Shepherd School of Music must arrange for an audition with a member of the music faculty.

Architecture Portfolio and Interview—Architecture applicants must submit a portfolio. An interview with a faculty member from the School of Architecture is strongly recommended.

DECISION PLANS

Early Decision Plan—Early Decision is designed for students who have selected Rice as their first choice. Students may initiate applications to other colleges but may make a binding Early Decision application to Rice only.

Early Decision applicants must complete the required standardized testing on or by the November testing dates in the senior year. All other materials should be postmarked by November 1. Admission notices will be mailed by December 15. The committee will admit, defer, or deny Early Decision applicants. Deferred applicants are considered with the Regular Decision pool, and seventh-semester grades and additional standardized test scores will then be considered.

It is important to note that if admitted under Early Decision a candidate must withdraw all other college applications, may not submit any additional applications after accepting the offer, and must accept Rice's offer of admission by submitting a \$100 nonrefundable deposit by January 2. An additional \$50 housing deposit is required of those desiring on-campus accommodations.

Those accepted under Early Decision may receive an estimate of need-based financial aid by registering for the College Scholarship Service (CSS) PROFILE by November 1, and sending the PROFILE packet to CSS by November 15. Register for the CSS PROFILE by visiting their website at www.collegeboard.com. Students will complete the PROFILE online. The PROFILE number for Rice is 6609. Note that **official** financial aid offers may be made only after the Office of Student Financial Services has received the following documents:

- CSS PROFILE, priority date February 15
- Free Application for Federal Student Aid (FAFSA), priority date February 15
- Student and parent 2005 income tax and W-2 forms, priority date March 1

Interim Decision Plan—First-year applicants who complete their standardized testing on or before the December testing dates and who postmark all other materials by December 1 may be considered under the Interim Decision Plan. Decisions are mailed by February 10. The committee will admit, defer, or deny Interim Decision applicants. Deferred applicants are considered with the Regular Decision pool, and seventh-semester grades and additional standardized test scores will then be considered.

Interim Decision applicants who are offered admission must pay a \$100 registration deposit by May 1 to reserve a place in the incoming class. After May 1, deposits are not refundable. Those who desire a room on campus must pay an additional \$50 deposit.

Regular Decision Plan—Students who apply Regular Decision must postmark their materials by January 10 to receive notification by April 1. Candidates who miss the deadline must do so in full knowledge that they are in a less competitive position. Regular Decision applicants must complete their standardized tests by January.

Regular Decision applicants who are offered admission should submit a \$100 registration deposit by May 1 to reserve their places in the incoming class. After May 1, deposits are not refundable. Those who desire a room on campus must pay an additional \$50 deposit.

ACCELERATED STUDENTS

Rice University will accept applications from students who are completing high school in less than four years. It is important to note that these students will compete with other candidates who will be completing four years of high school. Therefore, it is the candidate's responsibility to demonstrate that he or she has exhausted *all* college preparatory course work at his or her school. Further, because of the residential focus and commitment to student self-governance at Rice, candidates must also demonstrate the maturity and personal development that would allow them

to participate fully and responsibly in campus life. Because of the unique circumstances surrounding the accelerated student, it is strongly recommended that these candidates have an on-campus interview before the application deadline.

HOME-SCHOOLED APPLICANTS

The Committee on Admission and Financial Aid recognizes that each home-schooled applicant is in a unique educational program. To ensure that our evaluation process is fully informed, each home-schooled applicant is encouraged to provide clear, detailed documentation of his or her curriculum of study, assessment tools, and learning experiences. Rice requires two academic letters of recommendation from all applicants, and at least one of these letters must come from someone who is not related to the applicant.

BACHELOR OF FINE ARTS

Students with a bachelor's degree in art from Rice or an equivalent degree from another university may apply to enter the BFA program, which consists of a fifth year of intensive study in the creative arts. In exceptional cases, students with a BA in a major other than art may be admitted. BFA students are considered on a space-available basis. The following items should be *received* by November 1 for spring term enrollment or May 1 for fall term enrollment.

Required application materials include:

- A \$50 application fee
- Official transcripts of all undergraduate and graduate work
- Official final high school transcript
- Two letters of recommendation from professors at the most recent college attended
- Dean of students recommendation from the most recent college attended
- SAT, SAT I, or ACT scores
- The complete application for bachelor of fine arts degree candidates
- Portfolio of artwork

Bachelor of Fine Arts Portfolio—Applicants to the Bachelor of Fine Arts program must submit a portfolio to the Department of Visual Arts for faculty review before admission is finalized.

The portfolio of artwork must include 15 slides of original paintings, drawings, sculpture, and prints, and/or film/video. Submission is limited to a binder or folder no larger than 9" x 12" x .5" and photographic transparencies (slides) must be placed in a standard-view sleeve, 20-slide capacity. Slides of artwork should be properly labeled (at the top of the individual slide) with name, title, medium, dimensions, and date(s), and submitted in clear plastic. Do not submit anything you wish returned.

All BFA students attending Rice are full-time students; most classes are held Monday through Friday. Financial aid and campus housing are not available for BFA students.

TRANSFER STUDENTS

Students with superior records from two-year or four-year colleges or universities may apply as transfer candidates. Applicants for transfer admission must file the following with the Office of Admission:

- The written application
- Official transcripts of all high school and college work completed to date as well as courses in progress
- Two faculty recommendations
- A recommendation from the dean of students

- SAT, SAT I, or ACT scores
- A \$50 application fee

Applications with the appropriate documents must be postmarked by March 15 for fall term admission and October 15 for spring term admission. Notification of the admission decision is mailed by May 15 and December 15, respectively. The criteria used in evaluating transfer applications are similar to those applied to applicants for the first-year class, except that special emphasis is given to performance at the college level. Because of the highly competitive nature of transfer admission, it is recommended that applicants have a minimum 3.20 (4.00 scale) grade point average on all college work. The SAT, SAT I or ACT must be taken by March 15 for fall application and October 15 for spring application. The SAT Subject Tests are not required.

Students for whom the \$50 application fee creates a hardship may apply for a waiver. Transfer applicants must send a copy of the Student Aid Report that they receive after completing the Free Application for Federal Student Aid (FAFSA) along with a request for a fee waiver to the Office of Admission. Financial stress created by application fees to other institutions is not considered a valid reason to grant a fee waiver.

Transfer students must be registered in residence at Rice for at least four full semesters during the fall or spring terms and must complete no fewer than 60 semester hours before earning a Rice degree.

ADVANCED PLACEMENT/INTERNATIONAL BACCALAUREATE/PLACEMENT TESTS

Students who score a 4 or 5 on the applicable Advanced Placement College Board examinations taken before matriculation at Rice are given university credit for corresponding Rice courses.

Students who complete the International Baccalaureate diploma and receive a score of 6 or 7 on a higher-level IB exam will also receive course credit for the appropriate course.

OTHER STUDENTS

Please note that financial assistance is not available for visiting, Class III, second degree, dual enrollment, or auditing students.

Visiting Students—Students who wish to spend a semester or a year at Rice taking courses for credit to be applied toward their undergraduate degree at another school may apply for admission as visiting students through the Office of Admission. The student's application should be accompanied by the \$50 application fee, an official high school transcript, an official transcript of college work to date, an SAT, SAT I, or ACT score, and recommendations from the dean of students and a faculty member who has taught the student within the past academic year. Visiting student applications should be postmarked by March 15 for the fall semester and October 15 for the spring semester.

Visiting students are assigned membership to one of the residential colleges during their stay and are charged the same fees as other undergraduates. In a few classes where enrollment is limited because of space or other considerations, candidates for Rice degrees have priority over visiting students for registration.

Visiting students may apply to transfer to Rice only after having left Rice for at least one semester.

Class III Students—Students with Class III standing at Rice have an undergraduate or graduate degree from an accredited college or university and are taking courses at Rice for credit but not in a specific degree program. Students interested in this program should contact the Office of Graduate Studies.

Second-Degree Students—An individual who has a bachelor's degree from an

other institution and desires another degree in a different area of focus may apply as a second-degree student on a space-available basis. Students may only pursue a second degree that is different from their first degree. The application, a \$50 application fee, official transcripts of all undergraduate and graduate work, a final high school transcript, two faculty letters of recommendation and a recommendation from the dean of students from the most recent college attended, and standardized test scores (the SAT, SAT I, or ACT) are required to complete an application file. The deadline for fall semester admission is March 15 and the deadline for spring is October 15.

Second degree applicants with a prior bachelor's degree from Rice should apply to the registrar. The application should include a written statement specifying the proposed major and course program for the second degree, a supporting letter from the chair of the major department, and an explanation of the student's reasons for seeking a second degree.

Dual Enrollment Students—Accelerated high school juniors and seniors who have taken all the courses in a given discipline available to them in high school may request admission to Rice for the purpose of taking one or more university-level courses as dual enrollment students. The written application, application fee of \$50, high school transcript, a teacher and a counselor recommendation from the applicant's high school, and an SAT, SAT I, or ACT score should be sent to the Office of Admission by June 1 for the fall semester or by December 1 for the spring semester. Home-schooled students must demonstrate that they have exhausted all other community resources before applying for dual enrollment at Rice. All dual enrollment students are limited to two courses per semester at Rice.

Tuition for new students is \$972 per semester hour plus a \$115 registration fee, the total not to exceed \$11,655. Tuition for returning dual enrollment students would be the rate (plus inflation) at which they first took dual enrollment courses at Rice. These charges are for the 2005-2006 school year and are subject to change in subsequent years. Financial assistance is not available for this program.

Auditors—Any interested person, including currently enrolled students, may audit one or more courses at Rice by securing permission of the instructor and by registering as an auditor with the registrar. The university grants no academic credit for such work. The audited course will appear on the student's transcript with the designation AUD. Currently enrolled students may audit courses without charge. Rice alumni are charged a fee of \$285 per course per semester. All others are charged \$570 per course per semester for the privilege of auditing. Request to audit a class or to change from audit to credit or vice versa must be done by the end of the fourth week of the semester.

TUITION, FEES, AND EXPENSES

Charges for tuition, fees, and room and board are billed to students each semester. Students may pay the charges in full by the due date or in installments over the course of the semester. The fall semester due date is August 1 for freshmen and mid-August for all others, and the spring semester due date is the first week of January. The following costs apply to undergraduates in the 2005-2006 school year:

| Tuition | Annual | Semester | Hour³ |
|--|---------------|-----------------|-------------------------|
| Entering first-year and transfer students | \$23,310 | \$11,655 | \$972 |
| Students matriculating in 2004-2005 | 21,830 | 10,915 | 910 |
| Students matriculating in 2003-2004 ¹ | 20,310 | 10,155 | 847 |
| Students matriculating in 2002-2003 ¹ | 19,360 | 9,680 | 807 |
| Students matriculating in 2001-2002 ¹ | 18,610 | 9,305 | 776 |
| Students matriculating in 2000-2001 ² | 18,510 | 9,255 | 772 |

¹ Tuition indexed for five years from year of matriculation

²Tuition indexed for six years from year of matriculation³By special permission only

| Required Fees | Fall | Spring | Annual |
|---------------------------------|-----------------|-----------------|-----------------|
| Student activities ⁴ | \$ 43.15 | \$ 43.15 | |
| Health services | 175.00 | 175.00 | |
| Total fees | \$218.15 | \$218.15 | \$436.30 |

⁴Fifth-year students in professional degree programs and students working toward a second bachelor's degree pay a reduced student activities fee of \$6.85 per semester, which covers the Student Association, Student Organizations Activity, University Court, and Honor Council portions of the activity fee.

Orientation Week Fees

| | |
|-------------------------------|----------|
| Oweek Room and Board-Freshmen | \$230.00 |
| Oweek Activity Fee-Freshmen | 190.00 |

| Room and Board | Annual | Semester |
|-----------------------|---------------|-----------------|
| Room | \$5,700.00 | \$2,850.00 |
| Board | 3,280.00 | 1,640.00 |
| Telecommunication | 142.00 | 71.00 |
| Off Campus Board | 1,380.00 | 690.00 |

Any undergraduate who withdraws or takes an approved leave of absence and then gains readmission to the university pays the tuition applicable at their matriculation, plus annual Consumer Price Index increases for a period not to exceed six years. Starting with fall 2001 matriculants, the index period is not to exceed five years. After five/six years, students pay the tuition applicable to the entering class. Indexing does not apply to classes entering after spring 2003.

REFUND OF TUITION AND FEES

Students who withdraw during the first two weeks of the semester are not charged tuition or fees for that semester. Students who withdraw during the third week must pay 30 percent of the semester's tuition, receiving a 70 percent refund. The amount of the refund drops by 10 percent at the beginning of each successive week that passes before withdrawal until the ninth week, after which no refund is made. Federal regulations require a refund calculation for all students receiving Title IV funds. The length of time during which a refund must be calculated is up to 60 percent of the payment period (semester). If a student withdraws on or before the 60 percent point in time, a portion of the Title IV funds awarded to a student (Pell Grant, Federal SEOG, Federal Perkins Loan, Federal Subsidized and Unsubsidized loans, and Federal PLUS Loans, and the Texas LEAP Grant) must be returned, according to the provisions of the Higher Education Act as amended. The calculation of the return of these funds may result in the student owing a balance to the university and/or the Department of Education.

For students withdrawing after the second week of classes in a semester, fees or special charges (see page 46) are not refunded. Similarly, students withdrawing or taking leaves of absence in the spring semester do not receive a partial refund of fees paid for the full year. Students withdrawing at any time forfeit the \$100 enrollment deposit they paid as incoming students.

Students who receive approval to enroll with a course load of fewer than 12 hours and do so within the first two weeks of the semester will be charged at the per hour rate plus a part-time registration fee. There are no refunds for part-time enrollment after the first two weeks of the semester.

Students unable to resolve with the cashier's office any request for special consideration in connection with waivers, refunds, or adjusted payments on tuition, fees, and other charges should forward their appeals to the Dean of Undergraduates. Exceptions are granted by the dean of undergraduates only under extraordinary circumstances.

LIVING EXPENSES

Residence fees cover dining hall costs and residence maintenance. They are established each year as needs dictate. For 2005-2006, the annual room and board charge for residence in a residential college is \$8,980. This charge includes the room and all the meals eaten during the year.

Housing—About 77 percent of Rice undergraduates live in the on-campus residential colleges. Information about the residential colleges and room application forms accompany the notice of admission sent to each new undergraduate. Room reservations cannot be made before notification of admission. Further information on housing in the residential colleges is available from the Office of Dean of Undergraduates, and information on off-campus housing is available from by the Office of Academic Advising.

When they receive their residential college room assignments for the academic year to follow, students must sign a housing agreement. To reserve their space, current students must sign a housing agreement by the date established in their respective colleges but no later than April 15. New students must make a \$50 deposit before May 1. These nonrefundable deposits are applied to the following semester's room and board charges.

Board—Meals are served cafeteria-style and are all-you-care-to-eat. The colleges provide three meals per day Monday through Friday, breakfast and lunch on Saturday, and lunch and dinner on Sunday. Meals are not served during the Thanksgiving holiday, at the mid-year break, over the fall and spring mid-term recesses, and during spring holidays. More information is available from the Residential Dining web site (<http://food.rice.edu/index.html>).

Payments and Refunds—Students may pay their residence fee in installments. The exact amounts and due dates appear in the Residential Housing Agreement. Students moving out of the college for any reason receive a refund (or a credit) of the reduced balance of room and board charges but must still pay a termination processing fee. Possible exceptions such as academic suspension, Rice-sponsored study abroad, and family emergencies are treated on a case-by-case basis.

SPECIAL CHARGES

The following charges are separate from the regular fees. For charges because of late registration or course changes made after the deadlines, see Registration (pages 21-24).

| | |
|--|-------|
| Preceptorship per semester | \$210 |
| Internship per semester | 210 |
| Study abroad fee-Fall 2005 | 140 |
| Study abroad fee-Spring 2006 | 250 |
| Study abroad fee-Summer 2006 | 250 |
| Late payment penalty | 140 |
| Undergraduate application fee | 50 |
| Part-time registration fee | 115 |
| Orientation Week room and board (coordinators) | 170 |
| Late registration fee | 110 |

| | |
|---|-----|
| Failure to register fee | 60 |
| Deferred payment plan late fee | 35 |
| College withdrawal: suspension | 100 |
| College withdrawal: breaking of lease | 700 |
| Diploma fee: sheepskin | 105 |
| Diploma fee: parchment | 35 |
| Diploma fee: facsimile | 15 |
| Diploma mailing fee: domestic | 25 |
| Diploma mailing fee: air mail | 30 |
| Transcript fee | 5 |
| Replacement ID | 10 |
| Readmission fee after withdrawal for nonpayment | 300 |

HEALTH INSURANCE

All Rice students must have health insurance. Students may purchase insurance for the 2005–2006 school year through the university program developed for Rice students at a yearly premium of \$1,936. Coverage is effective from 12:01 A.M., August 15, 2005, until 12:01 A.M., August 15, 2006. Dependent coverage is also available. A description of the policy, application form, and waiver form can be found on the Web at <http://studenthealthinsurance.rice.edu>. Students should submit either the application or waiver by August 15 each year.

EDUCATION CERTIFICATION PROGRAM FEES

Students enrolling in the student teaching apprenticeship or internship plans must pay a \$210 registration fee for each semester. An additional \$25 fee (paid to the School of Continuing Studies) is due for each summer school session.

DELINQUENT ACCOUNTS

Students in arrears on their financial obligation to Rice as of the last day to add courses for any semester may be withdrawn. The university will not issue certificates of attendance, diplomas, or transcripts at any time for a student whose account is in arrears.

Students who have not made satisfactory arrangements with the cashier for payment of current charges or who have moved on campus without a proper room contract may be withdrawn from the university.

TRANSCRIPTS

Transcripts are issued on written request to the Office of the Registrar. The registrar does not issue transcripts without the consent of the individual. The charge of \$5 for each copy is payable in advance. Those requesting transcripts by mail should include payment with the request.

FINANCIAL AID

The financial aid programs at Rice provide assistance to meet demonstrated need for university attendance for all admitted students. Through grants, endowments, low-interest loans, campus work opportunities, or a combination of these programs, Rice makes every effort to provide students and families assistance to meet their educational expenses. The financial aid program receives funding from many sources. Rice uses contributions from alumni and friends to establish and maintain scholarships and loan funds. Federal and state grant, work, and loan programs also provide funds. Awards are based primarily on financial need and a computed Expected Family Contribution (EFC), although there are also attractive loan opportunities for students and families who demonstrate no need.

The university determines need for first-time students by having them complete the College Scholarship Service (CSS) PROFILE. Students register for CSS PROFILE by visiting their website at www.collegeboard.com. Students will complete the PROFILE online. The PROFILE number for Rice is 6609. First-time students also complete the Free Application for Federal Student Aid (FAFSA) and submit copies of student and parent income tax and W-2 forms. The FAFSA school code for Rice is 003604.

The university determines need for continuing students by having them complete the FAFSA and the PROFILE; continuing students also submit student and parent income tax and W-2 forms.

“Need” is the amount required to meet the difference between each student’s basic educational expenses and his or her family’s resources. Parents are expected to contribute according to their financial means, taking into account income, assets, home equity, number of dependents, and other relevant factors. Students are expected to contribute as well from their own assets and earnings, including appropriate borrowing against future earnings.

The brochure *Financing Your Education* explains the assistance programs in detail. Copies are available from the Office of Admission.

NEED-BASED APPLICATION PROCESS

Rice University is a need-blind school. Applicants are admitted to the university regardless of their family’s ability to pay for college. Rice will meet 100% of demonstrated financial need as determined by university calculations.

Rice considers applicants for all appropriate assistance administered by the university, including grants, scholarships, loans, and work. Students receive notification of an offer after their financial aid files are complete. Student Financial Services provides financial assistance only for coursework sponsored through Rice University.

To apply for financial assistance, first time students (including Early Decision students) must submit the following:

- CSS PROFILE, priority date February 15
- Free Application for Federal Student Aid (FAFSA), priority date February 15
- Student and parent income tax and W-2 forms, priority date March 1

Continuing students must submit the following:

- FAFSA, priority date April 15
- CSS Profile, priority date April 15
- Student and parent income tax and W-2 forms, priority date April 15

DECISION

Financial aid offers are made annually. Award amounts are specified in the Financial Aid Offer Letter. Because financial circumstances change from year to year, Rice conducts an annual review of need and offers aid accordingly. For this reason, continuing students must complete CSS Profile and file the FAFSA every year that they seek assistance.

The university, from time to time, may adjust its methods of computing financial need or its policies regarding the types of financial assistance that it offers so as to meet the financial needs of the largest possible number of students. Therefore, the amount and type of financial aid may change from year to year, even when the student’s financial situation appears to remain relatively stable.

TYPES OF FINANCIAL AID AND ASSISTANCE

Need-Based Scholarships/Grants—Various need-based scholarships and grants

are awarded to assist students with demonstrated need.

Merit Scholarships—Merit Scholarships are offered through the Office of Admissions to incoming students. Merit scholarships may only be used for coursework sponsored by Rice University. Should a student with a merit award graduate early, unexpended merit funds will not be granted to the student.

Student Loan Funds—To assist students and parents with educational financing, the Office of Student Financial Services participates in the following programs:

- **Stafford Student Loans**—These are low-interest loans made to students attending school on at least a half-time basis. Subsidized Stafford loans require need-based financial aid eligibility, but unsubsidized Stafford loans are available to all students.
- **Parent Loans for Undergraduate Students (PLUS loan)**—The PLUS loan is a low-interest loan to parents or legal guardians of dependent undergraduate students. Eligibility is not based on demonstrated financial need.
- **Federal Perkins Loan Program**—These are low-interest loans made to students attending school on at least a half-time basis and who demonstrate high need.
- **Private Education Loans**—These nonfederal loans are available to students attending school on at least a half-time basis. Eligibility is not based on financial need. These are credit based loans and may require a co-signer.

A few endowments for student loans have been established at Rice primarily as memorial tributes. These funds exist separately from the normal financial aid program. Rice uses them to make small emergency loans to students experiencing unexpected financial problems or showing additional need beyond regular eligibility.

All requests for these loans must be submitted to the Office of Student Financial Services.

Student Employment Programs—Opportunities for employment are available to students, either on or off campus, during the academic year. Students are eligible to work under the Federal Work-Study Program or the Rice University Work Program. Students interested in employment should access the Student Financial Services webpage at <http://www.ruf.rice.edu/~fina/employment.htm>.

Deferred Payment Plan—Rice offers a deferred payment plan to enable families to finance students' educational costs. This plan divides each semester's charge over four installments. Applications and details are available to eligible students each semester at the time of billing. Students arrange for deferred payment through the Cashier's Office.

Summer Aid—Students who have not exceeded 10 semesters at Rice are eligible to apply for summer aid. The only aid available during the summer session are private educational loans.

VOCATIONAL REHABILITATION

The Texas Rehabilitation Commission (TRC) provides assistance in paying tuition and nonrefundable fees for students who have certain disabling conditions. Once a TRC counselor approves their vocational objectives, students affected by orthopedic deformities, emotional disorders, diabetes, epilepsy, heart problems, and other disabling conditions are eligible for assistance. The TRC offers a range of services to help handicapped students become employable. Interested students should apply to the Texas Rehabilitation Commission.

Students with visual handicaps should contact the Texas State Commission for the Blind.

FINANCIAL AID ELIGIBILITY

Undergraduate students are eligible to apply for need-based Rice sponsored and federal/state/private aid during the first 8 semesters at Rice; for transfer students the number of semesters is prorated based on the number of hours transferred. If a student is enrolled beyond eight semesters, the student may apply for federal/state/private aid for an additional two semesters. (Architecture students may apply for Rice sponsored aid for two semesters following their preceptorship to complete the Architecture degree.) If a student attends part-time during a semester or withdraws during a term, the semester is counted towards the number of semesters aid is available.

LOAN COUNSELING

Students who are recipients of federal student loans will be required to complete online loan entrance counseling before funds will be credited to student accounts. Students also will be required to complete online exit counseling at the completion of a program of study at Rice. Failure to complete online loan exit counseling will result in a transcript hold.

SATISFACTORY ACADEMIC PROGRESS

The Higher Education Act of 1965, as amended by Congress, mandates that institutions of higher education require minimum standards of "satisfactory academic progress" for students to be eligible to receive financial aid.

To remain in good standing, an undergraduate student must meet the following qualitative and quantitative standards:

Qualitative—A student must earn a minimum term GPA of 1.67 for each term enrolled at Rice University.

Quantitative—By the end of each academic year, a student must have earned a minimum of 24 credits. If a student were enrolled for only one term, the student must have earned a minimum of 12 credits.

If a student fails to meet either standard, the next term the student is enrolled the student will be granted aid on a probationary status. During a term in which a student is on financial aid probation, the student must complete a minimum of 12 credits and must earn a term GPA of 1.67 to be considered in good standing and to be eligible to receive aid for the next term enrolled. If a student on financial aid probation does not complete these requirements, then the student's financial aid eligibility is terminated.

Appeal—A student whose aid eligibility has been terminated after one semester of financial aid probation may submit an appeal in writing to Student Financial Services for a second term of financial aid probation. If during that second probation term the student fails to complete 12 credits and earn a term GPA of 1.67, the student's aid eligibility is terminated, and the student may not appeal for another probationary aid term. In order to regain aid eligibility, the student must complete 12 credits in one term with a 1.67 term GPA (or 2.0 GPA at a school without weighted grades) using resources other than aid offered through Rice University to pay affiliated charges.

Financial Aid After Suspension—Students who have been suspended by the University for academic reasons need to be aware that if they are readmitted by the Committee on Examinations and Standing they may not be eligible for financial aid based on their prior academic performance. Students who are petitioning for readmission are advised to contact Student Financial Services to determine their aid eligibility.

RETURN OF TITLE IV FUNDS

Students who receive federal funds as part of their aid packages and do not complete the academic term may be subject to returning a portion of those funds. Contact Student Financial Services for information about "Return of Title IV Funds" policies and procedures.

HONOR SOCIETIES

Honor societies at Rice include the following:

Phi Lambda Upsilon—national honorary chemical society promoting high scholarship and original investigation in all branches of pure and applied chemistry (Rice chapter: 1926)

Phi Beta Kappa—founded in 1776 at the College of William and Mary to recognize intellectual achievement and the love of learning among students in the liberal arts and sciences (Rice chapter: March 1, 1929)

Pi Delta Phi—organized to interest French students in competing for high standing in scholarship (Theta chapter at Rice: May 1930)

Society of Sigma Xi—for the promotion of research in science (Beta of Texas chapter at Rice: March 23, 1938)

Tau Beta Pi Association—organized to interest engineering students in competing for high standing in scholarship (Gamma of Texas chapter at Rice: December 18, 1940)

Delta Phi Alpha—to promote an interest in the German language and literature (Gamma Xi chapter at Rice: April 1949)

Sigma Delta Pi—to promote an interest in the Spanish language and literature (Rice chapter: May 14, 1953)

Tau Sigma Delta—national honor society in architecture and applied arts (Tau chapter at Rice: May 7, 1961)

Eta Kappa Nu—founded in 1904 at the University of Illinois for electrical engineering students, to stimulate and reward scholarship as well as assist and encourage its members to grow professionally throughout their lives (Rice chapter: January 1981)

Omicron Delta Epsilon—to promote study in economics (Rice chapter: 1981)

Psi Chi—founded in 1929 at Yale University to encourage, stimulate, and maintain excellence in scholarship and to advance the science of psychology (Rice chapter: April 23, 1990)

Chi Epsilon—the Civil Engineering Honor Society. It serves to recognize students of high scholarship, character, practicality, and sociability. Students are inducted into the society once or twice annually, and are selected from the pool of upper division level civil engineering students. (Rice chapter: 1995)

UNDERGRADUATE STUDENT LIFE

RESIDENTIAL COLLEGES

All undergraduate students at Rice, whether they live on campus or not, are members of one of nine residential colleges. All colleges are coeducational.

Each college has faculty masters who live in a house next to the college. Reporting to the vice president for student affairs, the masters have overall responsibility for

all aspects of student life in the college, especially for encouraging broad cultural and intellectual interests and for promoting self-discipline and effective self-government within the college. Upon agreement, the students and masters invite other members of the Rice faculty to become resident and nonresident associates of the college. Faculty associates act as advisers to the students and participate in the various activities of the college. Colleges also have nonfaculty university associates and community associates drawn from various professions in the Houston area.

Each college exists as a self-governing group of students. The elected officers and representatives are responsible to the masters and to the college membership for:

- Directing the college's cultural, social, and athletic activities
- Expenditure of college funds
- Maintaining order in the college

While uniformity among the colleges has never been sought and each college has developed its own particular interests and character, all seek to foster fellowship among their members and a mature sense of honor, responsibility, and sound judgment.

College Assignment—Each undergraduate, upon acceptance by the university, is designated a member of one of the colleges. Two students entering Rice for the first time may request assignment to the same college, but they may not designate which college. New students may also request membership in the same college as a close relative. Except for these cases, students have no individual choice of college.

Room and Board—College buildings include a dining hall and public rooms, which are available to both resident and nonresident members, and living quarters for approximately 215 students from all classes and all academic disciplines.

At present, Rice has room in its on-campus residential colleges for about 75 percent of its undergraduate students. Although most of the students who want to live in the colleges can be accommodated, demand usually exceeds the available number of rooms. The university makes every effort to provide housing in the colleges for all incoming first-year students who wish to live on campus, but space cannot be guaranteed. Continuing students draw for rooms according to the priority system established in each college. No student is required to live on campus; however, those members of the colleges who live off campus are encouraged to eat in their colleges and to participate in college activities.

The College Food Service provides à la carte meals, with the exception of prepaid dinners. Its other services include:

- Assistance with special diets prescribed by a physician
- Sack lunches for students who must miss a meal due to a job conflict
- Sick trays for students when requested by the Student Health Service
- Alternate menu entrées, whenever possible, to accommodate students' religious practices

For more information on room and board, see page 45.

College Courses. One of the colleges' important activities is their sponsorship of courses and workshops open to all students. By expanding course offerings outside the traditional departments, college courses promote the academic involvement of the colleges while introducing students to interdisciplinary topics of particular interest.

Students propose college courses during the semester before they are offered. Once approved by the masters and faculty associates of the college and by the dean of

undergraduates and the provost, these college courses are offered for academic credit on the same basis as departmental courses. The registrar provides a list of college courses each semester during preliminary registration.

STUDENT GOVERNMENT

All undergraduates are members of the Rice Student Association, which is governed through the Student Senate. The senate includes the president, two vice presidents, the secretary, the treasurer, the nine college presidents, and nine college senators.

Alleged violations of university or college rules are handled in accordance with the Code of Student Conduct. In most cases, original jurisdiction belongs to student courts. Students may appeal verdicts to the college masters or the assistant dean for student judicial programs, as appropriate with a final appeal to the vice president for student affairs. The student-staffed Honor Council conducts hearings and trials for alleged offenses against the honor system (see page 8). Rice retains ultimate authority in all matters of discipline and over all actions that affect its educational function or the safety and well-being of members of the university community.

Award Presentations—The Rice Student Association presents two coveted awards annually, one to a student and one to a faculty or staff member. The Rice Service Award, a memorial to Hugh Scott Cameron, first dean of students at Rice, is awarded to currently enrolled or former members of the association who have rendered distinguished service to the student body. The Mentor Recognition Award recognizes extraordinary service to the student body by a current member of the faculty or staff. A committee of faculty and students appointed by the association makes the selections.

OFFICE OF STUDENT ACTIVITIES

The Office of Student Activities, located in the Rice Memorial Center cloisters, oversees the activities of various campuswide student organizations. It also handles student requests for facilities and party permits, and it coordinates leadership development programs, including the annual leadership retreat and symposium.

Principal student organizations include the following:

- Rice Student Association, the student governing body
- Rice Program Council, which sponsors various events of current interest to the student body as well as social functions
- KTRU, the student-run radio station, operating 24 hours, seven days a week, on 91.7 FM
- Student publications (e.g., *Rice Thresher*, the student newspaper; *Campanile*, the yearbook; *The Rice Undergraduate: The Annual Academic Review*, a collection of peer-reviewed student papers; and *University Blue*, a literary and visual arts publication)

A large number of student organizations address special student interests, such as the Black Student Association, the Hispanic Association for Cultural Education at Rice, the Chinese Student Association, Rice Young Democrats, and Rice Republicans. There also are numerous clubs for such sports as sailing, rugby, lacrosse, volleyball, and soccer. Other special-interest groups include a premed society, forensic society, juggling club, and vegetarian club.

Many organizations are associated with special academic and professional disciplines, such as foreign language clubs, honor societies, and student affiliates of the American Chemical Society, the American Society of Civil Engineers, and the American Society of Mechanical Engineers.

The Rice Players, an extracurricular theater group of Rice students, faculty, and staff, present at least four productions each year and welcome participation by anyone interested in any aspect of theater production or management.

Rice students also maintain affiliations with a number of religious organizations. These include, but are not limited to, the Baptist Student Union, Canterbury Association, Catholic Student Association, Christian Science Organization, Hillel Society, Lutheran Student Association, Intervarsity Christian Fellowship, and the Wesley Foundation. Many of these clubs are assisted by local clergy who form the Joint Campus Ministry.

The Office of Student Organizations on the second floor of the Ley Student Center houses mailboxes for all student organizations. There is a student organization work space in the basement of the Rice Memorial Center that has office space, storage, and computers for student organization use.

COMMUNITY INVOLVEMENT CENTER/RICE STUDENT VOLUNTEER PROGRAM

Housed in the cloisters of the Rice Memorial Center, the Community Involvement Center works to develop a culture of service within the university by functioning as an advocate for community service, social responsibility, and an increased awareness of social and community issues. The center acts as a clearinghouse for resources and referrals involving local, national, and international community agencies and service opportunities. By making educational programs and information available, the center fosters a lifelong commitment to service among students, faculty, and staff. It also organizes alternative semester break service trips, volunteer fairs, beach cleanups, and other activities. The 10 student service organizations supported by the Community Involvement Center include Rice Habitat for Humanity, youth mentoring and tutoring programs, tutoring in English as a second language, Best Buddies, and the Rice Student Volunteer Program.

By heightening student awareness of community needs and generally raising social consciousness, the Rice Student Volunteer Program (RSVP) has organized volunteer projects for Rice students, faculty, and staff since 1985. The largest event of each semester is Outreach Day, a Saturday when approximately 500 students volunteer with more than 30 nonprofit agencies throughout the Houston area, learning how to take thoughtful action to build a stronger, more just community. With an office in the cloisters of the Rice Memorial Center, RSVP invites each student's involvement as an officer, a college representative, a committee member, a project organizer, or an interested participant in any RSVP event.

INTERCOLLEGIATE SPEECH AND DEBATE

Consistently ranked in the top 10 nationally, the George R. Brown Forensic Society sponsors competition in the categories of Individual Events, Lincoln-Douglas, and Parliamentary Debate. The society provides students with the chance to hone their public speaking skills and to qualify for competition both at the American Forensic Association National Individual Events Tournament and at the National Parliamentary Debate Championships. Recognizing the importance of developing strong communication skills, the society has an open admissions policy, inviting students with little or no previous experience as well as those with extensive high school backgrounds to become members of one of the most successful teams at Rice. For more information on speech and debate, please go to <http://www.ruf.rice.edu/~forensic/eventinfo/>.



INFORMATION
FOR GRADUATE
STUDENTS

INTRODUCTION

Since Rice opened in 1912, the university has recognized the importance of graduate study and research as a principal means of advancing knowledge. The first Doctor of Philosophy degree was awarded in 1918 in mathematics. Since that time, the graduate area has expanded to encompass the schools of architecture, engineering, humanities, management, music, natural sciences, and social sciences, as well as interdepartmental areas. The graduate program has steadily increased over time; Rice now enrolls approximately 1,900 graduate students and offers advanced degrees in 29 fields of study.

Graduate programs lead to either research or professional degrees. Research programs generally require the completion of a publishable thesis that represents an original and significant contribution to the particular field of study. Research degrees include the Doctor of Philosophy (PhD), Doctor of Architecture (DArch), Master of Arts (MA), and Master of Science (MS).

Professional programs provide advanced course work in several disciplines but do not generally include independent research. These programs lead to degrees in most of the major schools including many engineering disciplines. (See the Graduate Degree Chart and the Interdepartmental and Cooperative Programs Chart on pages 59-63 for a complete listing of degrees offered.)

All degrees conferred by the university are awarded solely in recognition of educational attainments and not as warranty of future employment or admission to other programs of higher education.

For additional information on graduate programs and requirements, please go to <http://rgs.rice.edu>.

ADMISSION TO GRADUATE STUDY

Graduate study is open to a limited number of extremely well-qualified students with a substantial background in their proposed field of study (this usually, though not always, means an undergraduate major in the field). Each department determines whether applicants have enough preparation to enter a given program, emphasizing the quality of their preparation rather than the particular academic program they completed or the credits they earned.

Admittance to a Rice University graduate-degree program, with the exception of those in the School of Music, requires a baccalaureate degree or its equivalent as determined by the Office of Graduate Studies. For the Shepard School of Music, the equivalent to the baccalaureate degree will be determined by their graduate committee.

Applicants for admission to graduate study should either contact the appropriate department for application forms and relevant information about the program or visit the department's website for on-line application information. The Graduate Studies website, <http://rgs.rice.edu>, also has links to the graduate departments' websites. The Graduate Degree and Department Information Chart (pages 59-62) lists department chairs with department phone/fax numbers and e-mail addresses. Applicants should send all application materials, including transcripts and test scores, to the admitting department.

Application Process—An application for graduate study should include the completed application form, the application fee, transcript(s), recommendations, and writing samples, if required. Some departments require scores on the aptitude

portion of the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT) and an appropriate advanced test; these should be sent directly to the admitting department. See individual departmental listings for specific requirement information.

To make sure scores are available when admission decisions are normally made, applicants should take the GRE by the December before the fall for which they are applying. The application deadline for the fall semester is February 1. Some departments, however, may specify an earlier deadline, and departments may occasionally consider late applications.

Admission depends on students' previous academic records, available test scores, and letters of reference from scholars under whom they have studied. Writing samples, portfolios, or statements of purpose may also be required. In general, applicants should have at least a 3.00 (B) grade point average in undergraduate work. Applicants whose native language is not English must take the TOEFL test and should score at least 600 on the paper-based TOEFL or at least 250 on the computer-based TOEFL. For those students who choose to take the IELTS in lieu of TOEFL, the minimum score is 7. The TOEFL and IELTS may be waived for an international student who has received a degree from a university in which English is the official language of communication.

GRADUATE DEGREES

RESEARCH DEGREES

Research degrees are offered in six of the seven schools at Rice (the School of Management offers professional degrees only), with some degrees combining studies in more than one school. For general information on advanced degree work at Rice, see Requirements for Graduate Study (pages 64–68). Specific requirements for advanced research degrees in each field of study appear in the appropriate departmental pages (pages 78–266). Students seeking additional material should contact the appropriate department (see Graduate Degree and Department Information Chart on pages 59–63).

PhD Programs—The PhD degree is awarded for original studies in the departments listed in the Graduate Degree and Interdepartmental and Cooperative Programs Charts (page 63); in architecture, the equivalent degree is the DArch. Candidates receive a PhD degree after successfully completing at least 90 semester hours of advanced study and concluding an original investigation that is formalized in an approved thesis. As final evidence of preparation for this degree, the candidate must pass a public oral examination. (See also Candidacy, Oral Examinations, and the Thesis Regulations on page 65.) The residency requirement for the doctorate is four semesters of full-time study at the university.

Master's Programs—The MA degree is available in the departments listed in the Graduate Degree and Interdepartmental and Cooperative Programs Charts (page 63), including certain scientific fields of study. The MS degree is offered in the engineering and science fields also listed in the chart. Candidates may undertake the MArch, MArch in Urban Design, and MMus degrees as research degrees by adopting the thesis option. Candidates receive a master's degree after completing at least 30 semester hours of study (including thesis hours), 24 hours of which must be

taken at Rice. Master's programs require original work reported in a thesis and a public oral examination. Most students take three or four semesters to complete a master's degree (some programs may require more time). Students receiving a master's degree must be enrolled in a graduate program at Rice University for at least one semester of full-time study.

Students may also pursue a nonthesis degree in certain departments. This degree would be based on alternative departmental requirements and would include, but not be limited to, the following:

- 30 semester hours of study
- 24 semester hours must be at Rice University
- Minimum residency is one semester of full-time graduate study
- At least 15 hours of course work must be at or above the 500 level
- All courses must be in the relevant field

In certain departments, students may receive a master's degree (called an *Automatic Master's*) when they achieve candidacy for the doctoral degree. Students seeking a master's degree in this manner must submit a petition for the degree, signed by their department chair, to the Office of Graduate Studies by February 1 of the year in which the degree is to be awarded. (See also Candidacy, Oral Examinations, and the Thesis on page 65.)

PROFESSIONAL DEGREES

Rice University offers advanced degree programs to prepare students for positions in a number of professional fields. The professional degrees offered appear in the Graduate Degree and Interdepartmental and Cooperative Programs Charts (pages 59-63). In some departments, the professional degree also prepares the student for a doctoral-level program. All professional degrees are master's degrees with one exception: candidates earn the DMA after concluding a program of advanced music study.

Requirements for professional degrees include the successful completion of 30 semester hours or more of upper-level courses (at the 300 level or higher) with at least 24 hours taken at Rice. Minimum residency for all master's degrees is one semester of full-time study. Specific information and requirements for individual degrees appear in the Graduate Degree Chart (pages 59-63). Program information and application materials are also available from the departments (see Graduate Degree and Department Information Chart on pages 59-63). For general information on advanced degree work at Rice, see Requirements for Graduate Study (pages 64-67).

Admission into a professional program is granted separately from admission into a research or thesis program. Students who wish to change from a thesis program to a professional degree program must petition their department in writing. Upon recommendation of the department and approval by the dean's office, the request is sent to the Office of Graduate Studies for consideration and final approval. If approved, students who received tuition waivers while enrolled in the thesis program will be expected to repay the tuition before their professional degrees are awarded. Professional degree programs terminate when the degree is awarded. Students who wish to continue graduate study after completing a professional program must reapply for admission into a research program.

GRADUATE DEGREE AND DEPARTMENT INFORMATION CHART

| School Department and Department Chair | Graduate Degree Offered and Contact Information | Additional Options or Areas of Concentration (within majors) |
|---|---|--|
| SCHOOL OF ARCHITECTURE | | |
| <p>Lars Lerup (Dean)</p> <p>John J. Casbarian (Associate Dean)</p> | <p>MArch, MArch in Urban Design, DArch</p> <p>713-348-4044 fax: 713-348-5277 arch@rice.edu</p> <p>713-348-5152 www.arch.rice.edu/llash/</p> | <p>Architecture design, urbanism, theory, and practice</p> |
| GEORGE R. BROWN SCHOOL OF ENGINEERING | | |
| <p>Bioengineering</p> <p>David Hellums</p> | <p>MBE, MS, PhD</p> <p>713-348-5869 fax: 713-348-5877 bioeng@rice.edu dacnet.rice.edu/~bioe/</p> | <p>Biochemical engineering, biological systems modeling, biomaterials, biomedical lasers, cellular and molecular engineering, controlled release technologies, metabolic engineering, phytoremediation, spectroscopy, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes.</p> |
| <p>Chemical and Biomolecular Engineering</p> <p>Kyriacos Zygourakis</p> | <p>MChE, MS, PhD</p> <p>713-348-4902 fax: 713-348-5478 ceng@rice.edu www.ruf.rice.edu/~che/</p> | <p>Thermodynamics and phase equilibria, chemical kinetics and catalysis, optimization and process control, rheology and fluid mechanics, polymer science, biomedical engineering, enhanced oil recovery and cleanup of groundwater aquifers, and biochemical reactor engineering.</p> |
| <p>Civil and Environmental Engineering</p> <p>Herb Ward</p> | <p>MCE, MEE, MES MS, PhD</p> <p>713-348-4949 fax: 713-348-5268 civi@rice.edu www.ruf.rice.edu/~ceedept/</p> | <p>Civil engineering: structural dynamics and control, structures and mechanics, reinforced and prestressed concrete, geotechnical engineering, computer-aided engineering, probability and random vibrations, reliability of systems, and solid mechanics.</p> <p>Environmental science: environmental biology, chemistry, toxicology, geology, and planning; surface and groundwater hydrology; water and wastewater treatment; and urban and regional air quality.</p> <p>Environmental engineering: hydrology and water resources engineering; water and wastewater treatment, design, and operation; and numerical modeling</p> |
| <p>Computational and Applied Mathematics</p> <p>Bill Symes</p> | <p>MCAM, MCSE, MA, PhD</p> <p>713-348-4805 fax: 713-348-5318 caam@rice.edu www.caam.rice.edu/</p> | <p>Numerical analysis, operations research, and differential equations; additional program in computational science and engineering (see Interdepartmental and Cooperative Programs)</p> |
| <p>Computer Science</p> <p>Keith Cooper</p> | <p>MCS, MS, PhD</p> <p>713-348-4834 fax: 713-348-5930 comp@rice.edu www.cs.rice.edu/</p> | <p>Algorithms and complexity, artificial intelligence and robotics, bioinformatics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages</p> |
| <p>Electrical and Computer Engineering</p> <p>Behnaam Aazhang</p> | <p>MEE, MS, PhD</p> <p>713-348-4020 fax: 713-348-5686 elec@rice.edu www.ece.rice.edu</p> | <p>Bioengineering, communication and signal processing, computer architecture and networking, electro-optics, and device physics</p> |

| | | |
|--|---|--|
| Mechanical Engineering and Materials Science Enrique V. Barrera | MME, MMS, MS, PhD 713-348-4906 mems@rice.edu www.mems.rice.edu/ | Mechanical engineering: mechanics, computational mechanics, stochastic mechanics, fluid dynamics, heat transfer, dynamics and control, robotics, biomedical systems, and aerospace sciences. Materials science: nanotechnology, metals physics, statistical mechanics, metallic solid thermodynamics, materials chemistry, aspects of composites, coatings and thin films, and interface science |
| Statistics Katherine B. Ensor | MStat, MA, PhD 713-348-6032 fax: 713-348-5476 stat@rice.edu www.stat.rice.edu/ | Applied probability, Bayesian methods, bioinformatics, biomathematics, biostatistics, data analysis, data mining, density estimation, epidemiology, environmental statistics, financial statistics, image processing, model building, nonparametric function estimation, quality control, risk management, spatial temporal statistics, statistical computing, statistical genetics, statistical visualization, stochastic processes, and time series analysis |

SCHOOL OF HUMANITIES

| | | |
|--|---|---|
| Education: | 713-348-4826 www.dacnet.rice.edu/Depts/Education/ | Secondary education (See Education Certification below) |
| English Susan Wood | MA, PhD 713-348-4840 fax: 713-348-5991 engl@rice.edu english.rice.edu | British and American literature and literary theory |
| French Studies Michel Achard | MA, PhD 713-348-4851 fax: 713-348-5951 fren@rice.edu www.ruf.rice.edu/~fren/ | French literature, language, and culture |
| Hispanic Studies Maarten Van Delden | MA 713-348-5451 fax: 713-348-4863 span@rice.edu hispanicstudies.rice.edu | Spanish and Latin American Literature and Spanish Linguistics |
| History Peter Carl Caldwell | MA, PhD 713-348-4948 fax: 713-348-5207 hist@rice.edu history.rice.edu/ | U.S., European, and other history |
| Linguistics Masayoshi Shibatani | MA, PhD 713-348-6010 fax: 713-348-4718 ling@ruf.rice.edu linguistics.rice.edu/ | Anthropological, applied, cognitive, field, functional or discourse, and English, German, or Romance linguistics; second language acquisition; language typology and universals, sociolinguistic, phonetics, phonology, and speech technology |
| Philosophy Steven Crowell | MA, PhD 713-348-4994 philos@rice.edu philosophy.rice.edu | Specialization in medical ethics |

| | | |
|-------------------|---|--|
| Religious Studies | MA, PhD | Religion and contemporary cultures; scriptural interpretation; ethics and philosophy of religion; mysticism, psychology, and religious practices |
| Jeffrey Kripal | 713-348-5201 fax: 713-348-5486 reli@rice.edu reli.rice.edu/ | |

JESSE H. JONES GRADUATE SCHOOL OF MANAGEMENT

| | | |
|------------------------------------|--|---|
| William H. Glick (Dean) | MBA, MBA/MBA/Master of Engineering MBA/MD (with Baylor College of Medicine) | MBA is a general management degree; however, students may have informal concentrations in the following areas: accounting, entrepreneurship, finance, general management, international business, information technology, marketing, operations management, organizational behavior and human resource management, healthcare management, and strategic management and planning; joint nonthesis degree option with all engineering disciplines |
| George Kanatas (Associate Dean) | MBA for Executives | |
| Wilfred C. Uecker (Associate Dean) | 713-348-4838 fax: 713-348-5251 ricemba@rice.edu jonesgsm.rice.edu/ 713-348-5396 fax: 713-348-5102 713-348-6060 fax: 713-348-5131 oed@rice.edu | |

SHEPHERD SCHOOL OF MUSIC

| | | |
|------------------------|--|--|
| Robert Yekovich (Dean) | BMus/MMus, MMus, DMA 713-348-4854 fax: 713-348-5317 musi@rice.edu www.ruf.rice.edu/~musi | Composition, choral and instrumental conducting, historical musicology, performance, and music theory Composition and selected areas of performance |
|------------------------|--|--|

WIESS SCHOOL OF NATURAL SCIENCES

| | | |
|-------------------------------|---|--|
| Biochemistry and Cell Biology | MA, PhD | Biochemistry, biophysics, developmental biology, cell biology, genetics, molecular biology, neurobiology, structure and function of nucleic acids and proteins, regulatory processes, biochemistry of lipids, enzymology, NMR and crystallography, cellular regulation, oxygen and electron transport, molecular genetics of plants, animals, fungi, bacteria, and bacteriophage |
| George Bennett | 713-348-4015 fax: 713-348-5154 bioc@rice.edu www.biochem.rice.edu | |
| Chemistry | MA, PhD | Organic chemistry, inorganic chemistry, physical chemistry, nanotechnology, biological chemistry, theoretical and computational chemistry, materials chemistry, bio-organic chemistry, and bio-inorganic chemistry |
| Kenton H. Whitmire | 713-348-5650 fax: 713-348-5155 chem@rice.edu www.chem.rice.edu | |
| Earth Science | MA, PhD | Marine geology and geophysics; sedimentology, stratigraphy, paleoceanography, paleoclimatology, evolution of continental margins and carbonate platforms; tectonics, neotectonics, tectonophysics, geodynamics, mantle processes, planetology, and space geodesy; remote sensing, potential fields, reflection and lithospheric seismology, global seismology, wave propagation and inverse theory; kinetics of fluid-solid interactions, low T aqueous geochemistry, petrology, and high T geochemistry, hydrogeology, sediment deformation, carbon cycling, and terrestrial-biosphere interactions |
| Alan Levander | 713-348-4880 fax: 713-348-5214 geol@rice.edu earthscience.rice.edu/ | |

| | | |
|---|---|--|
| Ecology and Evolutionary Biology Joan Strassmann | MA, PhD 713-348-4919 fax: 713-348-5232 eeb@rice.edu eeb.rice.edu | Ecology, plant and insect communities, populations, diversity, mutualisms, invasive species, evolution, quantitative genetics, mate choice, speciation, molecular evolution, adaptive evolution, behavioral ecology, sociobiology, genomics, microbial evolution |
| Mathematics Michael Wolf | MA, PhD 713-348-4829 fax: 713-348-5231 math@rice.edu math.rice.edu | Differential and algebraic geometry, ergodic theory, partial differential equations, probability and combinatorics, real analysis, complex variables, and geometric and algebraic topology |
| Physics and Astronomy F. Barry Dunning | MST, MS, PhD 713-348-4938 fax: 713-348-4150 physics@rice.edu www.physics.rice.edu/ | Atomic and molecular physics, biophysics, particle physics, condensed matter physics, surface physics, space physics, astronomy, astrophysics, and theoretical physics |

SCHOOL OF SOCIAL SCIENCES

| | | |
|-------------------------------------|---|---|
| Anthropology James D. Faubion | MA, PhD 713-348-4847 fax: 713-348-5455 anth@rice.edu www.ruf.rice.edu/~anth/ | Archaeology, anthropological linguistics, social/cultural anthropology, theory, history, and global change |
| Economics Peter Hartley | MA, PhD 713-348-4875 econ@rice.edu www.ruf.rice.edu/~econ/ | Econometrics, economic theory, industrial organization and regulation, international trade and finance, labor, macroeconomics/monetary theory, and public finance and development |
| Political Science Rick K. Wilson | MA, PhD 713-348-4842 poli@rice.edu www.ruf.rice.edu/~poli/ | American government, comparative government, and international relations |
| Psychology Randi Martin | MA, PhD 713-348-4856 fax: 713-348-5221 psyc@rice.edu www.ruf.rice.edu/~psyc/ | Cognitive-experimental psychology and industrial-organizational/social psychology, with tracks in engineering psychology, human-computer interaction, and neuropsychology |

EDUCATION CERTIFICATION

| | | |
|----------------|--|---------------------|
| Meredith Skura | 713-348-4826 Fax: 713-348-5459 educ@rice.edu education.rice.edu/ | Secondary education |
|----------------|--|---------------------|

INTERDEPARTMENTAL AND COOPERATIVE PROGRAMS

Opportunities for graduate study are available in a number of interdisciplinary areas. The advanced degree programs listed in the Interdepartmental and Cooperative Programs Chart (below) are administered by the participating Rice departments. They represent fields of study in rapidly developing areas of science and engineering or those areas subject to multiple investigations and interests. Rice has also established ties with other Houston universities and the Texas Medical Center to enable graduate students to receive training in computational biology research, to earn separate degrees simultaneously, or to focus their doctoral study on the specialized field of medical ethics.

INTERDEPARTMENTAL AND COOPERATIVE PROGRAMS CHART

| Program | Degrees Offered | Departments/Areas of Concentration |
|--|---|--|
| INTERDEPARTMENTAL PROGRAMS | | |
| Applied Physics | Master's, PhD | Departments of physics and astronomy, chemistry, electrical and computer engineering, mechanical engineering and materials sciences, bioengineering, computational and applied mathematics, chemical and biomolecular engineering, and civil and environmental engineering; sciences that underlie important new and emerging technologies. Contact: Rice Quantum Institute, 713-348-6356 or quantum@rice.edu. |
| Computational Science and Engineering | Master's, PhD | Modern computational techniques and use of powerful, new computers in research, development, and design involving the following departments: computational and applied mathematics, biochemistry and cell biology, earth sciences, computer science, chemical and biomolecular engineering, electrical and computer engineering, civil and environmental engineering, and statistics. Contact: 713-348-4657 or caam@caam.rice.edu. |
| Education Certification | MAT | Secondary teaching certification in conjunction with BA in major field |
| Environmental Analysis and Decision Making | MS | Departments of computational and applied mathematics, statistics, civil and environmental engineering, chemistry, earth science, ecology and evolutionary biology, mechanical engineering and materials science, chemical and biomolecular engineering, sociology, electrical and computer engineering, management, and natural sciences. Contact Professional Master's Program: 713-348-3188 or profms@rice.edu. |
| Materials Science and Engineering | Master's, PhD | Departments of chemistry, electrical and computer engineering, mechanical engineering and materials sciences, chemical and biomolecular engineering, and physics. Contact: 713-348-4906 or mems@rice.edu. |
| Nanoscale Physics | MS | Departments of physics and astronomy, electrical and computer engineering, chemistry, management, and natural sciences. Contact Professional Master's Program: 713-348-3188 or profms@rice.edu. |
| Study of Women and Gender | Graduate Certificate | Departments in anthropology, English, French, history, linguistics, philosophy, and religious studies |
| Subsurface Geoscience | MS | Departments in earth science, chemistry, statistics, management, sociology, and natural sciences. Contact Professional Master's Program: 713-348-3188 or profms@rice.edu. |
| COOPERATIVE PROGRAMS | | |
| Joint Programs in Biomedical Ethics | MA, PhD | Religious studies degree with the University of Texas Health Science Center at Houston. Contact: 713-348-5201 or reli@rice.edu Philosophy degree with the Baylor College of Medicine and the Institute of Religion. Contact: 713-348-4994 or phil@rice.edu. |
| Joint Program in Computational Biology | Training opportunities for PhD students | Research in a lab setting, seminars and work-shops, and access to advanced resources of W.M. Keck Center for Computational Biology (fellowships available); with Baylor College of Medicine and the University of Houston. Contact: 713-348-4752 or bioc@rice.edu. |
| Joint Programs with Medical Colleges | MD/PhD, MD/MA, MD/MS | Combined MD and advanced research degree for research careers in medicine; with Baylor College of Medicine. Contact: 713-348-5869 or bioeng@rice.edu. |

ACADEMIC REGULATIONS

REQUIREMENTS FOR GRADUATE STUDY

Graduate students must meet the following minimums, deadlines, and course or grade requirements to graduate in good standing from the university. Some departments may have stricter policies and/or requirements.

Residency—Master's students must complete at least one semester enrolled in full-time study in a graduate program at Rice University. PhD students must be enrolled at least four semesters in full-time study at Rice University.

Full-time study—Semester course load for full-time students is 9 hours, or more as required by specific departments. Graduate programs at Rice generally require full-time study.

Part-time study—Admission of part-time students requires departmental permission, and students must register for at least 3 hours in a semester. All time-to-degree requirements apply to part-time students.

Time to degree—PhD students are required to complete their program, including thesis defense, within ten years of initial enrollment in the degree program. All masters students are required to complete their program, including thesis defense, within five years of initial enrollment. In both cases, students have a limit of six additional months from the date of defense to submit their theses to the Office of Graduate Studies. These time boundaries include any period in which the student was not enrolled or enrolled part-time, for whatever reason.

Time to candidacy—PhD students must be approved for candidacy before the beginning of the ninth semester of their residency at Rice. Masters students must be approved for candidacy before the beginning of the fifth semester of their residency at Rice.

Time to defense—PhD students must defend their theses before the end of the 16th semester of their residency at Rice. Masters students must defend their theses before the end of the eighth semester of their residency at Rice.

Time to thesis submission—After candidates successfully pass the oral examination in defense of the thesis, they must submit two signed copies of the thesis to the Office of Graduate Studies no later than six months from the date of the examination.

Credit for previous degrees—For students who enter a doctoral program with a master's degree, completed at Rice or elsewhere, departments should determine the amount of previous work, if any, that will be counted from the master's degree at issue toward the doctoral degree. Any such credit of one semester or more toward doctoral requirements will result in an equal reduction of the time allowed for (1) the achievement of candidacy, (2) the defense of the PhD thesis, and (3) the total time to the doctoral degree. The maximum credit allowed for students with master's degrees from Rice will be six semesters, and the maximum credit allowed for students with master's degrees from outside Rice will be two semesters.

Minimum hours—Students must register for at least 3 hours in a semester.

Course registration—Students may register for courses of study and drop or add courses only with the approval of their adviser or the department chair.

Deadlines—Students must observe all deadlines listed in the Academic Calendar (pages viii-xiv).

Grades—To graduate, students must achieve at least a B- (2.67) grade point average in courses counted toward the graduate degree. Some programs and

departments have more stringent standards. To compute grade point averages, the credits attempted in semester hours for each course and the points for the grade earned (from A+ = 4.33 to F = 0.00) are multiplied, then the products (one for each course) are added together and the sum is divided by the total credits attempted. See also Probationary Status (page 67).

Pass/Fail—All students, except Class III students, may take course(s) Pass/Fail outside their department. They must file a course as Pass/Fail no later than the end of the 10th week of classes; however, they may later convert a Pass/Fail to a graded course by filing the appropriate paperwork with the registrar. Students should be aware that while a grade of P does not affect their Grade Point Average, a grade of F does.

Satisfactory/Unsatisfactory—Some departments may assign a grade of S or U. Students should be aware that while a grade of S or U does not affect their Grade Point Average, no credit will be awarded if a grade of U is received. Courses with a grade of S will count towards total credits earned.

Departmental duties—In most research degree programs, students must undertake a limited amount of teaching or perform other services as part of their training. Assigned duties should not entail more than 10 hours per week, averaged over the semester, or extend over more than eight semesters.

Employment—Students receiving a stipend may accept employment only with the approval of their home academic department. Students working for more than 20 hours per week are not normally eligible for full-time status.

Continuous enrollment—Students must maintain continuous program involvement and enrollment unless granted an official leave of absence. See Leaves or Withdrawals (page 66) for more information.

CANDIDACY, ORAL EXAMINATIONS, AND THE THESIS

Approval of Candidacy—Candidacy marks a midpoint in the course of graduate education. Achieving candidacy for the PhD implies that a graduate student has: (a) completed required course work, (b) passed required exams to demonstrate his/her comprehensive grasp of the subject area, (c) demonstrated the ability for clear oral and written communication, and (d) shown the ability to carry on scholarly work in his/her subject area. Requirements for achieving candidacy for the thesis Masters degree are determined at the departmental level. Students enrolled in research degree programs submit their petitions for candidacy for a master's or doctoral degree through the department chair to the vice provost for research and graduate studies. In the petition sent to the vice provost, the department chair identifies the student's thesis director, recommends a thesis committee, certifies that the applicant has fulfilled the departmental requirements, and provides a course transcript as evidence that work completed within the department is of high quality.

Students must file their applications for approval of PhD and MA/MS candidacy in the Office of Graduate Studies on or before November 1 for mid-year conferral and on or before February 1 for May commencement. Students may take the final oral examination in defense of their thesis only after the vice provost for research and graduate studies approves their candidacy. PhD students must be approved for candidacy before the beginning of the ninth semester of their residency at Rice. Master's students must be approved for candidacy before the beginning of the fifth semester of their residency at Rice.

Thesis Committee—The thesis committee administers the oral examination for the student's thesis defense and has final approval/disapproval authority and responsibility for the written thesis.

A thesis committee is composed of at least three members. Two, including the committee chair, must be members of the student's department faculty; in doctoral thesis committees, one member must be from another department within the university. At least three members of the committee must meet one of the following requirements:

- Tenured or tenure-track members of the Rice faculty
- Research faculty holding the rank of faculty fellow, senior faculty fellow, or distinguished faculty fellow
- Faculty who have been certified as thesis committee members by the vice provost for research and graduate studies

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenure-track member of the major department or a research faculty member of the major department. Additional members of the committee, who may or may not meet the above criteria, may be selected with the approval of the department chair. These would be in addition to the three required members.

Candidates are responsible for keeping the members of their committee informed about the nature and progress of their research. They also must establish a schedule for thesis completion and review. The members of the committee, in turn, should review the thesis in a timely manner, approving a preliminary form of the thesis before scheduling the oral examination.

Oral Examination in Defense of Thesis—The public oral defense of a thesis is intended to be an examination of a completed body of work and should be scheduled only when the dissertation is essentially completed. The defense should be scheduled by the student after consultation with the thesis adviser, who agrees that the thesis is completed and ready to be defended. All members of the thesis committee must be present for the oral defense. A candidate must be enrolled in the semester in which his or her oral examination is held. For the purpose of the oral defense only, enrollment in a semester is considered valid through the Friday of the first week of class of the following semester.

At least one copy of the thesis must be available in the departmental office not less than two calendar weeks prior to the date of the oral defense. Oral examinations for the doctoral degree must be announced in *Rice News* at least one week in advance. Oral examination announcements can be submitted to *Rice News* by entering the information into the Graduate Students Thesis Defense Announcement form. (Specific instructions should be requested by sending e-mail to graduate@rice.edu when the student has set the date for the defense. The words "Rice News defense announcement" need to appear in the subject line of the e-mail.) An automatically generated e-mail will be sent to *Rice News* once the defense form has been submitted.

Students should note that material printed in *Rice News* must be submitted at least two weeks before publication; the *Rice News* calendar editor can provide specific submission dates. PhD candidates therefore should begin scheduling their oral defenses at least three weeks in advance.

Oral examinations for the master's degree require only that public notice of the oral defense be posted on the department bulletin board one week in advance and a copy sent to the Office of Graduate Studies.

The length of the oral examination and the subject matter on which the candidate is questioned are left to the judgment of the committee. After candidates successfully pass the oral examination in defense of the thesis, they must submit two signed copies of the thesis to the Office of Graduate Studies no later than six months from the date of the examination. If the thesis is not ready for final signature by the end

of the six-month period, the “pass” will be revoked and an additional oral defense will need to be scheduled. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances. Applications for an extension must be made by the candidate with the unanimous support of the thesis committee and approved by the Office of Graduate Studies. Students passing the oral examination on or before the end of the first week of classes of any semester do not have to register for that or any subsequent semester even though they may be continuing to make minor revisions to the final copy of their thesis.

Should a candidate fail, the committee chair may schedule a second examination. Students who fail a second time must withdraw from the university.

Students must send a copy of their approval of candidacy form, signed by the thesis committee signifying successful defense of the thesis, to the Office of Graduate Studies within one week after the oral examination. The original approval of candidacy form must be turned in when the thesis is submitted.

PhD students must defend their theses before the end of the 16th semester of their residency at Rice. Master’s students must defend their theses before the end of the eighth semester of their residency at Rice.

Thesis Regulations and Procedures—The thesis is the principal record of a student’s work for an advanced degree. It is permanently preserved in the library. Instructions for thesis submission and guidelines for thesis formatting are provided by the Office of Graduate Studies at the time of approval of candidacy. Additional copies of these instructions are available from the graduate studies office and can also be accessed on the Rice website at: <http://rgs.rice.edu/grad/policies/thesis>.

Students must have the original signatures of their thesis committee on two title pages of their dissertation. Students submitting a dissertation for the PhD, DArch, or DMA must fill out a Survey of Earned Doctorates form. All students submitting theses, whether for master’s or doctoral degrees, must complete a University Microfilm contract. Students must pay their fees for microfilming and binding their theses to the cashier before submitting the two copies to the Office of Graduate Studies for approval. The thesis may be submitted to the Office of Graduate Studies at any time; however students must meet the deadline for the thesis submission listed in the Academic Calendar (pages viii-xiv).

LEAVES OR WITHDRAWALS

Leave of Absence—A leave of absence is granted only by the Office of Graduate Studies upon the recommendation of the department chair and only to graduate students in good standing with the university. Students must obtain approval for a leave before the academic semester in question. These requests, approved by the department, must be received in the Office of Research and Graduate Studies prior to the first day of classes.

Leaves are not granted after students register for courses or after the registration period passes. Normally, students may take a leave of absence for no more than two consecutive semesters. Students must pay a reinstatement fee of \$100 on their return from an official leave.

Short Term Medical and Parental Leave—If a graduate student cannot fulfill the duties of his or her appointment due to a medical emergency or the adoption or birth of a child, enrollment and stipend support may be continued for up to six weeks or until the appointment expires (whichever occurs first). Complete guidelines for obtaining a short term or parental leave are available at: <http://rgs.rice.edu/Grad/Policies/med-mat-leave.cfm>

Withdrawal and Readmission—Students who wish to withdraw from Rice during the semester, for any reason, are to notify the chair of their academic department in writing (see Refund of Tuition and Fees, pages 44-45). Failure to register for any period without a leave of absence granted by the Office of Graduate Studies constitutes a de facto withdrawal.

The university may insist on a student's involuntary withdrawal if, in the judgement of the vice provost for research and graduate studies, the student;

- Poses a threat to the lives or safety of him/herself or other members of the Rice community
- Has a medical or psychological problem that cannot be properly treated in the university setting
- Has a medical condition or demonstrates behavior that seriously interferes with the education of other members of the Rice community

Students who later wish to resume study, whether after voluntary or involuntary withdrawal, must reapply to the university. Readmission requires the recommendation of the department chair and the approval of the vice provost for research and graduate studies. Accepted students must pay a readmission fee of \$300.

Students who withdraw for medical reasons must meet certain conditions when applying for readmission. They must submit a written petition for readmission to the Office of Graduate Studies at least one month before the start of the semester in which they wish to resume their work at Rice. They must also provide evidence from a health professional that they have resolved the problems leading to their withdrawal. Some cases may require an interview with the director of the Rice Counseling Center, with the director of Student Health Services or their designees.

Nonenrollment—Students may not do degree work at Rice or work involving Rice faculty or facilities during any period of nonenrollment, except during the period following successful oral defense prior to submission of the final thesis.

DROP/ADD

During the first two weeks of classes, all students may change their registration without a penalty fee by adding or dropping courses with the appropriate adviser's approval. Students must obtain the instructor's permission and the adviser's approval to add a course after the second week of classes. Students may not add courses after the fourth week of classes without the permission of the Office of Graduate Studies.

Students may not drop courses after the end of the 10th week of classes, except by approval of the Office of Graduate Studies (a \$50 fee is assessed for courses dropped after the 10th week by non-first-semester students). The student's request to drop a course must be approved by the student's advisor and then forwarded to the vice provost for consideration.

Students who add or drop courses after the second week but before the deadlines noted above are charged for each drop/add form submitted according to the fee schedule (see page 23).

ACADEMIC DISCIPLINE

Probationary Status—Students whose cumulative grade point average or the average for the most recently completed semester falls below 2.33 are placed on probationary status; some departments may have more stringent standards. Although

the department in most cases sends the student a letter of warning, probationary status applies whether or not a letter has been issued. A second semester of probationary status leads to automatic dismissal by the Office of Graduate Studies unless the student's department presents a plea for exception that is approved by the vice provost for research and graduate studies. Departments are free to dismiss a student in the first semester of probationary status if they issue a warning before taking action.

Dismissal—Reasons for student dismissal include unsatisfactory progress as determined by the student's department or behavior judged by Rice to be disruptive or otherwise contrary to the best interests of either the university or the student.

APPEAL

Students may petition the Office of Graduate Studies regarding the application of any academic regulation. Petitions should go through department chairs and divisional deans, who will be asked to comment on their merits. In some cases, the vice provost will seek the advice of the Graduate Council. For appeals regarding nonacademic matters, see the following section on problem resolution.

OTHER DISCIPLINARY SANCTIONS

Additionally, the assistant dean of Student Judicial Programs may place students on probation or suspension for violating the Honor Code or Code of Student Conduct or for other disciplinary reasons. Students on disciplinary suspension (including for an Honor System violation) may not receive their degree even if they have met all academic requirements for graduation. They must leave the university within 48 hours of being informed of the dean's decision, though in cases of unusual hardship, the assistant dean of Student Judicial Programs may extend the deadline to one week. Any tuition refund will be prorated from the official date of suspension, which is determined by the registrar. While on disciplinary suspension, students may not run for, or hold, any elective or appointed office in any official Rice organization. Participation in student activities on and off campus and use of Rice facilities are limited to enrolled students. Students seeking admission after leaving the university because of a sanction imposed by the assistant dean should submit a petition in writing for review by the assistant dean.

PROCEDURES FOR RESOLUTION OF PROBLEMS

Problems or conflicts may arise during a student's graduate education. Students should take responsibility for informing the appropriate faculty of any such problem. All parties involved should work together amicably with the goal of resolving the problem informally if at all possible. When attempts to resolve a problem informally do not meet with success, the following grievance procedure should be adopted.

1. The student should submit the grievance in writing to the departmental chair, who will then attempt to resolve the problem.
2. If the student remains unsatisfied, the problem should be presented to a departmental committee for resolution. This committee should be a standing committee and not the student's own review or dissertation committee. Both the student and the chair should submit a written record of their views to this committee.
3. If the student remains unsatisfied, the problem should be referred to a standing subcommittee designed at Graduate Council and composed of three faculty

members (representing diverse disciplines within the university), one graduate student and the associate dean for graduate studies. A written report of proceedings at stage two should be presented to the chair of graduate council, for forwarding to the subcommittee, together with all other written materials generated during the investigation. The decision of this subcommittee will be considered final.

TUITION, FEES, AND EXPENSES

The tuition and fees for graduate students in this section are for the 2005–2006 academic year only and are subject to change in subsequent years. Current tuition and fees for all graduate students, full time and part time:

| | Annual | Semester | Hour |
|---|----------|-----------|---------|
| Tuition | | | |
| All schools except Jones School | \$22,700 | \$ 11,350 | \$1,262 |
| Jones School MBA | | | |
| Start 2005 | 30,900 | 15,450 | 1,717 |
| Start 2004 | 30,000 | 15,000 | 1,667 |
| Jones School EMBA | | | |
| Start 2004 (2-year rate) | 77,000 | | |
| Start 2005 (2-year rate) | 78,300 | | |
| Fees | | | |
| Health service | 350 | 175 | |
| Graduate Student Association | 20 | 10 | |
| Honor Council | 2 | 1 | |
| Student Organizations Fund | 8 | 4 | |
| Information technology | 120 | 60 | |
| Jones School activities (Jones School only) | 70 | 35 | |
| Jones School materials (Jones School only) | 1,350 | 675 | |

Away Status—Students pursuing their studies outside of the Houston area (students on “away” status) must be registered and pay tuition but are not required to pay the fees listed above, with the exception of the information technology fee.

Reduced Tuition—After six semesters of full-time study in one degree program (excluding the summer semesters), continuing students enter a reduced-tuition category of \$1,262 per year (\$631 per semester). Students who are admitted with a relevant master’s degree, i.e., a master’s degree that counts toward a doctoral program at Rice, may become eligible for reduced tuition earlier than those entering a doctoral program without a relevant master’s degree. Semesters credited toward reduced tuition will generally be limited to one degree program. In extraordinary circumstances, the Office of Graduate Studies may consider petitions for exceptions.

Health Insurance—All students, full time or part time—including those on away status—must carry health insurance (see page 11).

Other Fees—Unless students elect a special payment plan, they must pay all tuition and fees for the fall semester by the middle of August, and for the spring semester by the end of the first week of January. Past these deadlines, a late payment penalty of \$140 will be assessed.

Other fees applicable under special circumstances:

| | |
|--|-------|
| Preceptorship (per semester) | \$210 |
| Internship (per semester) | 210 |
| Study abroad fee—Fall 2005 | 140 |

| | |
|---|-------|
| Study abroad fee-Spring 2006 | 250 |
| Study abroad fee-Summer 2006 | 250 |
| Graduate application fee | 35 |
| Jones School application fee: MBA | 100 |
| Jones School application fee: EMBA | 100 |
| Part-time registration fee | 115 |
| Late registration fee | 110 |
| Failure to preregister fee | 60 |
| Late course change fee | |
| Adds: | |
| Week 1-2 | Free |
| Week 3-4 | \$ 10 |
| Week 5 and after | 50 |
| Drops: | |
| Weeks 1-4 | Free |
| Weeks 5-10 | 10 |
| Week 11 and after | 50 |
| Deferred Payment Plan late fee | 35 |
| Diploma fee: sheepskin | 105 |
| Diploma fee: parchment | 35 |
| Diploma fee: facsimile | 15 |
| Diploma mailing fee: domestic | 25 |
| Diploma mailing fee: air mail | 30 |
| Transcript fee | 5 |
| Class III registration fee | 115 |
| Class III late application fee | 80 |
| Class III late registration fee | 110 |
| Intramural fee | 15 |
| Readmission fee: graduate students only | 300 |
| Reinstatement fee: graduate students only | 100 |
| Replacement ID | 10 |

For more information, see Refund of Tuition and Fees (pages 44-45).

FINANCIAL AID

FELLOWSHIPS, SCHOLARSHIPS, AND ASSISTANTSHIPS

A range of fellowships, scholarships, and assistantships are available at Rice. Most graduate students in degree programs requiring a thesis are supported by fellowships or research assistantships.

Rice Graduate Fellowships—Doctoral students with high academic records and strong qualifications receive support through Rice fellowships. In most cases, these fellowships provide a stipend plus tuition for the nine-month academic period. Departments may nominate particularly outstanding entering students for a Rice Presidential Fellowship.

Rice Graduate Tuition Scholarships—Students whose previous records show marked promise but for whom no graduate fellowships are available may receive full or partial graduate tuition scholarships, which do not include a stipend.

Research and Teaching Assistantships—Usually funded from grants and contracts, research assistantships are available in many departments. Qualified students (usually second-year or later) receive these awards to provide assistance on faculty research projects, work that usually contributes to the student's own thesis. In

some departments, a limited number of teaching assistantships may be available to advanced students.

Fellowship, scholarship, and assistantship recipients are selected by the individual departments, subject to the approval of the Office of Graduate Studies. Students should send their applications for such awards directly to the department involved.

To receive Rice fellowships, graduate tuition scholarships, or assistantship aid, students must be engaged in full-time graduate study; part-time students and students who are not enrolled are not eligible for such aid.

Students receiving stipends from fellowships or assistantships may not accept any regular paid employment on or off campus without the explicit permission of the department. Full-time students, whether receiving stipend support or not, may not accept paid employment in excess of 20 hours per week.

LOANS AND WORK-STUDY FINANCIAL AID

In addition to fellowships, scholarships, and assistantships, the Office of Student Financial Services offers assistance in the form of loans. Interested students must file a Free Application for Federal Student Aid (FAFSA) and a Rice Graduate Financial Aid Application or a Rice Jones School Application and submit copies of income tax returns and W-2's. The priority deadline to apply is April 15. (Loan assistance through Rice is not available to Master of Liberal Studies students.)

To be eligible to apply for loans and federal work-study employment, graduate students must maintain satisfactory academic progress as defined by their departments. Should a graduate student fail to make satisfactory academic progress, the student's aid eligibility will be terminated. Graduate students who enroll for less than 5 hours in a term will not be eligible for financial aid.

Stafford Student Loans—These are low-interest loans made to students attending the university at least half-time. Subsidized Stafford loans require need-based financial aid eligibility, but unsubsidized Stafford loans are available to all students. Stafford loan eligibility is subject to annual and lifetime borrowing limits.

Loan Counseling—Students who are recipients of federal student loans will be required to complete online loan entrance counseling before funds will be credited to student accounts. Students also will be required to complete online exit counseling at the completion of a program of study at Rice. Failure to complete online exit counseling will result in a transcript hold.

Private Loan Programs—Private loans are available to graduate and MBA students. These loans are not based on need but do require credit approval from the lender and cannot exceed the student's cost of education, as determined by Rice, minus other resources.

Special Loan Programs—A Gulf Oil Corporation Foundation Loan Fund and the Benjamin S. Lindsey and Veola Noble Lindsey Memorial Loan Fund are available to help students working toward a degree meet their educational expenses, but funds are limited. Interested students may contact the Office of Student Financial Services.

The Mary Lyn and Niles Moseley Loan Fund and the Professor John A. S. Adams, Sr., Memorial Graduate Student Loan Fund—These funds provide financial assistance, in the form of loans, to graduate students at Rice University. Students wishing to apply for such a loan should obtain an application from the Graduate Studies Office. Guidelines for the program are:

- Individual loans are made for an amount not to exceed \$1,500.

- Loans are made for a period of up to one year and, upon request, may be renewable annually.
- The interest rate applicable to these loans is determined by the university.
- Graduate students must be enrolled on a full-time basis to be eligible to apply for a loan and must maintain full enrollment during the full term of the loan.
- Upon completion, applications are submitted to the vice provost for research and graduate studies for approval.
- Loans are available during the full course of the academic year.
- Loans must be repaid before graduation.

Emergency Loan Fund—Established through gifts from the Graduate Wives Club of 1972-73, the Graduate Student Association, and various faculty members, this fund makes available emergency loans to help graduate students at Rice with short-term needs. Loans are limited to \$250 and must be repaid within three months. In lieu of interest, a charge of \$5 per loan is assessed to maintain the fund.

Summer Aid—Graduate students are eligible to apply for private educational loans if they are registered during the summer term.

Other Fellowships, Honors, and Prizes—Provisions are made for a variety of fellowships, scholarships, and prizes available to graduates of this and other universities. Memorial fellowships that have been founded and endowed by gift or bequest on the part of friends of Rice University provide stipends enabling the holders to devote their time to study and research in their chosen fields. There are also several industrial fellowships maintained by companies interested in the development of technical fields and the training of competent scientists, engineers, and business executives.

Persons desiring consideration for appointment as fellows should consult with the department in which they wish to do research. However, not all fellowships are available every year.

Return of Title IV Funds—Students who receive federal funds as part of their aid packages and do not complete the academic term may be subject to returning a portion of those funds. Contact student Financial Services for information about policies and procedures regarding the return of Title IV funds.

GRADUATE STUDENT LIFE

GRADUATE STUDENT ASSOCIATION

All full-time students in the graduate program are members of the Graduate Student Association, which is the sole organization representing graduate students as a body. The governing body of this organization is the Graduate Student Association Council, consisting of a representative from each department offering graduate study and a president, vice president, secretary, and treasurer elected by the council. Graduate students also participate in university affairs through their representatives on many standing and ad hoc university committees, such as the Graduate Council, the Research Council, and various department committees.

One of the functions of the Graduate Student Association is to encourage social interaction among graduate students from different departments. To that end, the association organizes a variety of social activities open to all members of the graduate student body.

HOUSING FOR GRADUATE STUDENTS

The Rice Graduate Apartments are housed in a garden-style complex located on a 2.7-acre site just north of campus. The project features attractive landscaping and good lighting in all common areas, designed to enhance both the security and the aesthetics of pedestrian, bike, auto paths, parking, and recreational areas. Electronically controlled gates for both pedestrian and vehicular paths are provided. Handicap accessibility also is an important feature. A shuttle bus travels back and forth between the apartments and campus.

There are 112 units, including one-bedroom, two-bedroom, four-bedroom, and efficiency apartments. The complex is designed with a centrally located space for social activities, a laundry room on each floor, a study room equipped with computers, enclosed areas with locks for bike racks, and two courtyards. Every apartment has a living area, a fully equipped kitchen, cable TV connection, and a network drop for a personal computer. Housing is assigned on a space-available basis. Call 713-348-GRAD (4723) for further information.

The Morningside Square Apartments are two-story 1950s-vintage units located in a quiet neighborhood adjacent to Rice Village. They are within a short walking distance to campus, restaurants, and shopping areas. The complex is attractively landscaped and offers gated and covered parking.

There are 53 units, including one-bedroom, two-bedroom, and three-bedroom apartments. The common hallways, bedrooms, and living rooms feature oak hardwood flooring. Kitchens are equipped with a refrigerator and gas range. All units have ceiling fans, a gas furnace, and window air conditioners. Basic cable TV is provided, and a coin-operated laundry is available on site. Apartments are assigned on a space-available basis. Call 713-524-1275 for further information.

The Information Desk, the Office of Student Activities, and the Graduate Student Association keep records of available rooms and apartments listed with the university by area landlords. The daily newspaper and a weekly *Greensheet* are other sources of rental housing information. Incoming graduate students should arrive in Houston several days early to allow themselves time to find suitable housing.

HEALTH INSURANCE REQUIREMENTS FOR GRADUATE STUDENTS

Paying the student health service fee gives graduate students access to both the Student Health Service and Rice Counseling Center (see pages 11-12). New graduate students may not register for or attend classes until they have completed and returned the health data form to Rice and have met the immunization and TB screening requirements.

All graduate students must have health insurance purchased through Rice or provided by an outside source. Students may purchase insurance through the university. Rice's group coverage for the 2005-2006 academic year is effective from 12:01 A.M., August 15, 2005, until 12:01 A.M. August 15, 2006. Dependent coverage is also available. A description of the policy and the application form can be found on the Web at <http://studenthealthinsurance.rice.edu>. A waiver form, if outside insurance is provided, also can be found at this site. Students should submit either the application or waiver by August 15 each year.

CLASS III STUDENTS IN NONDEGREE PROGRAMS

Students with a 3.00 (B) or better grade average and an undergraduate or graduate degree from an accredited college or university may apply for admission as Class III students. These students may take courses for credit without being admitted to a specific degree program. Registration requires the permission of the instructor and

approval by the vice provost for research and graduate studies. Class III students must register for at least 3 hours and cannot take courses on a pass/fail or satisfactory/unsatisfactory basis. Class III students must receive at least a B for all classes taken or they will not be allowed to remain in the Class III program.

Students may not use courses taken under this arrangement to fulfill the requirements for a Rice degree unless and until they have been accepted into a degree program by an academic department (as well as, in the case of graduate students, by the vice provost for research and graduate studies) and received department approval; students are responsible for obtaining the proper approvals. Students may request that the department allow up to 3 courses taken as Class III to count toward their graduate degree.

APPLICATIONS FOR CLASS III

Applications and course request forms are available from the Office of Graduate Studies. Official transcripts from all colleges and universities the student has attended should be mailed directly by the institutions to the Office of Graduate Studies. Students who were previously Class III students must complete a new application (without transcripts) for each such semester. All application materials are due by the workday closest to August 1 for fall semester courses and December 1 for spring semester courses. Late applications are not considered after classes have begun. Individuals applying as Class III students for the summer term should apply to the Summer School for College Students (see page 36).

TUITION AND FEES FOR CLASS III

The tuition for 2005-2006 is \$1,262 per semester hour, plus a \$115 registration fee each semester. All fees are payable during registration. Students failing to submit their applications by the deadline must pay a late application fee of \$80, and students registering after the second week of class must pay a \$110 late registration fee and may also have to pay a late payment fee. For some courses, students may be charged for computer time. If a class fills with degree students, instructors may drop Class III students up to the end of the third week of class. In that case, the tuition (less \$30 of the registration fee) will be refunded. Please see page 36 for information pertaining to summer school.



DEPARTMENTS AND
INTERDISCIPLINARY
PROGRAMS

AIR FORCE SCIENCE

COMMANDER AND PROFESSOR

Colonel David L. Mintz

ASSOCIATE PROFESSORS

Captain Vince Terrell

Captain Kareem Owens

1st Lieutenant Malcolm Byrd

The Air Force ROTC program develops responsible, competent men and women prepared to assume leadership positions as commissioned officers in the active duty United States Air Force. Upon completion of the curriculum, students will have an understanding of the core values and the professional discipline of a military career. For more information on the Air Force Science program, contact the Air Force Science Department at the University of Houston by calling 713-743-4932.

COURSE CREDIT

ROTC classes may be taken for elective credit toward any degree plan at the University of Houston as well as Rice University. Freshman and sophomore level classes are open to all students. No military obligation is incurred as a result of enrollment in these courses. Junior and senior level courses are more restrictive and do require a military obligation. ROTC scholarship students also incur a military obligation.

FOUR-YEAR PROGRAM

The General Military Course (GMC) is the first half of the Four-Year Program and is taken during the freshman and sophomore years. This program allows the student to try out Air Force ROTC without obligation (unless the student is on an Air Force ROTC scholarship).

During the first two years, the student will learn about the Air Force and the historical development of aerospace power.

During the summer preceding the junior year, the student will compete for the opportunity to attend a four-week Field Training Unit. Successful completion of field training is mandatory for entrance into the Professional Officer Course (POC), the junior and senior years of the Four-Year Program.

As a junior, the student will study the leadership and management techniques needed to become an effective Air Force officer.

During the senior year, students study the national security policy process and regional issues while preparing for entrance to active duty.

Enrollment in the POC is open to graduate students if they have four semesters of school remaining. Each semester of the POC consists of three classroom hours of instruction as well as Leadership Laboratory each week.

TWO-YEAR PROGRAM

The two-year program bypasses the General Military Course (GMC) portion of the Four-Year Program and leads directly into the Professional Officer Course (POC).

This route is the best option for junior college transfer students, current college sophomores, college juniors and active duty personnel who have two years of school remaining. The student can be completing an undergraduate degree, a graduate degree, or a combination of the two. Requirements for POC include:

1. Attending an extended Field Training Unit the summer prior to entering the two year program or the summer between the junior and senior year
2. Achieving an acceptable score on the Air Force Officer Qualifying Test (AFOQT)
3. Passing a complete medical physical
4. Passing the Air Force Physical Fitness Test (PFT)

Students entering the POC must enter into a contract to pursue and accept a regular commission in the active Air Force.

LEADERSHIP LABORATORY

As an Air Force ROTC cadet, each student will be required to attend an additional class known as Leadership Laboratory.

Although it is not part of the academic class requirement, it is an essential part of officer training. Leadership Laboratory is a motivational, cadet-centered program where the student gains valuable leadership and managerial experience while learning about the Air Force way of life. On occasion, the student will have the opportunity to hear guest speakers discuss a variety of interesting topics.

AFROTC SCHOLARSHIP OPPORTUNITIES

Air Force ROTC offers four different scholarship opportunities for students at the University of Houston and Rice University:

In-College Scholarship Program (ICSP)—is a highly competitive scholarship program aimed primarily at college freshmen and sophomores in any major (students with a bachelor's degree can compete to earn a master's degree). The ICSP awards cover tuition capped at either \$15,000 per year plus \$510 per year for books or \$9,000 per year plus \$510 per year for books.

The Express Scholarship Program—is operated on a fully qualified basis: those who meet the qualifications are awarded the scholarship. Though the list of eligible college majors differs from year to year, the express scholarship pays up to \$15,000 tuition per year and \$510 for books. The processing of the scholarship award is completed at the local detachment.

General Military Course Incentive (POCI)—is a fully qualified scholarship program open to college students in the spring semester of their sophomore year. This program is open to students in any major. The GMCI provides up to \$1,500 in tuition and fees for eligible students. The GMCI does not pay for books.

Professional Officer Course Incentive (POCI)—is a fully qualified scholarship program open to college students in their junior or senior year (or to those with a bachelor's degree who will pursue a master's degree). POCI is open to any major. The POCI provides up to \$3,000 in tuition and fees each year and \$450 per year for books. POCI may be paid for up to two years.

STIPEND

All AFROTC scholarship recipients and POC cadets receive a nontaxable monthly stipend. The annual stipend amount ranges from around \$2,000 per year to 4,000 per year depending on the recipient's enrollment year.

For additional information on AFROTC scholarship opportunities, please visit the AFROTC website at www.afrotc.com or call 1-800-4AFROTC.

FIELD TRAINING (FT)

Cadets completing the General Military Course attend four weeks of field training (FT) during the summer at a selected Air Force base. Those who have not completed the GMC attend an extended FT Unit. This rigorous program of leader-

ship training, physical conditioning and academics assesses the cadet's potential to be an Air Force officer.

Cadets also receive survival and firearms training, career information, and an opportunity for a military aircraft orientation flight. Cadets receive travel pay and daily pay for FT.

PROFESSIONAL DEVELOPMENT TRAINING (PDT)

Cadets are eligible to compete to attend PDT during summer months.

PDT consists of several programs, including:

- Army Airborne
- United States Air Force Academy (USAFA) Survival Training
- USAFA Soaring
- USAFA Freefall Parachute Training
- Cadet Training Assistant
- The British Exchange program

Cadets receive travel pay and daily pay for the majority of these programs.

For more information contact Colonel David Mintz at 713-743-4932, or visit the University of Houston Air Force website at www.uh.edu/afrotc.

See AFSC in the Courses of Instruction section (these are University of Houston listings).

ANCIENT MEDITERRANEAN CIVILIZATIONS

THE SCHOOL OF HUMANITIES

DIRECTOR AND ADVISOR

Donald Ray Morrison

PROFESSORS

James D. Faubion

Michael Maas

Roderick J. McIntosh

Susan Keech McIntosh

Donald Ray Morrison

Harvey E. Yunis

ASSOCIATE PROFESSORS

Matthias Henze

Hilary S. Mackie

Carol E. Quillen

Paula Sanders

ASSISTANT PROFESSORS

David Cook

Eva Haverkamp

Scott McGill

Caroline Quenemoen

LECTURER

Kristine Gilmartin Wallace

VISITING ASSISTANT PROFESSOR

Eric Adler

DEGREE OFFERED: BA

This interdisciplinary major in the cultures of ancient Greece and Rome, Judaism, early Christianity, and early Islam, as well as their antecedents, explores these traditions both for their intrinsic interest and for the contributions each has made to contemporary Western society. Our combined focus on ancient cultural history in its broadest sense and on perspectives offered by cultural criticism enables students to examine the beginnings of the civilization in which they now participate.

Courses for this major address common questions about the transmission and transformation of cultures in the ancient Mediterranean world. Students examine sources, such as texts, artifacts, and institutions that illuminate the process. They study how shifting cultural centers and frontiers in this world are delineated, and they explore the general integration and disintegration of specific ancient cultures. This major also offers opportunities for archaeological fieldwork and study abroad.

Rice is a sponsor of the American School of Classical Studies at Athens, the American School of Oriental Research, and the Intercollegiate Center for Classical Studies in Rome. Students majoring in Ancient Mediterranean Civilizations are encouraged to study in these programs as well as in the College Year in Athens program.

DEGREE REQUIREMENTS FOR BA IN ANCIENT MEDITERRANEAN CIVILIZATIONS

Students must take one course from three of the five following categories: 1) Graeco-Roman Civilization, 2) Islamic Civilization, 3) Jewish Civilization, 4) Christian Civilization, and 5) Archaeological Methods & Theory. In addition, students must take one course that addresses the creation, transmission, and reception of traditions in the Mediterranean world. Courses that meet this requirement are designated as "Themes Across Time."

Students must also fulfill a comparative requirement by taking either one course that, in and of itself, treats two different cultural traditions (designated "Comparative") or two separate courses on similar themes but from different cultures (e.g. Women in Greece & Rome, Women in the Islamic World). Although not required, courses in ancient languages are recommended. A minimum of five courses must be taken at the 300 level or above.

For general university requirements, see the Graduation Requirements in this publication. Majors in Ancient Mediterranean Civilizations must complete at least thirty (30) semester hours (10 courses). Students must take a core course (HIST 200, CLAS 107, or CLAS 108) near the beginning of their studies, and may select from the following courses to fulfill their requirements for the major.

Please note that not all courses listed below will be offered during the academic year. For a current list of AMC courses that will be offered in fall 2005 and spring 2006, please visit the AMC web site at <http://amc.rice.edu>.

Core Courses

CLAS 107 *Greek Civilization and Its Legacy*
 CLAS 108 *Roman Civilization and Its Legacy*
 HIST 200 *Origins of Western Civilizations: Ancient Empires*
 HUMA 109 *Greek Civilization and Its Legacy*

Graeco-Roman Civilization

ANTH 321 *Text as Property, Property as Text: Across the Ages*
 ANTH 325 *Sex, Self, and Society in Ancient Greece*
 ANTH 363 *Early Civilizations*
 CLAS 101 *Socrates: The Man and His Philosophy*
 CLAS 107 *Greek Civilization and Its Legacy*
 CLAS 108 *Roman Civilization and Its Legacy*
 CLAS 209 *Greek and Roman Drama*
 CLAS 220 *The Novel in Classical Antiquity*
 CLAS 225 *Women in Greece and Rome*
 CLAS 235 *Classical Mythology: Interpretation, Origins, and Influence*
 CLAS 311 *Text as Property, Property as Text: Across the Ages*
 CLAS 312 *Greek Art and Architecture*
 CLAS 315 *Roman Art and Architecture*
 CLAS 316 *Democracy and Political Theory in Ancient Greece*
 CLAS 318 *The Invention of Paganism in the Roman Empire*
 CLAS 320 *The Age of Augustus*
 CLAS 336 *The Origin of the Languages of Europe*
 CLAS 337 *Epic and Novel*
 ENGL 335 *Epic and Novel*
 FSEM 101 *Socrates: The Man and His Philosophy*
 FSEM 151 *The Hero and His Companion from Gilgamesh to Sam Spade*
 GREE 101 *Introduction to Ancient Greek I*

GREE 102 *Elementary Greek II*
 GREE 201 *Intermediate Greek I: Prose*
 GREE 202 *Intermediate Greek II: Prose*
 GREE 301 *Advanced Greek*
 HART 204 *Art as Civilization*
 HART 218 *Special Topics: Ancient Greek Sites*
 HART 219 *Independent Study: Ancient Art*
 HART 228 *Special Topics: Christian, Byzantine, and Islamic Art*
 HART 229 *Independent Study: Christian, Byzantine, and Islamic Art*
 HART 312 *Greek Art and Architecture*
 HART 315 *Roman Art and Architecture*
 HART 320 *The Age of Augustus*
 HART 417 *Buried Cities: The Art and Architecture of Akrotiri, Pompeii, and Herculaneum*
 HART 428 *Special Topics: Early Christian, Byzantine, and Islamic Art*
 HART 429 *Independent Study: Early Christian, Byzantine, and Islamic Art*
 HIST 113 *God, Time, and History*
 HIST 151 *The Hero and His Companion from Gilgamesh to Spiderman*
 HIST 200 *Origins of Western Civilizations: Ancient Empire*
 HIST 202 *Introduction to Medieval Civilization: The Early Middle Ages*
 HIST 223 *Empires and Communities in the Middle Ages*
 HIST 257 *Jews and Christians in Medieval Europe*
 HIST 262 *Rome: City and Empire*
 HIST 304 *Imperialism and Its Critics in the Roman World*
 HIST 306 *The Roman Republic*
 HIST 307 *Imperial Rome from Caesar to Diocletian*
 HIST 308 *The World of Late Antiquity*

HIST 316 *The Invention of Paganism in the Roman Empire*
 HIST 323 *Empires and Communities in the Middle Ages*
 HIST 357 *Jews and Christians in Medieval Europe*
 HIST 358 *European Intellectual History from Augustine to Descartes*
 HIST 382 *Classical Islamic Cultures*
 HIST 437 *Christians and Jews in the Medieval Islamic World*
 HIST 438 *Women and Gender in the Medieval Islamic Societies*
 HIST 460 *Advanced Seminar in Ancient History*
 HUMA 109 *Greek Civilization and Its Legacy*
 HUMA 113 *God, Time, and History*
 LATI 101 *Elementary Latin I*
 LATI 102 *Elementary Latin II*
 LATI 201 *Intermediate Latin I: Prose*
 LATI 202 *Intermediate Latin II*
 LATI 301 *Advanced Latin: Literature of Exile in the Roman Tradition*
 LATI 302 *Advanced Latin: Roman Epic*
 LATI 303 *Advanced Latin: Plautus and Terence*
 LATI 311 *Latin Pastoral Poetry*
 LATI 312 *Advanced Latin: Ovid*
 LATI 313 *Cicero and Catullus: Literature and Society in the Roman Republic*
 MDST 101 *Elementary Latin I*
 MDST 102 *Elementary Latin II*
 MDST 202 *Introduction to Medieval Civilization: The Early Middle Ages*
 MDST 211 *Intermediate Latin I: Prose*
 MDST 212 *Intermediate Latin II*
 MDST 223 *Empires and Communities in the Middle Ages*
 MDST 257 *Jews and Christians in Medieval Europe*
 MDST 308 *The World of Late Antiquity*
 MDST 357 *Jews and Christians in Medieval Europe*
 MDST 358 *European Intellectual History from Augustine to Descartes*

MDST 382 *Classical Islamic Cultures*
 MDST 385 *Christians and Jews in the Medieval Islamic World*
 MDST 438 *Women and Gender in the Medieval Islamic Societies*
 MDST 460 *Advanced Seminar in Ancient History*
 RELI 123 *God, Time, and History*
 RELI 316 *The Invention of Paganism in the Roman Empire*
 WGST 225 *Women in Greece and Rome*
 WGST 332 *Sex, Self, and Society in Ancient Greece*
 WGST 455 *Women and Gender in the Medieval Islamic Societies*

Islamic Civilization

ASIA 221 *The Life of the Prophet Mubammad*
 ASIA 441 *Popular Religion in the Middle East*
 HIST 382 *Classical Islamic Cultures*
 HIST 437 *Christians and Jews in the Medieval Islamic World*
 HIST 438 *Women and Gender in the Medieval Islamic Societies*
 MDST 382 *Classical Islamic Cultures*
 MDST 385 *Christians and Jews in the Medieval Islamic World*
 MDST 438 *Women and Gender in the Medieval Islamic Societies*
 RELI 141 *Introduction to Islam*
 RELI 221 *The Life of the Prophet Mubammad*
 RELI 223 *Qur'an and Commentary*
 RELI 350 *Sacred Scriptures in Monotheistic Faiths*
 RELI 354 *Asian Apocalyptic Movements*
 RELI 441 *Popular Religion in the Middle East*
 WGST 455 *Women and Gender in the Medieval Islamic Societies*

Jewish Civilization

HIST 113 *God, Time, and History*
 HUMA 113 *God, Time, and History*
 RELI 122 *The Bible and Its Interpreters*
 RELI 123 *God, Time, and History*
 RELI 125 *Introduction to Biblical Hebrew I*
 RELI 126 *Introduction to Biblical Hebrew II*

RELI 127 *Intermediate Biblical Hebrew I*
 RELI 128 *Intermediate Biblical Hebrew II*
 RELI 209 *Introduction to Judaism*
 RELI 210 *Ethics in Judaism*
 RELI 350 *Sacred Scriptures in
 Monotheistic Faiths*
 RELI 383 *The Dead Sea Scrolls*

Christian Civilization

RELI 122 *The Bible and Its Interpreters*
 RELI 125 *Introduction to Biblical Hebrew I*
 RELI 126 *Introduction to Biblical Hebrew II*
 RELI 127 *Intermediate Biblical Hebrew I*
 RELI 128 *Intermediate Biblical Hebrew II*
 RELI 223 *Qur'an and Commentary*
 RELI 243 *The Book of Genesis*
 RELI 282 *Introduction to Christianity*
 RELI 350 *Sacred Scriptures in
 Monotheistic Faiths*
 RELI 381 *The Messiah*
 RELI 383 *The Dead Sea Scrolls*
 RELI 410 *Apocalypse Then and Now*

Archaeological Methods and Theory

ANTH 203 *Human Antiquity: An Introduction
 to Physical Anthropology and Prehistory*
 ANTH 205 *Introduction to Archaeology*
 ANTH 345 *The Politics of the Past:
 Archaeology in Social Context*
 ANTH 362 *Archaeological Field Techniques*
 ANTH 363 *Early Civilizations*
 ANTH 425 *Advanced Topics in Archaeology*
 ANTH 460 *Advanced Archaeological Theory*

Themes Across Time

ANTH 321 *Text as Property, Property as Text:
 Across the Ages*
 ANTH 363 *Early Civilizations*
 CLAS 311 *Text as Property, Property as Text:
 Across the Ages*
 FSEM 151 *The Hero and His Companion from
 Gilgamesh to Sam Spade*
 HART 101 *Introduction to the History of
 Western Art: Prehistoric to Gothic*
 HIST 113 *God, Time, and History*
 HIST 151 *The Hero and His Companion from
 Gilgamesh to Spiderman*

HIST 200 *Origins of Western Civilizations:
 Ancient Empires*
 HIST 308 *The World of Late Antiquity*
 HIST 358 *European Intellectual History from
 Augustine to Descartes*
 HUMA 113 *God, Time, and History*
 MDST 308 *The World of Late Antiquity*
 MDST 358 *European Intellectual History from
 Augustine to Descartes*
 PHIL 201 *History of Philosophy I*
 PHIL 301 *Ancient and Medieval Philosophy*
 PHIL 307 *Social and Political Philosophy*
 PHIL 327 *History of Social and
 Political Philosophy*
 RELI 123 *God, Time, and History*

Comparative

CLAS 209 *Greek and Roman Drama*
 CLAS 225 *Women in Greece and Rome*
 CLAS 336 *The Origin of the Languages
 of Europe*
 CLAS 337 *Epic and Novel*
 ENGL 335 *Epic and Novel*
 HIST 357 *Jews and Christians in
 Medieval Europe*
 HIST 437 *Christians and Jews in the Medieval
 Islamic World*
 HIST 438 *Women and Gender in the Medieval
 Islamic Societies*
 MDST 357 *Jews and Christians in
 Medieval Europe*
 MDST 385 *Christians and Jews in the
 Medieval Islamic World*
 MDST 438 *Women and Gender in the
 Medieval Islamic Societies*
 PHIL 501 *Seminar in Ancient and
 Medieval Philosophy*
 WGST 225 *Women in Greece and Rome*
 WGST 455 *Women and Gender in the
 Medieval Islamic Societies*

ANTHROPOLOGY

THE SCHOOL OF SOCIAL SCIENCES

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Roderick J. McIntosh

Susan Keech McIntosh

Julie M. Taylor

Stephen A. Tyler

ASSOCIATE PROFESSOR

Eugenia Georges

ASSISTANT PROFESSORS

Christopher Kelty

Hannah Landecker

Amy Ninetto

ADJUNCT PROFESSOR

Patricia Seed

ADJUNCT ASSISTANT PROFESSOR

Deepa Reddy

DEGREES OFFERED: BA, MA, PHD

The major in anthropology has 2 areas of concentration: cultural anthropology and archaeology. The focus in cultural anthropology is on contemporary theoretical issues. By reading primary sources, students gain an exposure to the styles of argument and reasoning of a broad range of theorists. They can then engage in the ongoing discussion and definition of central problems within the field. Fieldwork and ethnography are important in the doctoral research.

In archaeology, the focus is on research skills in the library, the field, and the laboratory. Most students also develop at least one analytical skill, such as remote sensing, archaeological statistics, osteology, or geomorphology, drawing on the university's extensive laboratory and computer facilities.

Students may organize a major in one or both fields or combine a major in anthropology with one in another discipline.

DEGREE REQUIREMENTS FOR BA IN ANTHROPOLOGY

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in anthropology must:

- Complete a total of 30 semester hours of departmental courses (10 courses), at least 18 of which should be at the 300 level or above
- Have a plan of study approved by the undergraduate adviser

With department approval, students may substitute for departmental courses at most 6 hours of courses from outside the major that are related to their plan of study. The department recommends that students intending to pursue graduate study acquire a reading knowledge of 1 or 2 European languages.

Honors Program—Majors considering a career in anthropology should apply to the honors program, as should those who wish to include advanced training and an intensive, individual research project in their undergraduate education. Anthropology faculty determine acceptance into the program. More information is available from the department office; see also Honors Programs (page 26).

ARCHAEOLOGICAL FIELD SCHOOL ON GORÉE ISLAND, SENEGAL

The Department of Anthropology offers a 6-week field school in June and July on the island of Gorée, located off the coast of Senegal just a short ferry ride away from the capital of Dakar. The field school excavations are part of ongoing investigations into the growth and development of Gorée as a supply port for the Atlantic trade, occupied and serviced by a polycultural population of slaves, Europeans, mainland

Africans, and mixed-race female landowners, known as *signares*. Two courses, ANTH 364 and 370, are offered for a total of 6 hours credit. The courses are offered without specific prerequisites, but there is a general requirement that students have some prior coursework in archaeology or African history. Program fees apply.

DEGREE REQUIREMENTS FOR MA AND PHD IN ANTHROPOLOGY

Because each field of specialization offers different opportunities for training and different research orientations, the department seeks applicants with a defined interest in either cultural anthropology or archaeology; an undergraduate background in anthropology is desirable but not required. Entering students devise a detailed first-year plan of study and provisional plans for succeeding years in consultation with an adviser. The plan should emphasize broad training in the selected field before the eventual definition of a project for dissertation research. For general university requirements, see Graduate Degrees (pages 57-58).

MA Program—Graduate students may earn the MA after obtaining approval of their candidacy for the PhD. For the MA as a terminal degree, students must complete:

- 30 semester hours of approved course work
- 1 of the 3 special papers required for the PhD
- A thesis

PhD Program—For the PhD degree, students must accomplish the following:

- Complete 3 substantial papers, each emphasizing an analytical, research, and writing skill appropriate to their field of specialization (should be completed during the first two years of study)
- Demonstrate reading competency in 1 foreign language
- Prepare a satisfactory proposal for dissertation research, based in substantial part on field research
- Complete and defend the dissertation

Special Options—The department will arrange **seminars and tutorials** on any topic relevant to a student's training; these seminars may be conducted in supervisory consultation with scholars in other disciplines as well as with adjunct faculty. Students interested in the specialized field of **medical anthropology** may take advantage of the extensive resources of the Texas Medical Center through ties established with the University of Texas School of Public Health and Graduate School of Biomedical Sciences; students may earn degree credit for formal courses taken at both schools.

Financial Support—All first-year students receive the same level of support: a combination of graduate fellowships and tuition scholarships. These awards are renewed for a further two years of study.

See ANTH in the Courses of Instruction section.

APPLIED PHYSICS GRADUATE PROGRAM

THE RICE QUANTUM INSTITUTE

DIRECTOR OF APPLIED PHYSICS GRADUATE PROGRAM

D. Natelson

PARTICIPATING FACULTY

This program is open to faculty from physics and astronomy, chemistry, mechanical engineering and materials science, electrical and computer engineering, bioengineering, computational and applied mathematics, civil and environmental engineering, and chemical engineering.

DEGREES OFFERED: MS, PHD

A joint effort of both the natural sciences and the engineering divisions at Rice, overseen by the Rice Quantum Institute (RQI), the Applied Physics Program (APP) is administered by a committee composed of members from the participating departments mentioned above. The objective is to provide an interdisciplinary graduate education in the basic science that underlies important technology. The faculty believes that the experience obtained by performing research at the intellectually stimulating interface of physical science and engineering is particularly effective in producing graduates who succeed in careers based on new and emerging technologies.

Due to the interdisciplinary nature of the program, students can access virtually any of the research facilities in either the natural sciences or engineering schools of Rice University. The Applied Physics Committee (APC) urges prospective students to contact individual departments or RQI for detailed descriptions of research facilities and ongoing research projects. Within RQI alone, there are more than 100 separate projects, and there are numerous other research opportunities.

DEGREE REQUIREMENTS

The Applied Physics Program offers master's and PhD degrees. For each degree, the student must fulfill the University requirements set forth in the catalog under which he/she entered. The semester hour requirements may be fulfilled both by classroom hours and research hours. A total of nine one-semester graduate level courses is required for the Master's Degree in Applied Physics, ordinarily a requirement for advancement to candidacy in the PhD program. Four of these are core courses required of all students, and five are elective courses chosen according to individual research goals. The Applied Physics Committee may waive some course requirements for students who demonstrate a thorough knowledge of material in one or more core/elective course(s). The student will normally be expected to complete the course requirements in three semesters and maintain a minimum grade point average of 3.0 in core courses as well as a 3.0 average in all courses taken.

By the end of the third year in the program, all APP students should have completed the university requirements for a master's degree, fulfilled the course requirements of the APP and defended a master's thesis in a public oral examination by a committee approved by the APC. The examination covers the work reported in the thesis as well as the entire field in which the student intends to work toward to PhD. The examining committee votes separately on awarding the masters degree and on admission to candidacy for the PhD. Fulfillment of all university degree

requirements and successful defense of a PhD thesis in a public examination by an APC approved committee is necessary for the PhD.

Core courses

Quantum Mechanics I (PHYS 521 or CHEM 530)

Quantum Mechanics II or *Statistical Physics* (PHYS 522 or PHYS 526 or CHEM 531 or CHEM 520)

Classical Electrodynamics (PHYS 532)

Introduction to Solid State Physics I (PHYS 563/ELEC 563)

It is assumed that the student has an adequate background in classical mechanics, electrostatics, and statistical and thermal physics. This background is determined from interviews or exams given to entering students by the APC or the host department.

Elective courses (5 required)

BIOE 584 *Lasers in Medicine and Bioengineering*

BIOE 589/BIOS 589 *Computational Molecular Biophysics*

BIOE 610/PHYS 600 *Methods of Molecular Simulation/Advanced Topics in Physics*

CENG 630 *Chemical Engineering of Nanostructured Materials*

CHEM 495 *Transition Metal Chemistry*

CHEM 515 *Chemical Kinetics & Dynamics*

CHEM 520 *Classical and Statistical Thermodynamics*

CHEM 530 *Quantum Mechanics I/Quantum Chemistry*

CHEM 531 *Quantum Mechanics II/Quantum Chemistry*

CHEM 533 *Nanostructure & Nanotechnology*

CHEM 547 *Supramolecular Chemistry*

CHEM 611 *High Temperature and High Pressure Chemistry*

CHEM 630 *Molecular Spectroscopy*

ELEC 462 *Semiconductor Devices*

ELEC 463 *Lasers and Photonics*

ELEC 465 *Physical Electronics Practicum*

ELEC 560 *Linear/Nonlinear Fiber Optics*

ELEC 561 *Topics in Semiconductor Manufacturing*

ELEC 562 *Submicrometer & Nanometer Device Technology*

ELEC 564/PHYS 564 *Introduction to Solid State Physics II*

ELEC 565 *Topics in Quantum Semiconductor Nanostructures*

ELEC 567 *Applied Quantum Mechanics*

ELEC 568 *Laser Spectroscopy*

ELEC 569 *Ultrafast Optics*

ELEC 591 *Optics*

ELEC 592 *Topics in Quantum Optics (Nonlinear Optics)*

ELEC 603 *Topics in Micro- and Nano-Photonics*

ELEC 691 *Seminar Topics in Nanotechnology*

MECH 679 *Applied Monte Carlo Analysis*

MECH 682 *Convective Heat Transfer*

MECH 683 *Radiative Heat Transfer I*

MECH 684 *Radiative Heat Transfer II*

MSCI 402 *Mechanical Properties of Materials*

MSCI 523 *Properties, Synthesis, and Design of Composite Materials*

MSCI 535 *Crystallography and Diffraction*

MSCI 597 *Polymer Synthesis, Soft Materials and Nanocomposites*

MSCI 610 *Crystal Thermodynamics*

MSCI 614 *Principles of Nanoscale Mechanics*

MSCI 615 *Thin Film Failure Analysis, Measurement & Reliability*

MSCI 623 *Analytical Spectroscopies*

MSCI 634 *Thermodynamics of Alloys*

MSCI 635 *Transformation of Alloys*

MSCI 645/ELEC 645 *Thin Films*

MSCI 666 *Conduction Phenomena in Solids*

PHYS 480 *Introduction to Plasma Physics*

PHYS 512 *Ionospheric Physics*

PHYS 515 *Classical Dynamics*

PHYS 516 *Mathematical Methods*

PHYS 521 *Quantum Mechanics I*

PHYS 522 *Quantum Mechanics II*

PHYS 526 *Statistical Physics*

PHYS 533/534 *Nanostructures and Nanotechnology I/II*

PHYS 537/538 *Methods of Experimental Physics I/II*

PHYS 539 *Characterization and Fabrication at the Nanoscale*

PHYS 564/ELEC 564 *Introduction to Solid State Physics II*

PHYS 566 *Surface Physics*

PHYS 571 *Modern Atomic Physics and Quantum Optics*

PHYS 572 *Fundamentals of Quantum Optics*

PHYS 663 *Condensed Matter Theory: Applications*

PHYS 664 *Condensed Matter Theory: Many-Body Formalism*

No courses may be used for both core and elective courses. Due to overlap of curricula, only one from each of the pairs PHYS 521/CHEM 530, PHYS 522/CHEM 531, and PHYS 526/CHEM 520 may be used for the nine required courses.

ARCHITECTURE

THE SCHOOL OF ARCHITECTURE

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ASSOCIATE DEAN

John J. Casbarian

PROFESSORS

William T. Cannady

Carlos Jimenez

Albert H. Pope

Gordon G. Wittenberg, Jr.

ASSOCIATE PROFESSORS

John Biln

Farès el-Dahdah

Sanford Kwinter

Spencer W. Parsons

ASSISTANT PROFESSORS

Dawn Finley

David Guthrie

Christopher Hight

Nana Last

Clover Lee

LECTURERS

Alan Fleishacker

James Furr

Tom Lord

Mark Oberholzer

Frank S. White

PROFESSORS IN PRACTICE

Nonya S. Grenader

Douglas E. Oliver

ADJUNCT LECTURER

Stephen Fox

CAUDILL VISITING ASSISTANT PROFESSOR

Sean Lally

VISITING SMITH PROFESSOR

Danny M. Samuels

VISITING CULLINAN PROFESSOR

Mark Wamble

DEGREES OFFERED: BA, BARCH, MARCH, MARCH IN URBAN DESIGN, DARCH

The principal goal of the School of Architecture is to contribute to a more humane environment. The school focuses on teaching and research, the development of a broad liberal education for undergraduates in the allied sciences and arts of architecture, and professional graduate and postgraduate education in architecture and urban design. Intimate student-faculty interaction, academic freedom, and unrestricted institutional cooperation within and outside the university are distinctive qualities of the architecture degree programs at Rice.

"In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes two types of degree: the Bachelor of Architecture and the Master of Architecture. A program may be granted a six-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards.

Masters degree programs may consist of a pre-professional undergraduate degree and a professional degree, which, when earned sequentially, comprise an accredited professional education. However, the professional degree is not, by itself, recognized as an accredited degree."—National Architectural Accrediting Board

The undergraduate programs maintain a balance between academic studies and professional practice. Lectures and other public programs, visiting faculty, scholarly presentations, and the Preceptorship Program, which provides a one-year

internship in outstanding architectural offices throughout the U.S., Europe, and Japan, all complement the school's core of distinguished teachers and practitioners.

The graduate programs have three areas of emphasis: architectural design, with particular attention paid to history, theory, and practice; urban design, where the concern is the emerging form of the American city; and research in computer visualization, which uses the resources of the state-of-the-art Rice Advanced Visualization Lab.

DEGREE REQUIREMENTS FOR BA IN ARCHITECTURE OR ARCHITECTURAL STUDIES

For general university requirements, see Graduation Requirements (pages 14–15). The conditions specified here for each major also satisfy the university distribution requirements.

BA in Architecture—The curriculum for architecture majors is divided into a foundation sequence taken in the freshman and sophomore years and a preprofessional sequence taken in the junior and senior years. The foundation sequence consists of four semesters of design studios and other related courses in architecture. The first-semester studio develops basic design skills through directed explorations and problem-solving exercises in form, texture, color, material, and structures. In the subsequent 3 studios, through a carefully sequenced series of exercises, students are introduced to a broad range of architectural design issues, processes, and methods. Students are required to take 4 courses in the history and theory of art and architecture during the freshman and sophomore years in addition to two semesters of architectural technology. They must also complete university distribution requirements. It is recommended that students take an introductory drawing course during their first two years of study to develop visual skills.

Students who satisfactorily complete the foundation sequence may, upon approval of their major, enter the junior and senior year preprofessional sequence. The fall studios for the third and fourth years are organized around the workshop model and emphasize complex building/computer applications and urban design issues, respectively. The spring studios are vertically integrated, allowing students to select offerings emphasizing specialized design topics such as technology, landscape, historical precedent, and urban design. During the third and fourth years, students are required to take 2 additional technology courses and to fulfill all remaining school or university distribution requirements. Students wishing to pursue the professional degree in architecture may apply for admission to the Bachelor of Architecture (BArch.) degree program during the second semester of the fourth year.

BA in Architectural Studies—Students who have been admitted as architecture majors and who have successfully completed the two-year foundation program may choose the architectural studies curriculum. The first four semesters of the curriculum are identical to the foundation sequence of the architecture major except for the omission of 1 technology course. Subsequent requirements are the completion of 1 additional studio and 4 elective courses in architecture. The program provides basic preparation for later professional study while allowing students to pursue other academic interests in depth.

TYPICAL CURRICULUM FOR BA IN ARCHITECTURE

First Semester

ARCH 101 *Principles of Architecture I*
 HART 101 *Introduction to History of Art*
 PHYS 101 *Mechanics (with lab)*
 LPAP 101 *Lifetime Physical Activities*
 Approved architecture-restricted distribution
 course in humanities

Second Semester

ARCH 102 *Principles of Architecture I*
 ARCH 132 *Freshman Seminar*
 HART 102 *Introduction to History of Art*
 LPAP 102 *Lifetime Physical Activities*
 MATH 101 *Single Variable Calculus*
 Approved architecture-restricted distribution
 course in humanities

Third Semester

ARCH 201 *Principles of Architecture II*
 ARCH 207 *Introduction to the Design of
Structures*
 ARCH 345 *Architecture and the City I*
 Studio Art Elective*
 Elective*

Fourth Semester

ARCH 202 *Principles of Architecture II*
 ARCH 214 *Design of Structures II*
 ARCH 346 *Architecture and the City II*
 Approved architecture-restricted distribution
 course in social sciences
 Elective*

Fifth Semester

ARCH 301 *Principles of Architecture III*
 ARCH 315 *Building Climatology*
 Architectural Theory Elective
 Elective*
 Elective*

Sixth Semester

ARCH 302 *Principles of Architecture III*
 ARCH 316 *Design of Structures III*
 Elective*
 Elective*
 Elective*

Seventh Semester

ARCH 401 *Principles of Architecture IV*
 Elective*
 Elective*
 Elective*

8th Semester

ARCH 402 *Principles of Architecture IV*
 Elective*
 Elective*
 Elective*

*All courses must be selected to satisfy both architecture major requirements and university distribution requirements.

DEGREE REQUIREMENTS FOR A BACHELOR OF ARCHITECTURE (BARCH)

The Bachelor of Architecture program is only open to students who have completed the undergraduate preprofessional architecture program at Rice. Upon admission, students are assigned a preceptorship, which takes place immediately after receipt of the Bachelor of Arts in Architecture degree. The preceptorship program balances academic learning with professional experience. Qualified students who have been admitted to the BArch. degree program are assigned to work for a year in the United States or abroad with leading architectural offices designated by the school as preceptors. The BArch. degree requires the successful completion of the BA in architecture, completion of the two-semester preceptorship, and completion of 2 graduate studios and 5 approved lecture or seminar courses.

PRECEPTORS**Allied Works**

Portland

Arquitectonica

Miami

Backen Arrigoni & Ross, Inc.

San Francisco

Cambridge Seven Associates

Cambridge

GenslerHouston, London, Los Angeles,
San Francisco, Santa Monica**Michael Graves Architects**

Princeton

Kohn Pedersen Fox, Architects

London, New York

Lake/Flato Architects

San Antonio

Machado-Silvetti Associates

Boston

Richard Meier and Partners

Los Angeles

Mitchell Giurgola

New York

NBBJ

Seattle

Office dA, Inc

Boston

Ong & Ong Architects

Singapore

Pei, Cobb, Freed & Partners

New York

Cesar Pelli & Associates

New Haven

Renzo Piano Building Workshop

Genoa, Paris

Robert A. M. Stern Architects

New York

Rogers Marvel Architecture

New York

SOM

San Francisco

Venturi Scott-Brown & Associates

Philadelphia

Weiss/Manfredi Architects

New York

Zimmer Gunsul & Frasca

Los Angeles

MASTER OF ARCHITECTURE

The Master of Architecture (MArch) program prepares graduates for a full range of professional activities in the field of architecture. It is offered to individuals who possess a bachelor's degree. Students follow a course of study in all four areas of the curriculum: design; history, theory, and criticism; structures, practice, and environments; and computing, logic, and representation. These areas of study are sustained by groups of courses from which students may choose offerings according to the requirements of their particular program. Strong emphasis is given to developing design skills, logic, and imagination through an intensive series of design studio courses. Students are also required to prepare an independent thesis before graduating. A potential exists for dual degrees.

The Master of Architecture program is accredited by the National Architectural Accrediting Board (NAAB). It leads to the degree of Master of Architecture, which qualifies graduates to take the state professional licensing examination after completing the required internship in an architectural office.

Programs of Study—Three program options are available at the Master of Architecture level. Options 1, 2, and 3 differ according to the bachelor's degree received before entering the graduate program.

OPTION 1

Seven-Semester Program—Option 1 is offered to individuals who hold a four-year undergraduate degree with a major in a field other than architecture. Preference for admission is given to those who have completed a balanced education in the arts, sciences, and humanities. A minimum of two semesters of

college-level courses in the history of art and/or architecture are recommended; so is a minimum of one semester of college-level courses in mathematics or physics. Previous preparation in the visual arts is also desirable as are courses in philosophy, literature, and economics.

To graduate, students must complete a four-semester core curriculum (76 credit hours), which is followed by a three-semester advanced curriculum (57 credit hours). Course work in both core and advanced curricula consists of 7 studios (including thesis) and 20 distribution courses (133 credit hours).

Core Curriculum

First Semester

ARCH 501 *Core Design Studio I*

ARCH 507 *Introduction to Design of Structures II*

ARCH 635 *Architecture Computer Graphics Overview*

ARCH 685 *Architecture and Society I*

Second Semester

ARCH 502 *Core Design Studio II*

ARCH 514 *Design of Structures II*

ARCH 532 *Introduction to Digital Visualization and Communication*

ARCH 686 *Architecture and Society II*

Third Semester

ARCH 503 *Core Design Studio III*

ARCH 516 *Environmental Control Systems*

ARCH 683 *20th-Century History of Ideas in Architecture*

Dist. Elective (Comp., Log., and Repr.)

Fourth Semester

ARCH 504 *Architectural Problems*

ARCH 515 *Design of Structures III*

ARCH 623 *Professionalism and Manag. in Architecture*

Dist. Elective (Hist., Theory, and Crit.)

Advanced Curriculum

Fifth Semester

ARCH 601 *Architectural Problems*

Dist. Elective (Hist., Theory, and Crit.)

Dist. Elective (Comp., Log., and Repr.)

Elective

Sixth Semester

ARCH 602 *Architectural Problems*

ARCH 702 *Pre-Thesis Preparation*

Dist. Elective (*Struct., Pract., and Env.*): *Sustainability*

Elective

Seventh Semester

ARCH 703 *Thesis Studio* or equivalent

Elective

Elective

OPTION 2

Five-Semester Program—Option 2 is offered to individuals who hold a four-year undergraduate degree with a major in architecture. Preference for admission is given to those who have successfully completed between four and six semesters of undergraduate design studio as well as undergraduate courses that are analogous to those given in the first year of Option 1. A minimum of two semesters of college-level courses in the history of art and/or architecture are recommended; so is a minimum of one semester of college-level courses in mathematics and physics.

Students in this program enter into the second year of the core curriculum (two semesters, 38 credit hours), followed by the advanced curriculum (three semesters, 57 credit hours). Course work in both core and advanced curricula consists of 5 studios (including thesis) and 14 distribution courses (95 credit hours).

First Semester

ARCH 503 *Core Design Studio III*
 ARCH 516 *Environmental Control Systems*
 ARCH 683 *20th-Century History of Ideas in Architecture*
 Dist. Elective (Comp., Log., and Repr.)

Second Semester

ARCH 504 *Architectural Problems*
 ARCH 515 *Design of Structures III*
 ARCH 623 *Professionalism and Manag. in Architecture*
 Dist. Elective (Hist., Theory, and Crit.)

Fourth Semester

ARCH 602 *Architectural Problems*
 ARCH 702 *Pre-Thesis Preparation*
 Dist. Elective (*Struct., Pract., and Env.*):
Sustainability
 Elective

Fifth Semester

ARCH 703 *Thesis Studio**
 Elective
 Elective
 *or an approved alternative

Advanced Curriculum

Third Semester

ARCH 601 *Architectural Problems*
 Dist. Elective (Hist., Theory, and Crit.)
 Dist. Elective (Comp., Log., and Repr.)
 Elective

Option 3: Three-Semester Program—Option 3 is offered to individuals who hold a professional degree in architecture (BArch.), or its equivalent from a foreign university. Preference for admission is given to those who have significant practical experience in architecture and who have demonstrated high achievement in design.

To graduate, students must complete a three-semester advanced curriculum of elective courses. Course work consists of 3 studios (including thesis) and 8 distribution courses (57 credit hours).

First Semester

ARCH 601 *Architectural Problems*
 Dist. Elective (*Hist., Theory, and Crit.*)
 Dist. Elective (*Comp., Log., and Repr.*)
 Elective
 or

ARCH 610 *History, Theory, . . . /RSAP*
 ARCH 620 *Architectural Problems/RSAP*

Second Semester

ARCH 602 *Architectural Problems*
 ARCH 702 *Pre-Thesis Preparation*

Dist. Elective (*Struc., Pract., and Env.*)
 Elective
 or

ARCH 610 *History, Theory, . . . /RSAP*
 ARCH 620 *Architectural Problems/RSAP*

Third Semester

ARCH 703 *Thesis Studio*
 Elective
 Elective

Thesis Requirement—All MArch candidates are required to develop a thesis in partial fulfillment of graduate degree requirements. Students are asked to demonstrate their ability to independently undertake research and analysis as well as develop a hypothesis and a thorough demonstration of the thesis. This must take the form of either a research thesis (written thesis) or a thesis with a design demonstration (design thesis). Both thesis formats must address architectural consequences that may be derived from within or outside conventional boundaries of the architectural discipline.

Thesis preparation begins in the next-to-last semester with a 3-hour independent study course leading to the submission of a thesis proposal and the selection of a thesis director plus two faculty members as readers. While the thesis is independent work carried out by the student under the direction of a chosen adviser, it is organized as a studio in the fall term of the academic year. The thesis studio provides a support setting for both formal and informal review processes throughout the thesis semester. In early January, thesis projects are reviewed by a panel of guest critics and publicly presented in the Farish Gallery.

MASTER OF ARCHITECTURE IN URBAN DESIGN

The Master of Architecture in Urban Design (MAUD) program prepares graduates for a full range of professional activities in the field of urban design. It is offered to individuals who already hold a professional degree qualifying them for registration as architects or landscape architects. The MAUD program makes extensive use of Houston as a setting for case studies and design problems. During the first year, strong emphasis is given to developing design skills, logic, and imagination through an intensive series of urban design studio courses. Three additional courses in urban history, planning, and design are required each semester. Students are also required to prepare an independent thesis during their third semester.

DOCTOR OF ARCHITECTURE

Admission to the Doctor of Architecture program requires either a bachelor's or master's degree in architecture and a detailed statement of research concerns and anticipated array of investigation. A student entering with a master's degree normally takes three semesters of course work before the qualifying examination. A student with a bachelor's degree normally requires two to five semesters of course work before the qualifying examination. Preparation for doctoral candidacy may include a foreign language or computer skills. Specific course requirements are established individually when a student is admitted to the program.

After successful completion of all required course work, students may apply to take the qualifying examination after submitting a prospectus outlining their research programs for the doctoral dissertation. The dissertation must represent an original contribution to knowledge in the field of architecture. Completion and successful defense of the dissertation will take a minimum of one year. University requirements for thesis (dissertation) preparation and defense must be carefully followed. The time limit for successful defense of the dissertation is established by university policy. Students should not expect to complete the Doctor of Architecture program in less than four years of full-time study.

See ARCH in the Courses of Instruction section.

ART HISTORY

THE SCHOOL OF HUMANITIES

CHAIR

Joseph Manca

PROFESSORS

Joseph Manca

Hamid Naficy

ASSOCIATE PROFESSORS

Marcia Brennan

Linda E. Neagley

ASSISTANT PROFESSORS

Robert Leo Costello

Shirine T. Hamadeh

Caroline Quenemoen

LECTURER

Sarah Costello

ADJUNCT LECTURER

Charles Dove

VISITING ASSISTANT PROFESSOR

James Clifton

DEGREES OFFERED: BA

The Department of Art History offers a wide range of courses in European, American, Asian, and Middle Eastern/Islamic art history with additional strengths in architectural history and film and media studies. The major in art history is structured to expose students to the chronological, geographical, and methodological breadth of the field of scholarship.

DEGREE REQUIREMENTS FOR BA IN ART HISTORY

For general university requirements, see Graduation Requirements (pages 14-15).

Students with a single major in Art History must complete 36 hours (12 courses) and double majors must complete 30 hours (10 courses) in art history. A total of six of the courses for double and single majors must be at the 300 level or above. Of these six courses, two courses must be in each of the following periods: Pre Modern, Early Modern, and Modern. Three of these six courses must also be in American/European, distributed over the three periods; one course in Asian from any period; and one course in the Middle East/Islamic from any period. Of the 12/10 courses for single and double majors, at least two courses must be seminars.

It is strongly recommended that majors in Art History acquire a proficiency in at least one foreign language.

In addition, Art History majors are encouraged to take advantage of the opportunities provided by museum internships, study abroad programs, and travel fellowships.

TRANSFER CREDIT

With approval from the departmental undergraduate adviser, a maximum of four courses may be taken outside of the department and applied to the major as transfer credits or study abroad course credits. No Advanced Placement credits may be used to satisfy major requirements.

See also Transfer Credit in the Information for Undergraduate Students section (page 26-27).

HONORS PROGRAM IN ART HISTORY

Art History majors may apply in the spring semester of their junior year for acceptance into the Honors Program. Interested students, with an excellent academic record, must submit a thesis proposal and recommendation from their thesis adviser to a committee of art historians for review. If accepted, six credit hours

(included in the 36/30 hours for single and double majors) of directed research and writing would be taken the senior year to complete an honors thesis (HART 402/HART 403). Financial assistance is available for honor students to conduct research between their junior and senior years. In addition to a written thesis, honors students must make a presentation to the faculty and students of the department. Once the adviser and readers have evaluated the completed thesis, the art history faculty determine whether to award honors. Students who do not make satisfactory progress in the first term will not be allowed to continue. Students who miss the final thesis deadline (mid-spring semester of the senior year) will receive a grade and credit but no honors.

EXHIBITIONS, LECTURES, AND ARTS PROGRAMS AT RICE AND IN HOUSTON

Exhibitions and related activities organized by the Rice University Art Gallery (Kimberly Davenport, director) enrich the teaching program of the Department of Art History as well as the larger university and Houston community. The Department of Visual Arts mounts several art and photography exhibitions each year and sponsors Rice Cinema, a public alternative film program. Rice cinema is intimately connected with the curriculum both in film and media studies (HART) and in film and photography production (ARTV), and includes frequent guest lecturers, panel discussions, and media events.

The department enjoys an ongoing close relationship with local museums and galleries. The department offers opportunities for students to work and study with local museums, galleries, and alternative art spaces by way of internship courses (HART 400, HART 401, HART 500, HART 501), summer internship working opportunities, fellowships, or collaborative events. The collections and special exhibitions of local museums are often the subject of course lectures.

Lectures, symposia, and talks are sponsored the department. These events are designed to bring local, national, and international scholars, critics, and artists to campus to speak on a broad range of topics and current interests.

The Department of Art History houses the Visual Resources Center, which currently holds a broad and extensive collection of approximately 300,000 slides and digital images related to the arts for teaching and research, serving both the department and the university at large.

See HART and ARTV in the Courses of Instruction section.

ASIAN STUDIES

THE SCHOOL OF HUMANITIES AND THE SCHOOL OF SOCIAL SCIENCES

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Nanxiu Qian

ASSISTANT PROFESSORS

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DISTINGUISHED LECTURER EMERITUS

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Hiroko Sato

Guatami Shah

LECTURERS

Jonathan Ludwig

Marshall McArthur

E. Douglas Mitchell

Nam Van Nguyen

Chao-Mei Shen

Meng Yeh

DEGREE OFFERED: BA

Asian Studies is an interdisciplinary major that explores the complex interaction between political, social, religious, and other important spheres of human life in Asia. Emphasis is placed not only on the diversity and achievements of Asian civilizations but also on the ways an understanding of Asia may shed new light on Western cultural traditions. The major is built around courses in the humanities and social science divisions and a team-taught interdisciplinary core course, Introduction to Asian Civilizations. Some residential college courses may qualify for Asian studies credit.

Requirements: The undergraduate Asian Studies major will consist of 30 hours or more of course work. All majors must take the core course, ASIA 211, and 9 additional courses drawn from at least three of the departments offering courses in Asian studies. (See specific guidelines below.)

DEGREE REQUIREMENTS FOR BA IN ASIAN STUDIES

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in Asian studies must complete 30 semester hours or more of major course work, including:

- ASIA 211 *Introduction to Asian Civilizations*
- 9 additional courses drawn from at least three of the departments or programs that offer courses with predominantly Asian content. In the case of cross-listed courses, any one of the departments or programs appearing in the cross-listing can be used to satisfy this particular requirement. See courses listed below.
- 6 courses at the 300 level or above
- 2 years of a single Asian language (this may include an Asian language other than those offered by Rice), though students may count no more than four

semesters of Asian languages toward the major. Students who have placed into the third year (300-level) or higher of an Asian language at Rice will have satisfied our proficiency requirement for the Asian Studies major. Such students may continue with the same Asian language or another and receive up to four semesters of credit toward the major for this additional language coursework.

Any changes in the requirements for the major must be approved by the director of Asian Studies.

One or more independent reading courses (ASIA 401 for the fall and ASIA 402 for the spring, or ASIA 403) taught by Asian Studies faculty in these departments may be counted toward the major. Students may also use certain residential college courses to fulfill their major requirements, subject to the approval of the director of Asian Studies.

The following courses, not all of which are taught every year, may be used to satisfy the major requirements. Note that a number of these courses are cross-listed.

Anthropology

- ANTH 220 *Contemporary China* (also offered as HIST 220)
 ANTH 310 *Contemporary China* (enriched version of ANTH 220; also offered as HIST 310)
 ANTH 353 *Cultures of India*

Art and Art History

- HART 170 *The Arts of China*
 HART 371 *The Brush and the Stroke in Traditional Chinese Painting* (also offered as ASIA 371)
 HART 470 *Visual Culture in Revolutionary and Post-revolutionary China (ca. 1949-present)* (also offered as ASIA 470)
 HART 472 *Japanese Animation* (also offered as ASIA 472 and HIST 472)

Asian Studies

- ASIA 139 *Introduction to Indian Religions* (also offered as RELI 139)
 ASIA 140 *Introduction to Chinese Religions* (also offered as RELI 140)
 ASIA 179 *The Arts of China*
 ASIA 211 *Introduction to Asian Civilizations* (Also listed as HIST 206)
 ASIA 221 *The Life of the Prophet Mubammad* (also offered as RELI 221)
 ASIA 231 *The Enlightenment of the Body* (also offered as RELI 231)
 ASIA 240 *Gender and Politicized Religion* (also offered as WGST 240)
 ASIA 250 *Meditation, Mysticism, and Magic* (also offered as RELI 250)

- ASIA 280 *The Asian American Experience*
 ASIA 299 *Women in Chinese Literature* (also offered as CHIN 299 and WGST 299)
 ASIA 323 *The Knowing Body* (also offered as WGST 323 and RELI 323)
 ASIA 330 *Introduction to Traditional Chinese Poetry* (also offered as CHIN 330)
 ASIA 332 *Chinese Films and Modern Chinese Literature* (also offered as CHIN 332)
 ASIA 334 *Traditional Chinese Tales* (also offered as CHIN 334)
 ASIA 335 *Introduction to Classical Chinese Literature* (also offered as CHIN 335)
 ASIA 340 *Gender and Politicized Religion* (also offered as WGST 340)
 ASIA 344 *Korean Literature* (also offered as HUMA 344 and KORE 344)
 ASIA 345 *Origin and Development of Korean and Related Languages in East Asia* (also offered as HUMA 345 and KORE 345)
 ASIA 346 *Korean Culture and History* (also offered as KORE 346)
 ASIA 354 *Asian Apocalyptic Movements* (also offered as RELI 354)
 ASIA 355 *Religion and Social Change in South Asia* (also offered as RELI 355)
 ASIA 360 *China and the Chinese Diaspora*
 ASIA 361 *The Oriental Renaissance* (also offered as RELI 361)
 ASIA 363 *Marriage of Heaven and Hell* (also offered as RELI 363)

ASIA 365 *Mysticism and Meditation in China* (also offered as RELI 365)

ASIA 369 *Film, Literature, and the Japanese Past* (also offered as HIST 369)

ASIA 372 *Survey of Asian American Literature* (also offered as ENGL 372)

ASIA 380 *The Asian American Experience*

ASIA 387 *Asian Religious and Medical Traditions*

ASIA 399 *Women in Chinese Literature* (also offered as WGST 399)

ASIA 401/402 *Independent Reading*

ASIA 422 *Original Beauty of Chinese Literature*

ASIA 432 *Islam in South Asia* (also offered as HIST 432 and WGST 432)

ASIA 441 *Popular Religion in the Middle East* (also offered as RELI 441/525)

ASIA 470 *Visual Culture in Revolutionary and Post-revolutionary China (ca. 1949-present)* (also offered as HART 470)

ASIA 472 *Japanese Animation* (also offered as HART 472, HIST 472)

ASIA 473 *Topics in Asian American Literature* (also offered as ENGL 473)

ASIA 489 *Migrations and Diasporas*

Chinese

CHIN 101/102 *Introductory Chinese I and II*

CHIN 201/202 *Elementary Chinese I and II*

CHIN 203/204 *Accelerated Chinese I and II*

CHIN 211/212 *Accelerated Elementary Chinese I and II*

CHIN 215 *Classical Chinese*

CHIN 301/302 *Intermediate Chinese I and II*

CHIN 311/312 *Accelerated Intermediate Chinese I and II*

CHIN 313 *Advanced Intermediate Chinese: Media Chinese*

CHIN 314 *Contemporary China*

CHIN 316 *Texts from Popular Culture*

CHIN 318 *Medical Chinese*

CHIN 321 *Structure of Chinese: Syntax and Semantics* (also offered as LING 321)

CHIN 322 *Taiwanese Language and Literature*

CHIN 330 *Introduction to Traditional Chinese Poetry* (also offered as ASIA 330)

CHIN 332 *Chinese Film and Modern Chinese Literature* (also offered as ASIA 332)

CHIN 334 *Traditional Chinese Tales* (also offered as ASIA 334)

CHIN 335 *Introduction to Classical Chinese Literature* (also offered as ASIA 334)

CHIN 346 *History of the Chinese Language* (also offered as LING 346)

CHIN 399 *Chinese Teaching Practicum*

CHIN 411/412 *Advanced Chinese Language and Culture I and II*

CHIN 422 *Original Beauty of Chinese Literature* (also offered as ASIA 422)

English

ENGL 372 *Survey of Asian American Literature* (also offered as ASIA 372)

ENGL 473 *Topics in Asian American Literature* (also offered as ASIA 473)

Hindi

HIND 101/102 *Elementary Hindi I and II*

HIND 201/202 *Intermediate Hindi I and II*

HIND 335 *South Asian Literature*

HIND 336 *South Asian Literature, Poetry, and Popular Culture*

HIND 398/399 *Hindi Teaching Practicum*

History

HIST 206 *Introduction to Asian Civilizations*

HIST 219 *Fortune-Tellers and Philosophers*

HIST 220 *Contemporary China* (also offered as ANTH 220)

HIST 221 *Japan in the World Until 1800*

HIST 222 *Japan in the World Since 1800*

HIST 250 *Traditional Chinese Culture*

HIST 270 *South Africa and Indonesia*

HIST 310 *Contemporary China* (enriched version of HIST 220; also offered as ANTH 310)

HIST 319 *Fortune-Tellers and Philosophers*

HIST 321 *Japan in the World Until 1800*

HIST 322 *Japan in the World Since 1800*

HIST 341 *Pre-modern China*

HIST 342 *Modern China*

HIST 352 *The Comparative Modernization of China and Japan*

HIST 369 *Film, Literature and the Japanese Past* (also offered as ASIA 369)

HIST 405 *Issues in Comparative History*

HIST 421 *Japan in the World Until 1800*
(enriched version of HIST 221)

HIST 422 *Japan in the World Since 1800*
(enriched version of HIST 222)

HIST 432 *Islam in South Asia*
(also offered as ASIA 432 and WGST 432)

HIST 448 *Creating Modern Japan:
The Meiji Restoration*

HIST 449 *Nation, Empire, and War: Japan in
the 1930s*

HIST 450 *Traditional Chinese Culture*
(enriched version of HIST 250)

HIST 472 *Japanese Animation*
(also offered as ASIA 472 and HART 472)

HIST 485 *Comparing Histories: Modernization,
War, and Society in Germany and Japan*

Japanese

JAPA 101/102 *Introduction to Japanese I and II*

JAPA 201/202 *Intermediate Japanese I and II*

JAPA 301/302 *Advanced Japanese Reading and
Composition I and II*

JAPA 370 *Structure of Japanese* (also offered
as LING 370)

JAPA 398/399 *Japanese Teaching Practicum*

JAPA 498/499 *Independent Study*

Korean

KORE 101/102 *Introduction to Korean
Language and Culture I and II*

KORE 201/202 *Intermediate Korean Language
and Culture I and II*

KORE 301/302 *Advanced Korean I and II*

KORE 344 *Korean Literature and Culture*
(also offered as ASIA 344 and HUMA 344)

KORE 345 *Origin and Development of Korean
and Related Languages in East Asia*
(also offered as LING 345 and ASIA 345)

KORE 346 *Korean Culture and History* (also
offered as ASIA 346)

KORE 398/399 *Korean Teaching Practicum*

Linguistics

LING 321 *Structure of Chinese Syntax and
Semantics* (also offered as CHIN 321)

LING 345 *Linguistic Structure of Korean* (also
offered as KORE 345)

LING 346 *History of the Chinese Language*
(also offered as CHIN 346)

LING 351/352 *Introduction to Sanskrit I and
II* (also offered as SANS 301 and 302)

LING 370 *Structure of Japanese* (also offered
as JAPA 370)

LING 451/452 *Advanced Sanskrit I and II*
(also offered as SANS 401 and 402)

Political Science

POLI 351 *Politics of Southeast Asia*

POLI 460 *Seminar in Comparative Government*

Religious Studies

RELI 132 *Classical and Colloquial Tibetan*
(also offered as TIBT 132)

RELI 139 *Introduction to Indian Religions*
(also offered as ASIA 139)

RELI 140 *Introduction to Chinese Religions*
(also offered as ASIA 140)

RELI 221 *The Life of the Prophet Muhammad*
(also offered as ASIA 221)

RELI 231 *The Enlightenment of the Body*
(also offered as ASIA 231)

RELI 235 *Intro to Taoism*

RELI 250 *Meditation, Mysticism, and Magic*
(also offered as ASIA 250)

RELI 322 *Introduction to Buddhism*

RELI 323 *The Knowing Body* (also offered as
ASIA 323)

RELI 325 *Buddhism and the Female*

RELI 331/332 *Advanced Tibetan Language
and Culture I and II* (also offered as
TIBT 331/332)

RELI 354 *Asian Apocalyptic Movements*
(also offered as ASIA 354)

RELI 355 *Religion and Social Change in
South Asia* (also offered as ASIA 355)

RELI 356 *Major Issues in Contemporary Islam*

RELI 361 *The Oriental Renaissance*
(also offered as ASIA 361)

RELI 363 *The Marriage of Heaven and Hell*
(also offered as ASIA 363)

RELI 365 *Mysticism and Meditation in China*
(also offered as ASIA 365)

RELI 441/525 *Popular Religion in the Middle East* (also offered as ASIA 441)

RELI 470 *Buddhist Wisdom Texts*

RELI 471 *Buddhist Meditation Theory: Women and Men*

RELI 480/580 *Sexuality, Sanctity, and Psychoanalysis* (also offered as WGST 470)

Sanskrit

SANS 301/302 *Elementary Sanskrit I and II* (also offered as LING 351 and 352)

SANS 401/402 *Advanced Sanskrit I and II* (also offered as LING 451 and 452)

Sociology

SOCI 323 *The Knowing Body: Buddhism, Gender, and the Social World* (also offered as ASIA 323 and WGST 323)

Tibetan

TIBT 132/133 *Tibetan Language and Culture I and II* (also offered as RELI 132/133)

TIBT 331/332 *Advanced Tibetan Language and Culture I and II* (also offered as RELI 331/332)

University and Residential College Courses

BAKE 121/JONE 135 *Beginning Vietnamese Language and Culture*

JONE 279 *Intermediate Vietnamese Language and Culture*

JONE 311 *Indian Society and Politics*

UNIV 118 *The Classic of Changes (I Ching) in Asian and World Culture*

Vietnamese

JONE 135/BAKE 121 *Beginning Vietnamese Language and Culture*

JONE 279 *Intermediate Vietnamese Language and Culture*

Women and Gender Study

WGST 240 *Gender and Politicized Religion* (also offered as ASIA 240)

WGST 299 *Women in Chinese Literature* (also offered as ASIA 299 and CHIN 299)

WGST 323 *The Knowing Body: Buddhism, Gender, and the Social World* (also offered as ASIA 323 and SOCI 323)

WGST 340 *Gender and Politicized Religion* (also offered as ASIA 240)

WGST 399 *Women in Chinese Literature* (also offered as ASIA 399 and CHIN 399)

WGST 432 *Islam in South Asia* (also offered as ASIA 432 and HIST 432)

WGST 470 *Sexuality, Sanctity, and Psychoanalysis* (also offered as RELI 480/580)

See ASIA in the Courses of Instruction section.

BIOENGINEERING

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DEGREES OFFERED: BSB, ME, MS, PHD

Graduate programs in bioengineering offer concentrations in areas that include cellular and molecular engineering; bioinstrumentation, imaging, and optics; biomaterials and biomechanics; and computational bioengineering. Undergraduate programs in bioengineering offer concentrations in areas that include cellular and molecular engineering; bioinstrumentation, imaging, and optics; and biomaterials and biomechanics. Research areas include biomechanical engineering, biological systems modeling, bioinformatics, biomaterials, biomedical lasers, cellular and molecular engineering, controlled release technologies, metabolic engineering, spectroscopy, statistical mechanics, systems engineering and instrumentation, thrombosis, tissue engineering, and transport processes.

Undergraduate Program—The bioengineering undergraduate program will prepare students for careers in rapidly developing areas of biomedical engineer-

ing and bioprocessing. Our unified and comprehensive program leading to the BS degree in bioengineering will:

- Provide students with a fundamental understanding of mathematics and the natural, life, and medical sciences
- Teach students bioengineering principles and their applications in life and medical sciences
- Develop their critical problem-solving skills in bioengineering.
- Develop their ability to communicate effectively and participate in interdisciplinary teams
- Expose students to a broad education that prepares them for diverse careers

Undergraduates in bioengineering will then have the training to pursue further education in graduate school or medical school and will have strong preparation for a career in the biotechnology industry.

The BSB degree is organized around a core of required courses and a selection of elective courses from three areas of specialization. The specialization electives provide a flexibility that can be used to create a focus in cellular and molecular engineering; bioinstrumentation, imaging, and optics; or biomaterials and biomechanics. Because of the number of options, students should consult early with departmental advisors to plan a program that meets their needs.

DEGREE REQUIREMENTS FOR BS IN BIOENGINEERING

For general university requirements, see Graduation Requirements (pages 14-15). The curriculum for a BS degree in bioengineering requires 94 credit hours, which count toward the total of 134 hours required to graduate.

Preparation—As freshmen, students considering a major in bioengineering should take MATH 101 and 102, CHEM 121 and 122, PHYS 101 or PHYS 125, PHYS 102 or PHYS 126, and CAAM 210. Sophomore students should take MATH 211 and 212, CHEM 211, BIOS 201, ELEC 243 and MECH 211. BIOE 252 should be taken in the first semester of the sophomore year. BIOE 330, BIOE 320, and BIOE 322 should be taken the second semester of the sophomore year.

Students majoring in bioengineering must complete the following courses.

Core Courses

Bioengineering

BIOE 252 *Bioengineering Fundamentals*

BIOE 320 *Systems Physiology Laboratory Module*

BIOE 322 *Systems Physiology*

BIOE 330 *Bioreaction Engineering*

BIOE 332 *Thermodynamics*

BIOE 342 *Tissue Culture Laboratory*

BIOE 370 *Biomaterials*

BIOE 372 *Biomechanics*

BIOE 383 *Biomedical Instrumentation*

BIOE 384 *Biomedical Instrumentation Laboratory Module*

BIOE 391 *Numerical Methods*

BIOE 420 *Biosystems Transport and Reaction Processes*

BIOE 440 *Statistics for Bioengineers*

BIOE 442* *Tissue Engineering Laboratory Module*

BIOE 443* *Bioprocessing Laboratory Module*

BIOE 444* *Biomechanical Testing Laboratory Module*

BIOE 445* *Advanced Bioinstrumentation Laboratory Module*

BIOE 451 *Bioengineering Design I*

BIOE 452 *Bioengineering Design II*

Biosciences

BIOS 201 *Introductory Biology*

BIOS 341 *Cell Biology*

Computational and Applied Mathematics

CAAM 210 *Introduction to Engineering Computation*

Chemistry

CHEM 121 *General Chemistry*

CHEM 122 *General Chemistry*

CHEM 211 *Organic Chemistry*

Math

MATH 101 *Single Variable Calculus I*

MATH 102 *Single Variable Calculus II*

MATH 211 *ODEs and Linear Algebra*

MATH 212 *Multivariable Calculus*

Electrical Engineering

ELEC 243 *Introduction to Electronics*

Mechanical Engineering

MECH 211 *Engineering Mechanics*

Physics

PHYS 101, PHYS 111, or PHYS 125 *Mechanics*

PHYS 102, PHYS 112, or PHYS 126 *Electricity and Magnetism*

*Students must take the advanced laboratory module in their specialization area: BIOE 442 or BIOE 443 for cellular and molecular engineering, BIOE 442 or 444 for biomaterials and biomechanics, and BIOE 445 for bioinstrumentation, imaging and optics. Students must take one other advanced laboratory module for a total of two of the four listed modules (BIOE 442, 443, 444, and 445).

SPECIALIZATION AREAS

Three specialization area elective courses, at least two of which must be at the senior level, will be required in one of the three areas:

- Cellular and molecular engineering
- Bioinstrumentation, imaging, and optics
- Biomaterials and biomechanics

The elective courses in these concentration areas will be announced in future course listings. All three specialization courses must be engineering courses.

Graduate Program—The bioengineering graduate program at Rice educates its students so that they can directly interact with physicians and cell and molecular biologists, while still excelling in the quantitative capabilities so important for engineering applications.

DEGREE REQUIREMENTS FOR ME, MS, AND PHD IN BIOENGINEERING

For general university requirements, see Graduate Degrees (pages 57–58).

ME Program—The master of bioengineering degree is intended for those having a BA or BS degree in an engineering or science discipline.

To obtain an ME from the bioengineering department, you must complete the following course work:

1. Curriculum must be approved by the Academic Affairs Committee of the bioengineering department. (This will be done on a case-by-case basis).
2. Total of 30 credit hours is required (courses must be above and beyond the requirement for the undergraduate degree) as follows:
 - At least 15 credit hours of the 30 must be taken as BIOE courses, including Biosystems Transport and Reaction Processes (BIOE 520) and Fundamentals of Systems Physiology (BIOE 572)

- Introduction to Partial Differential Equations (MATH 381) (3 hours)
- One additional engineering course (3 hours)
- Three additional courses approved by the Academic Affairs Committee (9 hours)

In summary, the credit hours required are:

- 15 credit hours of BIOE courses
- 3 credit hours of MATH 381
- 3 credit hours of one additional engineering course
- 9 credit hours of additional courses approved by the Academic Affairs Committee
- 30 Total credit hours

MS Program—Candidates for the MS degree must:

- Complete at least 18 semester hours of foundation, supporting, and advanced courses with high standing
- Fulfill a teaching requirement
- Submit an original research thesis
- Defend the thesis in a public oral examination

PhD Program—Candidates for the PhD degree must:

- Complete at least 36 approved semester hours of foundation, supporting, and advanced courses, with high standing. With departmental approval, the course requirements may be reduced to not less than 22 hours for students already holding an MS degree.
- Fulfill a teaching requirement. After their first semester in residence, students may be asked to spend the equivalent of 6 to 10 hours per week for a total of three semesters on teaching assignments.
- Submit a thesis proposal. PhD students must submit and successfully defend their thesis proposals by the end of their fourth semester in residence.
- Complete a three- to six-month industrial internship. This requirement may be waived for those with adequate previous industrial experience.
- Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of bioengineering.
- Defend the thesis in a public oral examination.

Graduate students take required courses and electives in the following areas:

- Cellular and molecular engineering
- Bioinstrumentation, imaging, and optics
- Biomaterials and biomechanics
- Computational bioengineering

See BIOE in the Courses of Instruction section.

BIOSCIENCES

BIOCHEMISTRY AND CELL BIOLOGY

THE WIESS SCHOOL OF NATURAL SCIENCES

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ADJUNCT FACULTY

Nancy Greig

Steve Pennings

DEGREES OFFERED: BA, BS, MA, PHD

Undergraduate Programs—The Departments of Biochemistry and Cell Biology and Ecology and Evolutionary Biology offer a broad range of courses in the biosciences: animal behavior, animal biology, biochemistry, biophysics, cell biology, developmental biology, ecology, endocrinology, evolutionary biology, genetics, immunology, microbiology, molecular biology, neurobiology, plant biology, and advanced courses in these and related areas. Students may elect a BA in Biochemistry and Cell Biology, BA in Biological Sciences, BS in Biochemistry and Cell Biology, or BS in Ecology and Evolutionary Biology; and may select courses from the range of topics listed above.

Core courses required of all biosciences majors:**Mathematics**MATH 101/102 *Single Variable Calculus I and II***Chemistry**CHEM 121/122 *General Chemistry with Laboratory*CHEM 211/212 *Organic Chemistry*CHEM 215 *Organic Chemistry Lab***Physics**PHYS 125/126 *General Physics I and II***Biosciences**BIOS 201/202 *Introductory Biology*BIOS 301 *Biochemistry*BIOS 211 *Introductory Lab in Biological Sciences* (2 credit hours)BIOS 213 *Introductory Lab in Ecology and Evolutionary Biology***One Group B BIOS course****2 of the following advanced laboratory courses:**BIOS 311 *Lab in Protein Purification*BIOS 312 *Lab Module in Molecular Biology I*BIOS 313 *Lab Module in Molecular Biology II*BIOS 314 *Lab in Cell and Developmental Biology*BIOS 315 *Lab in Physiology*BIOS 316 *Lab in Ecology*BIOS 317 *Lab in Behavior*BIOS 318 *Lab in Microbiology*BIOS 319 *Tropical Field Biology*BIOS 320 *Lab in Tissue Culture*BIOE 342 *Lab in Tissue Culture*BIOS 530 *NMR Spectroscopy and Molecular Modeling*BIOS 532 *Spectroscopy*BIOS 533 *Computational Biology*BIOS 535 *Practical X-Ray Crystallography*

Math 111 and 112 may be substituted for Math 101; Chem 151, 152 may be substituted for Chem 121, 122; Phys 101 and 102 or Phys 111 and 112 and their labs may be substituted for Phys 125, 126. See listings in the Courses of Instruction for Group A and B designations. No course may be counted more than once toward any of the major requirements.

One of the advanced laboratory course requirements can be satisfied by taking any of the following: (i) Bios 310 if taken for at least two credits; or (ii) Hons 470/471, if the research supervisor is from one of the Biosciences departments, or if the research is biological in nature and pre-approved by the student's advisor; or (iii) Bios 412.

BA IN BIOCHEMISTRY AND CELL BIOLOGY

In addition to the core courses required of all biosciences majors, BA majors within this option must also take:

- MATH 211 or MATH 213
- BIOS 311

- BIOS 341
- Two of the following courses: BIOS 302, BIOS 344, BIOS 352
- Two additional Group A biosciences courses, only one of which may be BIOS 401 or 402

Chem 311 and 312 may be substituted for BIOS 352. Neur 511 and 512 may be substituted for one Group A course. Students may receive credit toward the major for a maximum of 3 credits of BIOS 390.

BA IN BIOLOGICAL SCIENCES

In addition to the core courses that are required of all biosciences majors, BA majors within this option must take:

- MATH 211 or MATH 213 or STAT 305
- One of the following advanced lab courses: BIOS 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 530, 532, 533, 535, or BIOE 342
- One of the following Group A courses: BIOS 302, 341, 344, 352
- One additional Group A course
- Two Group B courses
- One additional Group A or Group B course

Only one of the courses used to satisfy these group A and group B requirements may be BIOS 401, 402, 403, or 404. NEUR 511 and 512 may be substituted for one Group A course. Students may receive credit toward the major for a maximum of 3 credits of BIOS 390 and 3 credits of BIOS 391. Students desiring to specialize in ecology and evolutionary biology can choose a group B course for the group A or B course and their advanced lab can be BIOS 316, 317, or 319.

BS IN BIOCHEMISTRY AND CELL BIOLOGY

In addition to the core courses required of all biosciences majors, BS majors must also take:

- MATH 211 or MATH 213
- BIOS 311
- BIOS 302
- BIOS 341
- BIOS 344
- BIOS 352
- Three additional Group A bioscience courses

BIOS 401 and 402 are recommended Group A courses in the BS degree program. NEUR 511 and 512 may be substituted for one Group A course. Students may receive credit toward the major for a maximum of 3 credits of BIOS 390.

BS IN ECOLOGY AND EVOLUTIONARY BIOLOGY

In addition to the core courses required of all biosciences majors, BS majors must also take:

- MATH 211 or MATH 213 or Stat 305
- One of the following advanced laboratory courses: BIOS 316, 317, 319
- One Group A biosciences course
- BIOS 403 and BIOS 404
- Two additional Group B biosciences courses
- One additional biosciences course from Group A or B

NEUR 511 and 512 may be substituted for one Group A course. Students may receive credit toward the major for a maximum of 3 credits of BIOS 390 and 3 credits of BIOS 391.

Advising—Students should contact the appropriate departmental office to be assigned to an advisor. Those pursuing a BS or BA in Biochemistry and Cell Biology should contact that department office. Those pursuing a BS in Ecology and Evolutionary Biology should contact that department office. Those electing a BA in Biological Sciences may choose the department that most closely corresponds to their interests, and that choice may be changed at any time. Students interested in environmental careers should consult with the Ecology and Evolutionary Biology Department for a list of recommended courses. See also Environmental Studies listings and Environmental Science Double Major.

It is recommended that the 100-level mathematics and chemistry courses be taken in the freshman year; that the 100-level physics courses and the 200-level biosciences courses be taken in either the freshman or sophomore year; and that CHEM 211, 212, 215 be taken in the sophomore year. Those with a limited background in chemistry should complete CHEM 121, 122 before taking BIOS 201, 202. Others are urged to take BIOS 201, 202 as freshmen, to permit earlier access to advanced level BIOS courses. PHYS 125 and 126 are the preferred physics courses for biosciences majors. However, PHYS 101 and 102 or PHYS 111 and 112 and their labs may be taken instead by those wishing to preserve the option of majoring in a subject for which PHYS 101 and 102 are required.

An undergraduate major in biosciences must have 48 semester hours in courses numbered 300 or higher to obtain a BA or BS degree. Students must also complete no fewer than 60 semester hours outside the departmental requirements. These must include the courses needed to satisfy the university distribution requirements.

ACCELERATED RICE BA–BS/PHD PROGRAM IN BIOCHEMISTRY AND CELL BIOLOGY

Qualified undergraduate students at Rice can apply to enroll in the biochemistry and cell biology graduate program in their senior year. The course requirements for graduate studies are therefore completed at the same time as the upper-level undergraduate degree requirements; laboratory research performed as part of the undergraduate thesis project can serve as the initial phases of the PhD thesis work. As a result, the graduate careers of these students will be accelerated by at least one full year, and, in principle, such students should be able to obtain their PhD degrees approximately three years after obtaining their BA or BS degree.

Criteria for selection include academic performance ($GPA \geq 3.3$), GRE scores, motivation, previous research experience, and personal qualities. Selection is made by the department admissions committee.

MECHANICS OF THE PROGRAM

The program requires the completion of two and one-half years (or their equivalent) of undergraduate studies at Rice before a student can be considered for enrollment in the accelerated PhD program. To continue in the program, the following requirements must be fulfilled: (1) The student must take the GRE before receiving the BA or BS degree and receive scores greater than 80 percent in the Analytical and Quantitative Tests; (2) students must also maintain at least a B average in all courses in their senior year; and (3) the usual graduate requirements will apply for continuation in the program.

DEGREE REQUIREMENTS FOR MA AND PHD IN BIOCHEMISTRY AND CELL BIOLOGY

Admission—Applicants for graduate study in the Department of Biochemistry and Cell Biology must have:

- BA degree in biochemistry, biology, chemistry, chemical engineering, physics, or some equivalent
- Strong ability and motivation, as indicated by academic record, Graduate Record Examination (GRE) scores, and recommendations

Although the department offers an MA degree in biochemistry and cell biology, only on rare occasions are students who do not intend to pursue the PhD degree admitted to the graduate program. The department provides a program guide entitled “Graduate Requirements for Biochemistry and Cell Biology” which is updated annually. For general university requirements, see Graduate Degrees (in the General Announcements).

Both PhD and MA Programs—Most of the formal course studies will be completed in the first year of residence to allow the students to commence thesis research at the end of their second semester at Rice. During the first year, all graduate students will be advised by the Graduate Advisory Committee (current composition: Stern, Bartel, Braam, Gustin, Olson). This committee will determine the formal course program to be taken during the first year in residence. Students are required to have training in biochemistry, cell biology, genetics, and physical chemistry or biophysics. If students are missing formal training in these subjects, they are required to take the equivalent background courses during their first year. The corresponding courses at Rice include the following:

BIOS 301 *Biochemistry*

BIOS 302 *Biochemistry*

BIOS 311, 312 and 313 *Laboratories for the Biosciences*

BIOS 341 *Cell Biology*

BIOS 344 *Molecular Biology and Genetics*

BIOS 352 *Physical Chemistry for the Biosciences*

All PhD students are required to take the following graduate-level courses:

BIOS 575 *Introduction to Research*

BIOS 581, 582 *Graduate Research Seminars*

BIOS 583 *Molecular Interactions*

BIOS 587 *Research Design, Proposal Writing, and Professional Development*

BIOS 594 *The Ethics of Bioscience and Bioengineering*

BIOS 599 *Graduate Teaching*

BIOS 800 *Graduate Research* (rotations in first year)

Students must also take 2 units from the following set of advanced courses:

BIOS 525 *Plant Molecular Biology* (1 unit)

BIOS 530, 532, 533, 535 *Graduate Laboratory Modules in Molecular Biophysics* (1/2 unit each)

BIOS 545 *Advanced Molecular Biology and Genetics* (1 unit)

BIOS 551 *Molecular Biophysics*

BIOS 588 *Advanced Cell and Developmental Biology* (1 unit)

Students should complete BIOS 583 and BIOS 587 in their first year, and they will be responsible for the content of those course programs in their admission to candidacy examinations (see below). Students also gain teaching experience by serving as discussion leaders and graders in undergraduate sections during their second year. Safety and ethics presentations are provided for first-year students.

Evaluation of Progress in Graduate Study—The Graduate Advisory Committee evaluates each student’s undergraduate record and identifies any deficiencies to be corrected (usually in the first year). Thesis advisors may require additional course work of a more specialized nature. Students must complete all additional courses before taking the admission to candidacy examination.

At the end of each semester, the department chair, in consultation with the committee and faculty, reviews student performance in the formal course work; after students complete two semesters at Rice, the faculty conducts a review. Students must maintain at least a B average and demonstrate outstanding motivation and potential for research.

Evaluation after the first year includes:

- Ongoing review of research progress by the thesis research advisor
- A research progress review examination given each year by the student's Research Progress Review Committee
- Presentation of research progress at least once a year after the second year until submission of a complete doctoral thesis
- Completion of an oral admission to candidacy examination before the end of the student's fourth semester
- Defense of the PhD thesis research and text in a final public seminar presentation and oral examination attended by the student's Thesis Committee

MA Program—All the above requirements and evaluation procedures apply to MA candidates with the following exceptions. The research progress review examination held during the MA student's second full year, which is identical in format to that for PhD students, replaces the admission to candidacy examination; no other preliminary examination is held before the final oral defense of the master's thesis. MA candidates must complete a thesis and make a public oral defense of their research work to their Thesis Committee and other interested parties.

DEGREE REQUIREMENTS FOR MA AND PHD IN ECOLOGY AND EVOLUTIONARY BIOLOGY

Admission—Applicants for graduate study in the Department of Ecology and Evolutionary Biology must have:

- BA degree or equivalent
- Scores from the Graduate Record Examination (GRE), including the advanced examination in biology
- A strong background in biology
- Completed course work in physics, mathematics (including calculus), and chemistry (including organic chemistry)

These requirements do not preclude admission of qualified applicants who have majored in areas other than biology. Deficiencies should be made up during the first year of residence; some may be waived at the discretion of the student's faculty advisor and the department chair.

Entering students will meet with a faculty advisor to form a course of study for the first year. All first-year students will demonstrate basic proficiency in ecology and evolutionary biology either by completing one ecology course from the following choices: BIOS 322, BIOS 324, BIOS 325, BIOS 329, or BIOS 336 and one evolutionary biology course from the following choices: BIOS 321 or BIOS 334 or by performing satisfactorily on a written examination that tests basic knowledge in both ecology and evolutionary biology.

All graduate students are required to complete the following graduate-level courses: BIOS 561 Topics in Evolution, BIOS 562 Topics in Behavioral Biology, BIOS 563 Topics in Ecology, BIOS 568 Topics in Biological Diversity, BIOS 585/586 Graduate Seminar in Ecology and Evolutionary Biology. Students may substitute BIOS 432 Advanced Evolutionary Biology for BIOS 561 or BIOS 562. Students are required to complete

two semesters of BIOS 591 Graduate Teaching. Students typically complete a PhD in no fewer than 3 and no more than 5 years.

MS Program—In addition to the general university requirements and those listed above, the Master of Science in Ecology and Evolutionary Biology requires 10 hours of research credit.

MA Program—In addition to the general university requirements and those listed above, the Master of Arts in Ecology and Evolutionary Biology requires the completion and public defense of a thesis embodying the results of an original investigation.

PhD Program—In addition to the general university requirements and those listed above, applicants for the PhD degree in Ecology and Evolutionary Biology must:

- Maintain a grade average of B or better in courses taken in the department and satisfactory grades in courses taken outside the department
- Pass the admission to candidacy examination given by the Graduate Advisory Committee (this examination may be oral and/or written)
- Complete an original investigation and a doctoral thesis worthy of publication in a scientific journal
- Present a departmental seminar on the research
- Publicly defend the doctoral thesis

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The Center for the Study of Languages (CSL) was founded in 1997 to promote and enhance the study of languages at Rice University and is responsible for teaching 13 languages through the third year of instruction. The role of the center is to establish innovative approaches to language acquisition, expand opportunities for language learning across the curriculum, and increase Rice students' participation in study and work abroad. The Language Resource Center (LRC), the technology division of the CSL, provides resources such as specialized computer software and enhanced videos to support and supplement all aspects of the teaching and learning of languages.

DEGREES OFFERED: NONE

The CSL does not offer degree programs itself, but students are able to pursue language degrees from language departments. Some of those degrees include: BA in Asian Studies (Asian Studies), BA in Classical Studies (Classical Studies), BA, MA, and PhD in French Studies (French Studies), BA in German Studies, BA in Slavic Studies (German and Slavic Studies), and BA, MA in Spanish (Hispanic Studies). See each department for degree requirements.

PLACEMENT TESTING

Foreign language classes are popular among Rice University students who wish to enhance their knowledge of world languages and cultures. Students who have some background in the language they intend to study are required to take a placement test to ensure that they are placed in the appropriate course. Placement Tests can be given online prior to matriculation or during O-Week. Additional information regarding language placement tests can be found on the Language Resource Center web page at www.ruf.rice.edu/~lrc.

TRANSFER CREDITS

The CSL will determine equivalency for foreign language classes taken at other colleges or universities and approve them for transfer credit. University transfer credit guidelines (see page 27) as well as requirements of the degree-granting department still apply. Students who study abroad should have their transfer credits approved before they commit to a study-abroad program. When requesting Rice equivalent credit for foreign language acquisition courses students must submit no less than the following to the CSL for approval: 1) the appropriate transfer request form from the Registrar's Office, 2) a program description for courses taken abroad or catalog description for courses taken in the US, and 3) a syllabus for the course they wish to take or have taken. Students should be aware that the approval process takes about one week and should plan accordingly.

SCHOLARSHIPS

Two scholarships are offered yearly through the CSL. The Donne Di Domani donates money to be awarded to outstanding Rice University students. This scholarship, to be used for tuition and books, is awarded to students committed to study of the Italian language and is based on need and merit. The Ministry of Education, Republic of China in Taiwan also offers a scholarship to study Mandarin Chinese in Taiwan for one year. Students interested in applying for either of these scholarships should contact the CSL at the beginning of the spring semester.

See ARAB, CHIN, FREN, GERM, HIND, HEBR, ITAL, JAPA, KORE, PLSH, PORT, RUSS, and SPAN in the Courses of Instruction section.

CHEMICAL AND BIOMOLECULAR ENGINEERING

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DEGREES OFFERED: BA, BSChE, MChE, MS, PHD

This major gives undergraduates a sound scientific and technical grounding for further development in a variety of professional environments. Courses in mathematics, chemistry, physics, and computational engineering provide the background for the chemical engineering core, which introduces students to chemical process fundamentals, fluid mechanics, heat and mass transfer, thermodynamics, kinetics, reactor design, process control, and process design. Course electives may be used to create a focus area in one of the following four disciplines: bioengineering, environmental engineering, materials science/engineering, and computational engineering. Upon completing either the flexible BA requirements or the more scientific and professional BSChE requirements, students may apply for a fifth year of study leading to the nonthesis Master of Chemical Engineering (MChE) degree. A joint MBA/MChE degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

Students admitted for graduate studies leading to the MS or PhD degrees must complete a rigorous program combining advanced course work and original research that must be formalized in an approved thesis. Graduate research is possible in a number of areas, including thermodynamics, interfacial phenomena, complex fluids, polymer science and rheology, process control and optimization, reaction engineering and catalysis, reservoir engineering, biotechnology, and biomedical engineering.

DEGREE REQUIREMENTS FOR BS IN CHEMICAL ENGINEERING

For general university requirements, see Graduation Requirements (pages 14-15). The BS degree is accredited by the Accreditation Board for Engineering and

Technology (ABET). Through careful selection of other engineering and science courses, a student can develop a focus (or concentration) area in any of the following 4 engineering disciplines: environmental science/engineering, bioengineering, materials science/engineering, and computational engineering. These elective programs can be completed within the framework of a BS in chemical engineering. Students majoring in chemical engineering must complete 96 hours in the courses specified below for a minimum of 132 hours at graduation.

The undergraduate curriculum is designed so that outstanding students interested in careers in research and teaching may enter graduate school after earning either bachelor's degree.

ENGINEERING BREADTH AND FOCUS AREA OPTIONS

To complete their technical education, Rice students seeking a BS degree in chemical engineering take course electives in at least two other engineering disciplines to satisfy a "breadth" requirement.

Or, they can use their electives to create a focus (or concentration) area in one of the following four disciplines:

- biotechnology/bioengineering
- computational engineering
- environmental engineering
- materials science and engineering

Consult our department web page for a detailed list of courses that can be used to satisfy the engineering breadth or focus area requirements.

DEGREE REQUIREMENTS FOR BA IN CHEMICAL ENGINEERING

Chemistry

CHEM 121/122 *General Chemistry with Laboratory*

or CHEM 151/152 *Honors Chemistry with Laboratory*

CHEM 211/212 *Organic Chemistry*

CHEM 217 *Organic Chemistry Lab*

CHEM 311/312 *Physical Chemistry*

Any 2 of CHEM 212, CHEM 311, or CHEM 312

Chemical Engineering

CHBE 301 *Chemical Engineering Fundamentals*

CHBE 303 *Computer Programming in Chemical Engineers*

CHBE 305 *Computational Methods for Chemical Engineers*

CHBE 343 *Chemical Engineering Lab I*

CHBE 390 *Kinetics and Reactor Design*

CHBE 401/402 *Transport Phenomena I and II*

CHBE 404 *Product and Process Design*

CHBE 411/412 *Thermodynamics I and II*

CHBE 443 *Chemical Engineering Lab II*

CHBE 470 *Process Dynamics and Control*

Mathematics

MATH 101/102 *Single Variable Calculus I and II*

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus* or equivalent honors courses

CAAM 336 *Differential Equations in Science and Engineering* or MATH 381 *Introduction to Partial Differential Equations*

Physics

PHYS 101 or 111 *Mechanics*

PHYS 102 or 112 *Electricity and Magnetism*

Mechanical Engineering

MECH 211 *Engineering Mechanics*

Students pursuing the BA degree in chemical engineering must meet all of the requirements for the BSChE degree with the following exceptions: CHBE 404 and 470 are not required. They do not have to satisfy the requirements for either the

engineering breadth or the focus area. Free electives may be substituted for these requirements to reach at least 132 semester hours for graduation.

Prerequisites for Chemical Engineering Courses—Before undergraduates may register for courses in chemical engineering at the 300 level and above, they must satisfy the following prerequisites.

For CHBE 301

Math 101/102

CHEM 121/122 or CHEM 151/152

Corequisite: CHBE 303

For CHBE 390

CHBE 301, 303, and 305

MATH 211/212

For CHBE 401

CHBE 411

MATH 211/212

PHYS 101/102

Co/Prerequisite: CHBE 305

For CHBE 402

CHBE 401

Co/Prerequisites: CAAM 336 or MATH 381

For CHBE 403

CHBE 390, 402, and 412

Co/Prerequisites: CHBE 470 and

MECH 211

For CHBE 404

CHBE 403

For CHBE 411

CHBE 301 and 303

For CHBE 412

CHBE 411

For CHBE 470

CHBE 390, 402, and 412

With the written consent of the instructor, students may register for a course without completing the required prerequisite(s). Waivers, however, are not transferable.

DEGREE REQUIREMENTS FOR MChE, MS, AND PHD IN CHEMICAL ENGINEERING

For general university requirements, see Graduate Degrees (pages 57-58).

MChE Program—For the MChE degree, students must complete at least 30 hours of courses beyond those counted for their undergraduate degree. At least 6 of the courses taken must be upper-level courses in chemical engineering and 1 must be an approved mathematics course. The chemical engineering courses selected should include process design (two semesters) and process control, unless courses in these subjects were taken during the student's undergraduate studies.

MS Program—Candidates for the MS degree must:

- Complete at least 18 approved semester hours with high standing
- Submit an original research thesis
- Defend the thesis in a public oral examination

PhD Program—Candidates for the PhD degree must:

- Demonstrate competence in the areas of applied mathematics, thermodynamics, transport processes, and chemical kinetics and reactor design by passing qualifying examinations, usually during the first year of study
- Complete at least 36 approved semester hours with high standing (with department approval, the course requirements may be reduced to 24 hours for students already holding an MS degree)
- Submit a thesis that provides evidence of their ability to carry out original research in a specialized area of chemical engineering
- Defend the thesis in a public oral examination

See CHBE in the Courses of Instruction section.

CHEMISTRY

THE WIESS SCHOOL OF NATURAL SCIENCES

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DEGREES OFFERED: BA, BS, MA, PHD

Recognizing the wide range of studies encompassed by chemistry, the department encourages undergraduates to explore offerings in other departments such as mathematics, computational and applied mathematics, biochemistry, and physics as well as upper-level courses in chemistry. An interdepartmental major is offered in chemical physics. Taking advantage of the department's extensive facilities, each BS degree candidate carries out a program of individual research under the supervision of a faculty member.

Graduate studies emphasize individual research, together with a fundamental understanding of chemistry beyond the students' specific interests. Faculty research interests include the synthesis and biosynthesis of organic natural products; the synthesis of small cycloalkanes, molecular recognition, and biological catalysis; bioinorganic and organometallic chemistry; main group element and transition metal chemistry; the chemistry of group 13 elements; high-pressure and high-temperature chemistry; fluorine chemistry; chemical vapor deposition; the design of nanophase solids; molecular photochemistry and photophysics; infrared kinetic spectroscopy, laser and NMR spectroscopy; studies of electron transfer in crossed beams; theoretical and computational chemistry; and the study of fullerene molecules, carbon nanotubes, and their derivatives; polymer synthesis and characterization; molecular electronics; and molecular machines.

DEGREE REQUIREMENTS FOR BA IN CHEMISTRY

For general university requirements, see Graduation Requirements (pages 14–15). Students choosing to receive a BA in chemistry must have a total of at least 120 semester hours at graduation, including the following courses required of all majors.

Core Courses

Chemistry

CHEM 121/122 *General Chemistry* with laboratory or CHEM 151/152 *Honors Chemistry* with laboratory

CHEM 211/212 *Organic Chemistry*

CHEM 215 *Organic Chemistry Lab*

CHEM 311/312 *Physical Chemistry*

CHEM 351 *Introductory Module in Experimental Chemistry I*

CHEM 352 *Introductory Module in Experimental Chemistry II*

CHEM 353 *Introductory Module in Analytical Methods*

CHEM 360 *Inorganic Chemistry*

Mathematics*

MATH 101/102 *Single Variable Calculus I and II* or MATH 121/122

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus* or MATH 221/222 *Honors Calculus III and IV*

Physics

PHYS 101 or 111 *Mechanics*

PHYS 102 or 112 *Electricity and Magnetism*

Other

NSCI 230 *Computation in the Natural Sciences* or CAAM 210 *Introduction to Engineering Computation* (or equivalent)

* The Department of Mathematics may, after consultation with a student concerning his/her previous math preparation, recommend that a student be placed into a higher level math course than for which the student has official credit. The Department of Chemistry will accept this waiver of the math classes upon a written confirmation of the waiver from the Department of Mathematics and upon the student's successful completion of the higher

level math course.

Advanced Courses

Additional Lecture Courses

At least 1 course from the following:

CHEM 401 *Advanced Organic Chemistry*

CHEM 430 *Quantum Chemistry*

CHEM 495 *Transition Metal Chemistry*

Additional Laboratory Courses

At least 3 advanced laboratory module credit hours from the following list:

CHEM 373 *Advanced Module in Fullerene Chemistry*

CHEM 374 *Advanced Module in Synthetic Chemistry*

CHEM 375 *Advanced Module in Nanotechnology*

CHEM 376 *Advanced Module in Materials Chemistry*

CHEM 377 *Advanced Module in Catalysis*

CHEM 381 *Advanced Module in Physical Chemistry, A*

CHEM 382 *Advanced Module in Physical Chemistry, B*

CHEM 383 *Advanced Module in Instrumental Analysis, A*

CHEM 385 *Advanced Module in Polymer Chemistry*

CHEM 391 *Advanced Module in Catalysis*

CHEM 395 *Advanced Module in Green Chemistry*

CHEM 435 *Methods of Computational Quantum Chemistry*

To ensure that students receive suitable breadth in their laboratory experience, advanced module selections must be approved by the student's major committee.

Other advanced laboratory courses from chemically related disciplines (biochemistry, materials science, environmental engineering, etc.) may be substituted for these advanced modules, with approval of the committee. Chemistry majors may also substitute 2 advanced organic laboratory module credit hours for CHEM 215, with approval of the committee. Three hours of CHEM 491 (taken for one entire semester) may be substituted for 1 advanced laboratory module if no other CHEM 491 credit is taken in the same semester.

Students in the chemistry BA major must satisfy the university distribution requirements and complete no fewer than 64 semester hours in addition to the departmental requirements for the chemistry major, giving a minimum total of 120 hours for graduation.

DEGREE REQUIREMENTS FOR BS IN CHEMISTRY

The core chemistry, math, physics, and NSCI 230 requirements for the BS degree are the same as those for the BA degree. PHYS 201 *Waves and Optics* and PHYS 202 *Modern Physics* are recommended but not required.

In addition to the core requirements, the BS degree requires the following course and laboratory work:

- 2 courses total from the **Additional Lecture Courses** list
- 3 advanced modules from the **Additional Laboratory Courses** list. As with the BA degree, 2 advanced laboratory modules may be substituted for CHEM 215 with departmental approval.
- At least 3 semester hours in undergraduate research (CHEM 491) in no less than 2-hour segments. With departmental approval, students may satisfy this requirement with HONS 470/471, which requires participation in CHEM 491 meetings. Students may also satisfy 3 of the 6 required hours in upper-level courses with additional research.
- 6 hours credit in upper-level courses (300 level or higher) in chemistry, mathematics, computational and applied mathematics, physics, biochemistry, or other subjects with adviser approval.

Students in the chemistry BS major must satisfy the distribution requirements (see pages 15–16) and complete no fewer than 60 semester hours in addition to the departmental requirements for the chemistry major, giving a minimum total of 128 hours for graduation.

American Chemical Society Certification—The Rice Department of Chemistry is on the approved list of the Committee on Professional Training of the American Chemical Society and so can certify that graduates have met the appropriate standards. The BA degree is not certifiable. For certification, students must complete:

- All degree requirements for the BS degree listed above
- CHEM 495 *Transition Metal Chemistry* as one of the additional lecture courses
- A department-approved course in biochemistry
- 9 hours total in upper-level courses from chemistry, physics, mathematics, computational and applied mathematics, biochemistry, or other courses in science or engineering with the approval of the department. The required course in biochemistry listed above counts toward this total.

A foreign language, preferably German, is recommended.

Chemical Physics Major—The chemical physics major leading to a BS degree is offered in conjunction with the Department of Physics and Astronomy. Students take upper-level courses in both chemistry and physics, focusing on the applications of physics to chemical systems. Students majoring in chemical physics must complete the following courses:

Core Courses

Chemistry

CHEM 121/122 *General Chemistry with Laboratory* or CHEM 151/152 *Honors Chemistry with Laboratory*

CHEM 211 *Organic Chemistry*

CIEM 311/312 *Physical Chemistry*

Physics

PHYS 101 or 111 *Mechanics*

PHYS 102 or 112 *Electricity and Magnetism*

PHYS 201 *Waves and Optics*

PHYS 202 *Modern Physics*

PHYS 231 *Elementary Physics Lab II*

PHYS 301 *Intermediate Mechanics*

PHYS 302 *Intermediate Electrodynamics*

Mathematics

MATH 101/102 *Single Variable Calculus I and II* or MATH 121/122

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus* or MATH 221/222 *Honors Calculus III and IV*

Additional Courses

1 course from CHEM 212 or CHEM 360

2 courses from PHYS 311, PHYS 312, CHEM 430, or CHEM 415

6 hours from CHEM 215, CHEM 351, CIEM 352, CHEM 373–391, CHEM 435, PHYS 331, or PHYS 332. Up to 2 hours of independent research (CHEM 491 or PHYS 491/492 may be counted toward this requirement.)

2 courses from NSCI 230, CAAM 210, or mathematics or computational and applied mathematics at the 300 level or above

ADMISSION REQUIREMENTS FOR ACCELERATED BS/PHD PROGRAM IN CHEMISTRY

The high level of training provided in the Rice BS program enables certain specially qualified undergraduates to enter an accelerated program that allows them to complete a PhD degree within two or three years after receiving their BS degree. Students electing this option must begin their research during the summer following their junior year and continue the research by taking CHEM 491 during their senior year.

** Students wishing to be considered for the accelerated BS/PhD program should apply to the Department by January 15 of the second semester of their sophomore or junior years at Rice. The student should submit with the application a letter describing why they would like to enroll in this program and outline briefly their intended plan of study, stating their area of interest and with whom they would like to undertake graduate research. After an interview, the Department's graduate admissions committee will consider the application and inform the candidate of their decision by no later than April 15 of that semester. Students admitted to the program will be assigned a committee to work out details of required courses for the accelerated program.

DEGREE REQUIREMENTS FOR MA AND PHD IN CHEMISTRY

For general university requirements, see Graduate Degrees (pages 57–58). Students who have completed course work equivalent to that required for a BA or BS in chemistry may apply for admission to the PhD program. For more information, see Admission to Graduate Study (pages 56–57).

MA Program—Students are NOT normally admitted to study for an MA degree. However, this degree is sometimes awarded to students who do not wish to complete the entire PhD program. Candidates for the MA degree must:

- Complete 6 one-semester courses
- Produce a thesis that presents the results of a program of research approved by the department
- Pass a final oral examination

Students who are admitted to PhD candidacy may apply for an automatic master's degree.

REQUIREMENTS FOR THE PHD IN CHEMISTRY AT RICE UNIVERSITY

The PhD in Chemistry is awarded for original research in Chemistry. Candidates receive a PhD after successfully completing at least 90 semester hours of advanced study in Chemistry and related fields and culminating in a thesis that describes an original and significant investigation in Chemistry. The thesis must be satisfactorily defended in a public oral examination. The student must pass the thesis defense before the end of the 16th semester of residency.

RESEARCH

During the first semester of residence students will select a research advisor from among the members of the faculty; the department chair must approve this choice. In some cases, students may choose research advisors outside of the department; however, such arrangements must be approved by the chemistry faculty. The research advisor will guide the student in the choice of an appropriate research topic and in the detailed training required to complete that project. Students must enroll in CHEM 800 (Graduate Research) and must participate in one of the graduate seminar classes offered by the department (currently CHEM 600) each semester that the student is in residence.

COURSE WORK

The student must complete 6 three-semester-hour graduate-level lecture courses at Rice University. In order to satisfy this requirement, each of these courses must satisfy the following criteria:

- They must be approved by the department's graduate advising committee.
- If a Chemistry course, it must be at the 400 level or higher. Certain 300 level courses in other departments may be acceptable with prior approval by the department's graduate advising committee. Courses must be in technical subjects in Science or Engineering. Courses in teaching, presentation or management will not be counted towards the 6-class requirement.
- Each course must be passed with a grade of B or higher. It is possible to repeat or replace a course, upon approval of the department's graduate advising committee. A maximum of two courses can be repeated/replaced.

Students transferring from other graduate institutions or students with a master degree can apply to have a maximum of 2 courses waived. A course waiver request must be accompanied by proof that a course pertinent to the student's field of research has been successfully completed at a different institution. Waiver requests must be submitted for approval to the department's graduate advising committee.

TEACHING

Each student is required to participate in CHEM 700 (Teaching Practicum), for four semesters with no grade less than B-.

QUALIFYING EXAMINATION

An examination committee, consisting of three faculty members excluding the research advisor, will be assigned to each student, typically in the second semester. The student must defend an original research proposal before this committee, involving both a written and oral presentation of the original research proposal. The written proposal must conform to the format and guidelines established by the

Chemistry Department, which are available in the Department office. The written proposal must be submitted to the committee at least one week before the date of the oral examination. The examination (including any follow up work deemed necessary by the committee) must be passed by the last day of class at the end of the student's fourth semester in residency.

ADVANCEMENT TO CANDIDACY FOR THE PHD

The course and examination requirements listed above must be completed within two years of admittance to the graduate program. After completing these requirements, a student must petition to be advanced to candidacy for the PhD degree. Upon advancement to candidacy a student chooses a thesis committee of at least three faculty members with the guidance and approval of the research advisor and department Chair. The thesis committee must include one faculty member holding his/her primary appointment outside of the Chemistry Department.

SATISFACTORY PERFORMANCE

Students are expected to perform satisfactorily in research as judged by their research director and their thesis committee. Students may also be requested to fulfill certain service functions for the Department. The student must be enrolled full time in a research group each semester that the student is in residence (except the first semester). Every year the student must submit an annual three-page research progress report to the thesis committee by August 1st.

The thesis committee will assess the progress being made in research and may invite the student to present a discussion of their work. If progress is unsatisfactory, the committee may recommend a semester of probation, which may result in dismissal from the program if progress remains unsatisfactory in the subsequent semester. The student, advisor, or committee may request a meeting between student and committee at other times to evaluate progress or to determine a course of action.

In order to remain in good standing, a student must receive grades above B- in CHEM 800, CHEM 700, and the various seminar courses. In the completed lecture courses, a student must maintain an average GPA of 3.00 (B) or higher. Failure to maintain satisfactory progress in research and/or grades will result in probation and possible dismissal.

APPEAL

Students may petition the Chemistry Department Graduate Advising Committee for variances on these academic regulations.

CIVIL AND ENVIRONMENTAL ENGINEERING

THE GEORGE R. BROWN SCHOOL OF ENGINEERING

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LECTURERS

Joseph Cibor

John Grounds

Moyeen Haque

John E. Merwin

John M. Sedlak

Ed Segner, III

Tauqir Sheikh

DEGREES OFFERED: BA, MCE, MEE, MES, MS, PHD

Civil and environmental engineering (CEVE) is a broad and diverse field of study that offers students an education with several degree options. The most flexible degree options are at the bachelor's level, where students can major in civil engineering (BS or BA) or complete a double major with any other Rice University major. Three nonthesis graduate degrees (MCE, MEE, and MES) are available to students who desire additional education and specialization in civil engineering, environmental engineering, or environmental sciences. Joint MBA/Master of Engineering degrees are also available in conjunction with the Jesse H. Jones Graduate School of Management.

Students admitted for graduate study leading to MS or PhD degrees must complete a rigorous course of study that combines advanced course work with scholarly research culminating in the public defense of a written thesis. Graduate research is carried out in a range of areas reflecting the interests of the department's faculty. Examples include environmental engineering, geotechnical engineering, structural engineering and mechanics, hydrology, water resources and water quality management, air pollution and its control, and hazardous waste treatment.

BS DEGREE IN CIVIL ENGINEERING

The Department of Civil and Environmental Engineering (CEVE) offers an innovative and challenging BS engineering curriculum, which is designed to provide significant flexibility to the student. Specific details and typical course layouts by semester can be found at the departmental website: <http://ceve.rice.edu>.

The main features of the ABET accredited BS in Civil Engineering are as follows:

- Six core courses (21 hours) primarily aimed at introduction to civil and environmental engineering, followed by 8 courses (24 hours) that represent the four thrust areas within CEVE
- The total required CEVE courses are kept to a minimum level of 45 hours to provide maximum flexibility to the student
- The thrust areas include (1) Environmental engineering (air and water quality, transport theory and modeling), (2) Hydrology and water resources (watershed and aquifer management, flood prediction, data analysis, GIS), (3) Structural engineering and mechanics (structural analysis, mechanics, design, matrix methods), (4) Urban infrastructure and management (transportation systems, geotechnical engineering, engineering economics, management)
- A choice of free electives (24 hours) to allow maximum flexibility for students to choose from a approved list of courses
- General science (39 hours) courses involve mathematics, physics, and chemistry

- Distribution (24 hours) courses as per university requirements

Total of at least 132 hours are required for graduation with a BS (see detailed list below).

Additional features of the BS curriculum include

- Freshman/sophomore year courses that introduce fundamentals of CEVE primarily targeted at students with diverse science, engineering, and humanities backgrounds (CEVE 101, 201, 203, 204, 211, and 311, 312)
- Special topics course available in the final year to help attract the best students to perform undergraduate research in the department
- Engineers Without Borders (EWB) is an important component of the program. This exciting new endeavor allows undergraduates to have an experience in a developing country where they are able to actually design and build a project to help society. Students have been attracted to the program in large numbers.

Course Requirements

General Science Requirements (* or an equivalent approved course)

- MATH 101 *Single Variable Calculus I* (3)
 MATH 102 *Single Variable Calculus II* (3)
 CHEM 121 *General Chemistry with Lab* (4)
 CHEM 122 *General Chemistry with Lab* (4)
 PHYS 101 *Mechanics with Lab* (3)
 PHYS 102 *Electricity and Magnetism with Lab* (4)
 MATH 211 *Ordinary Differential Equations* (3)
 MATH 212 *Multivariable Calculus* (3)
 CAAM 210 *Intro to Engineering Comp* (3)
 STAT 310* *Probability and Statistics* (3)
 CAAM 335* *Matrix Analysis* (3)
 CHEM 211 or PHY 201 or BIOS 201 (3)

CEVE Core Requirements (21 credits)

- CEVE 101 (F) *Fundamentals of CEVE* (3)
 CEVE 203 (F) *Environmental Eng. Processes* (3)
 CEVE 204 (F) *Environmental Eng. Lab* (1)
 CEVE 211 (F) *Engineering Mechanics* (3)
 CEVE 311 (S) *Mechanics of Solids and Structures* (3)
 CEVE 312 (S) *Strength of Materials Lab* (1)
 CEVE 371 (F) *Fluid Mechanics* (3)
 CEVE 480 (S) *Senior Design Project* (4)

Area I Environmental Engineering (select 6 approved hours)

- CEVE 401 (F) *Environmental Chemistry* (3)
 CEVE 402 (F) *Environmental Chemistry Lab* (1)
 CEVE 406 (S) *Environmental Law* (3)
 CEVE 411 (S) *Air Resources Management* (3)
 CEVE 434 (F) *Chemical Transport and Fate* (3)
 Or any approved environmental course in CEVE/CENG

Area II Hydrology and Water Resources (select 6 approved hours)

- CEVE 412 (S) *Hydrology and Watersheds Analysis* (3)

- CEVE 512 (S) *Hydrologic Design Lab* (3)
 CEVE 443 (F) *Atmospheric Science* (3)
 ESCI 450 (S) *Remote Sensing* (3)
 ESCI 451 (F) *Analysis of Environmental Data* (3)
 ESCI 454 (F) *Geographical Info Systems* (3)
 Or any approved computational course in CEVE/CAAM/ESCI

Area III Structural Engineering and Mechanics (select 6 approved hours)

- CEVE 304 (S) *Structural Analysis* (3)
 CEVE 405 (S) *Steel Design* (3)
 CEVE 407 (F) *Reinforced Concrete Design* (3)
 CEVE 408 (F) *Structures Lab* (1)
 CEVE 427 (F) *Matrix Methods in Structural Mechanics* (3)
 Or any approved structures/mechanics course in CEVE/MECH

Area IV Urban Infrastructure and Management (select 6 approved hours)

- CEVE 201 (F) *Urban and Environmental Systems* (4)
 CEVE 322 (F) *Engineering Economics* (3)
 CEVE 452 (S) *Urban Transportation Systems* (3)
 MGMT 750 (F) *Management for Science and Engineering* (3)
 MGMT 751 (S) *Management for Science and Engineering* (3)
 CEVE 470 (F) *Infrastructure Geotechnical Engineering* (4)
 Or any approved Urban Infrastructure and Management course in CEVE/MGMT/ECON

List of Approved CEVE 500 Level Courses:

- CEVE 511, 516, 518, 520, 521, 522, 527, 530, 531, 532, 533, 534, 536, 540, 550, 570, 576, 590

ABET PRORAM OBJECTIVES

(see website at <http://ceve.rice.edu/> for additional information)

1. Develop/demonstrate strong problem solving and communication skills
2. Achieve leadership position in technical or managerial area
3. Demonstrate initiative and innovative thinking in project work
4. Maintain a keen awareness of ethical, social, environmental, and global concerns
5. Remain engaged in continuing learning, including advanced degrees
6. Prepare for a Professional Engineering License

BA DEGREE IN ENVIRONMENTAL ENGINEERING SCIENCES

The BA degree in Environmental Engineering Sciences is designed to provide access to topics of common interest to students across the disciplines at Rice University. It is tailored to the specific needs of each student by discussion with and approval by the CEVE departmental advisor. An advisor will be assigned by the CEVE department chair, normally during the first year of study. Five core courses, plus seven courses in a focused specialty area (see below for example curricula) of study are required; total CEVE requirements approximately 39 hrs. In addition, each student is responsible for satisfying the university distribution requirements (24 hours) and additional electives for a total of at least 120 hours for graduation with a BA in Environmental Engineering Sciences. Although not required, students are encouraged to double major in their focus specialty area.

The coherent and complete core curriculum is designed to give Rice Undergraduate students a consistent technological literacy through the lens of Civil and Environmental Engineering and to prepare students for graduate school in engineering, various sciences (depending upon focus), economics, business MBA, political science, law, or medicine. Select students will be invited to finish an accelerated MS/PhD degree in the CEVE Department at Rice (meet with your advisor or department chair for details). Those students who want to obtain an ABET accredited engineering degree must follow a BS degree program in one of the engineering disciplines, including CEVE.

A student must demonstrate proficiency in the basic concepts of mathematics, computation, chemistry, and physics. Generally, this will require that these subjects were studied previously, e.g., AP exams, or concurrent enrollment with CEVE 101 or 201.

Seven (7) courses from approved electives, including four (4) courses from one specific focus area; four of these seven courses must be 300, or above, and two of these upper-division courses must be from the CEVE curriculum.

Five Core courses required for all BA Environmental Engineering Science majors:

CEVE 101 *Fundamentals of CEVE* (3)

CEVE 201 *Urban and Environmental Systems* (4)*

CEVE 203(204) *Environmental Eng. Processes* 4*

CEVE 401 *Intro Environmental Chemistry* (4)

CEVE 412 *Hydrology and Watershed Analysis* (3)

* Courses with laboratories.

Typical "focus specialty areas" might include:

1. Environmental Engineering: CEVE 406, 411, 434; ESCI 451 + 3 approved electives
2. Chemical Engineering: CENG 301, 390, 401, 402; CEVE 411, 434, 443
3. Chemistry: CHEM 211, 212; CEVE 406, 511 + 3 approved electives
4. Economics: ECON 211, 212, 370, 450, 461; CEVE 406, 411
5. Management: ECON 211, 212, 461; ACCO 305; POLI 336; CEVE 406, 411

Engineers Without Borders (EWB) is an important component of the CEVE program. This exciting new endeavor allows undergraduates to have an experience in a developing country where they are able to actually design and build a project to help society. Students have been attracted to the program in large numbers

BA DEGREE IN CIVIL ENGINEERING

The BA degree in Civil Engineering is designed to provide access to topics of common interest to students across the disciplines at Rice University. It is tailored to the specific needs of each student by discussion with and approval by the CEVE departmental advisor. An advisor will be assigned by the CEVE department chair, normally during the first year of study. For the BA degree in Civil Engineering the students must have a total of at least 120 hrs. A student must demonstrate proficiency in the basic concepts of mathematics, computation, chemistry, and physics. Generally, this will require that subjects studied previously, e.g., AP exams. The BA degree in Civil Engineering requires 21 hours of general math and science courses, 25 hours of core civil engineering courses, and 74 hours of electives (distribution courses 24 hrs and remaining open or free electives 50 hrs). Although not required, students are encouraged to double major in their focus specialty area.

The coherent and complete core curriculum is designed to give Rice Undergraduate students a consistent technological literacy through the lens of Civil and Environmental Engineering and to prepare students for graduate school in engineering. Those students who want to obtain an ABET accredited engineering degree must follow a BS degree in Civil Engineering program.

| | | |
|--|---|---------------|
| Required general math and science courses | CEVE 312 <i>Strength of Materials</i> | 1* |
| MATH 101 <i>Single Variable Calculus I</i> | CEVE 371 <i>Fluid Mechanics</i> | 3 |
| MATH 102 <i>Single Variable Calculus II</i> | * Laboratory | |
| MATH 211 <i>Ordinary Differential Equations</i> | Total: | 13 hrs |
| PHYS 101* <i>Mechanics with Lab</i> | Any four civil engineering courses from the following: | |
| PHYS 102* <i>Electricity and Magnetism with Lab</i> | CEVE 202 Environmental Eng. Processes | 3 |
| One of [COMP 110, CAAM 210, CAAM 335] | CEVE 304 Structural Analysis | 3 |
| One of [BIOS 122, CHEM 121/122, ELEC 242, MECH200, MSCI 301] | CEVE 322 Engineering Economics for Engineers | 3 |
| * or equivalent | CEVE 405 Steel Design | 3 |
| [MATH 212 or 221 recommended] | CEVE 407 Reinforced Concrete Design | 3 |
| Total: | CEVE 412 Hydrology and Watersheds | 3 |
| Required core civil engineering courses | CEVE 427 Matrix Methods in Structural Mechanics | 3 |
| CEVE 101 <i>Fundamentals of CEVE</i> | CEVE 452 Urban Transportation Systems | 3 |
| CEVE 211 <i>Engineering Mechanics</i> | CEVE 470 Infrastructure Geotechnical Engineering | 4 |
| CEVE 311 <i>Mechanics of Solids and Structures</i> | Total: | 12 hrs |

DEGREE REQUIREMENTS FOR MCE, MEE, MES, MS, AND PHD

Admission—Applicants pursuing graduate education in environmental engineering or hydrology should have preparation in mathematics, science, and engineering or related courses. A BS degree, or degree in Natural Science is preferred. Applicants pursuing graduate education in structural engineering, structural mechanics, and geotechnical engineering should have a BSCE with a significant emphasis on struc-

tural engineering, but students with other undergraduate degrees may apply if they have adequate preparation in mathematics, mechanics, and structural analysis and design. Applicants for graduate degrees should have a BS or BA in related areas of science and engineering. Successful applicants typically have at least a 3.00 (B) grade point average in undergraduate work and high Graduate Record Examination (GRE) scores. For general university requirements, see Graduate Degrees and Admission to Graduate Study (pages 56–58).

MS Program—The Master of Science degree is offered in both civil engineering and environmental engineering. For general university requirements, see Graduate Degrees (pages 57–58). To earn a MS degree, students must:

- Complete at least 24 semester hours of approved courses. For students studying Environmental Engineering this must include one course each in environmental chemistry, water treatment, hydrology, and air quality. For students studying civil, structural engineering, and mechanics this must include one course each in structural engineering, mechanics, advanced mathematics, and dynamic systems (comparable course work completed previously may be substituted for the core courses).
- Select a thesis committee according to department requirements and conduct original research in consultation with the committee.
- Present and defend in oral examination an approved research thesis.

Students take the oral exam only after the committee determines the thesis to be in a written format acceptable for public defense. Normally, students take two academic years and the intervening summer to complete the degree.

Students intending to extend their studies into the PhD degree program should note that the department does not grant an automatic MS degree to candidates who have not written a satisfactory master's thesis.

MCE Program—The Master of Civil Engineering (MCE) is a professional non-thesis degree requiring 30 hours of study. Students with a BS in Civil Engineering are eligible to apply. (see Graduate Degrees pages 57–58). To earn an MCE degree, students must complete 30 semester hours of approved courses.

MBA/MCE Program—For general university requirements, see Graduate Degrees (pages 57–58). See also Management and Accounting (pages 192–202). To earn a MBA/MCE degree, students must:

- Complete 24 semester hours of civil engineering courses
- Complete 52 semester hours of business administration courses

MEE Program—The Master of Environmental Engineering (MEE) is a professional nonthesis degree requiring 30 hours of study. Students who have a BS degree in any field of engineering may apply (see Graduate Degrees pages 57–58).

MES Program—The Master of Environmental Science (MES) is a professional nonthesis degree requiring 30 hours of study. To enter the MES program, applicants must have a BA or BS degree in any of the natural or physical sciences (see Graduate Degrees pages 57–58).

PhD Program—To earn a PhD degree, candidates must successfully accomplish the following (spending at least four semesters in full-time study at Rice):

- Complete 90 semester hours of approved course work past BS (60 semester hours past MS) with high standing.
- Pass a preliminary written examination in civil and environmental engineering.
- Pass a qualifying examination on course work, proposed research, and related topics.

- Complete a dissertation indicating an ability to do original and scholarly research.
- Pass a formal public oral examination on the thesis and related topics.

PhD candidates in civil and environmental engineering take the preliminary exam, administered by department faculty, after two semesters of course work. Candidates who pass this exam then form a doctoral committee according to department requirements. The qualifying examination administered by the doctoral committee after candidates develop a research proposal evaluates their preparation for the proposed research and identifies any areas requiring additional course work or study.

CLASSICAL STUDIES

THE SCHOOL OF HUMANITIES

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Harvey Yunis

VISITING AUTRY PROFESSOR

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Hilary Mackie

ASSISTANT PROFESSOR

Scott McGill

Caroline Quenemoen

LECTURER

Kristine Gilmartin Wallace

DEGREE OFFERED: BA

The classical studies major offers instruction in the Greek and Latin languages, in Greek and Roman literature (studied in the original and in translation), in the classical civilizations surveyed as a whole, and in particular themes, genres, and periods of classical culture and its influence through subsequent ages.

We recognize that students come to the study of ancient Greece and Rome with a whole spectrum of different kinds of interest. Some will want to concentrate on learning the ancient languages and reading the classical texts in the original Greek or Latin. Others will desire a broader introduction to the cultures of Greece and Rome and their legacy. Still others will be looking for some combination of these two approaches. With this in mind, the classical studies major provides maximum flexibility without sacrifice of focus. We cater to students who wish to prepare for graduate school in classical studies and also to students who are interested in Greek and Roman culture for other reasons and who wish to take a less specialized approach. Students will be able to explore ancient Greece and Rome from a variety of different angles and with whatever emphasis best suits their individual needs and goals.

To satisfy the requirements for the classical studies major, students must complete 30 semester hours of courses listed under "Greek," "Latin," and "Classics." Courses listed under "Greek" and "Latin" concentrate on the acquisition of language skills and on the reading and interpretation of texts in the original languages. Courses listed under "Classics" explore, in translation, the literature, history, philosophy, art, and other aspects of Greek and Roman civilization and also the effect that Greece and Rome have had on literature and other traditions in the West. These courses in translation regularly include freshman seminars.

Classical Studies majors will also, if they wish, have the opportunity to engage in research. In the final semester of study, a student majoring in Classical Studies may enroll in CLAS 493, in which the student writes a senior thesis on a topic of the student's choice in close consultation with a particular faculty member.

Further information on the classical studies major is available from faculty members. Faculty also help students arrange travel to Greece or Italy, whether to work on a dig or to study at the Intercollegiate Center for Classical Studies in Rome.

DEGREE REQUIREMENTS FOR BA IN CLASSICAL STUDIES

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in classical studies must complete at least 30 semester hours (10 courses) listed under "Greek," "Latin," or "Classics." The precise combination of

Greek, Latin, and Classics courses is to be determined by the student in consultation with the undergraduate coordinator, to ensure an individual course of study that is tailored to the student's own interests and goals.

Some courses offered by the departments of History and Philosophy also satisfy requirements for the classical studies major. For advice on which courses do this, consult any member of the classical studies faculty.

See CLAS, GREE, and LATI in the Courses of Instruction section.

COGNITIVE SCIENCES

THE SCHOOL OF SOCIAL SCIENCES

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 Darcy Burgund
 Michael Byrne
 Denise Chen
 Katherine Crosswhite
 Robert Englebretson
 Nancy Niedzielski
 Geoffrey Potts
 Sherrilyn Roush

DEGREE OFFERED: BA

Researchers in this interdisciplinary field seek to understand such mental phenomena as perception, thought, memory, the acquisition and use of language, learning, concept formation, and consciousness. Some investigators focus on relations between brain structures and behavior, some work with computer simulation, and others work at more abstract theoretical levels.

DEGREE REQUIREMENTS FOR BA IN COGNITIVE SCIENCES

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in cognitive sciences must complete 5 core courses and 7 additional courses (see below). Among the 7 additional courses, at least 3 and no more than 4 must be in a single area of concentration—linguistics, philosophy, psychology, or neuroscience.

INTRODUCTORY COURSES

Because the major is interdisciplinary, no single course introduces the full range of the subject. However, students who are interested in majoring in cognitive sciences should take one or more of the following courses during their first and second years: LING200, PHIL103, PSYC101, or PSYC203.

HONORS PROGRAM

Students with a 3.5 GPA in cognitive sciences and 3.3 overall GPA may apply for the cognitive sciences honors program. Students in the honors program are expected to conduct an independent research project of either one or two semesters under the guidance of a member of the cognitive sciences faculty. Students who wish to enter this program should consult with prospective advisors during their junior year and submit a proposal by the end of the semester proceeding the initiation of the project. Typically, this means submitting a proposal by the end of the junior year and beginning the project during the fall of the senior year. Proposal will be reviewed by both the supervisor and the program director. Students who under-

take a two-semester project will be allowed to continue into the second semester only if their advisor judges that sufficient progress has been made during the first semester. At the end of a project, honors students are expected to submit a final paper to both their advisor and the program director and make an oral presentation. For more details, contact the program director.

INDEPENDENT RESEARCH

Majors may undertake supervised independent research by enrolling in CSCI390 or the honors program, and may apply up to 9 credits of independent research towards the major. Students who wish to take CSCI390 must complete a CSCI390 contract and have it approved by their supervisor and the program director prior to the end of the first week of classes. All students taking CSCI390 must also write a substantive research paper, which is to be submitted to both their advisor and the program director at the end of the semester. (Copies of the contract form and instructions are available on the 'forms' section of the cognitive sciences website.)

Core Courses

The core courses are divided into five groups. Majors just take one course from each group.

Computer Science

Though all of these courses may be used to satisfy the computer science core requirements, no more than one may be taken for credit within the major

CAAM 210 *Introduction to Engineering Computation*

COMP 200 *Elements of Computer Science*

COMP 201 *Principles of Object-Oriented Programming*

COMP 210 *Introduction to Principles of Scientific Computation*

Psychology

PSYC 203 *Introduction to Cognitive Psychology*

Linguistics

LING 200 *Introduction to the Scientific Study of Language*

LING 306 *Language and the Mind*

LING 315 *Semantics*

Philosophy

PHIL 103 *Philosophical Aspects of Cognitive Science*

PHIL 305 *Mathematical Logic*

PHIL 312 *Philosophy of Mind*

Advanced Psychology

PSYC 308 *Memory*

PSYC 309 *Psychology of Language*

PSYC 351 *Psychology of Perception*

PSYC 360 *Thinking*

PSYC 362 *Biopsychology*

PSYC 430 *Computational Modeling of Cognitive Processes*

PSYC 432 *Brain and Behavior*

Additional Courses

At least 3 and no more than 4 must be in one of the following areas of concentration: linguistics, philosophy, psychology, or neuroscience. Note: you may not use the same courses to fulfill both a core course requirement and an additional course requirement; in other words, no double counting.

Cognitive Sciences

CCSCI 390 *Supervised Research in Cognitive Science*

CSCI 481 *Honors Project*

CSCI 482 *Honors Project*

Computer Science

COMP 212 *Intermediate Programming*

COMP 440 *Artificial Intelligence*

COMP 450 *Algorithmic Robotics*

Linguistics

LING 200 *Introduction to the Scientific Study of Language*

LING 300 *Linguistic Analysis*

LING 301 *Phonetics*

LING 304 *Introduction to Syntax*

LING 306 *Language and the Mind*

LING 311 *Phonology*

- LING 315 *Semantics*
 LING 317 *Language and Computers*
 LING 402 *Syntax and Semantics*
 LING 403 *Foundations of Modern Linguistics*
 LING 404 *Research Methodologies and Linguistic Theories*
 LING 411 *Neurolinguistics*
 LING 412 *Language and Intelligence*
 LING 490 *Discourse Analysis*

Neuroscience

Many of the neuroscience courses are taught by Baylor College of Medicine faculty.

For more information, see
<http://www.ruf.rice.edu/~neurosci/neurocoursesmain.html>

- BIOS 421 *Neurobiology*
 CAAM 415 *Theoretical Neuroscience*
 ELEC 481 *Fundamentals of Systems Physiology and Biophysics*
 LING 411 *Neurolinguistics*
 PSYC 362 *Biopsychology*
 PSYC 432 *Brain and Behavior (formally cross-listed as CSCI 420)*
 NEUR 500 *Functional Neuroanatomy and Systems Neuroscience*
 NEUR 501 *Cognitive Neuroscience I*
 NEUR 502 *Cognitive Neuroscience II*
 NEUR 503 *Molecular Neuroscience I and II*
 NEUR 504 *Cellular Neurophysiology I and II*
 NEUR 505 *Optical Imaging in Neuroscience*
 NEUR 506 *Learning and Memory*
 NEUR 511 *Integrative Neuroscience Core Course (first semester)*
 NEUR 512 *Integrative Neuroscience Core Course (first semester)*
 NEUR 515 *Neural Development*

Philosophy

- PHIL 103 *Philosophical Aspects of Cognitive Science*
 PHIL 303 *Theory of Knowledge*
 PHIL 305 *Mathematical Logic*
 PHIL 312 *Philosophy of Mind*
 PHIL 353 *Philosophy of Language*
 PHIL 357 *Incompleteness, Undecidability, and Computability*

Psychology

- PSYC 308 *Memory*
 PSYC 309 *Psychology of Language*
 PSYC 340 *Research Methods*
 PSYC 351 *Psychology of Perception*
 PSYC 352 *Formal Foundations of Cognitive Science*
 PSYC 360 *Thinking*
 PSYC 362 *Biopsychology*
 PSYC 370 *Introduction to Human Factors*
 PSYC 409 *Methods in Human-Computer Interaction*
 PSYC 411 *History of Psychology*
 PSYC 430 *Computational Modeling of Cognitive Processes*
 PSYC 432 *Brain and Behavior (formally cross-listed as CSCI 420)*
 PSYC 441 *Human-Computer Interaction*
 PSYC 465 *Olfactory Perception*

Other

- ANTH 406 *Cognitive Studies in Anthropology and Linguistics*
 ELEC 201 *An Introduction to Engineering Design*
 ELEC 498 *Introduction to Robotics*
 STAT 300 *Model Building*

COMPUTATIONAL AND APPLIED MATHEMATICS

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Dmitriy Leykekhman

Bradford E. Peercy

LECTURER

Nicolas G. Cogan

DEGREES OFFERED: BA, MCAM, MCSE, MA, PHD

Courses within this major can provide foundations applicable to the many fields of engineering, physical sciences, life sciences, behavioral and social sciences, and computer science. Undergraduate majors have considerable freedom to plan a course of study consistent with their particular interests.

The professional degree (MCAM), for persons interested in practicing within this field, emphasizes general applied mathematics, operations research and optimization, and numerical analysis, while the MA and PhD programs concentrate on research. Faculty research interests fall in the four general areas of numerical analysis and computation, physical mathematics, operations research and optimization, and mathematical modeling in physical, biological, or behavioral sciences.

A further advanced degree program in computational science and engineering (CSE) addresses the current need for sophisticated computation in both engineering and the sciences. Such computation requires an understanding

parallel and vector capabilities and a range of subjects including visualization, networking, and programming environments. An awareness of a variety of new algorithms and analytic techniques is also essential to maximizing the power of the new computational tools.

A joint MBA/Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

DEGREE REQUIREMENTS FOR BA IN COMPUTATIONAL AND APPLIED MATHEMATICS

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in computational and applied mathematics are required to complete the 51 semester hours spelled out in the following program of study.

Introductory Courses: Typically completed during the first two years

| | |
|---|---|
| MATH 101 <i>Single Variable Calculus I*</i> | CAAM 210 <i>Introduction to Engineering Computation</i> |
| MATH 102 <i>Single Variable Calculus II</i> | CAAM 335 <i>Matrix Analysis</i> |
| MATH 212 <i>Multivariable Calculus</i> | |
| COMP 110 <i>Computation in Science and Engineering*</i> | |

*Students with prior experience with calculus and/or computational science may petition the department for a waiver.

Entering students should enroll in the most advanced course commensurate with their background; advice is available from the CAAM department during Orientation Week

Intermediate Courses: Typically completed by the end of the third year

| | |
|--|--|
| CAAM 336 <i>Differential Equations in Science and Engineering</i> | CAAM 378 <i>Introduction to Operations Research and Optimization</i> |
| (or STAT 310 <i>Probability and Statistics</i> or STAT 331 <i>Applied Probability</i>) | CAAM 401 <i>Analysis I</i> CAAM 402 <i>Analysis II</i> |

Advanced Courses: Typically completed during the fourth year

| |
|---------------------------------------|
| CAAM 453 <i>Numerical Analysis I</i> |
| CAAM 454 <i>Numerical Analysis II</i> |

Electives: 5 Courses at 300 level or above; 2 of which must be at the 400 level or above. (Chosen in consultation with the CAAM undergraduate advisor.)

| | |
|--|---|
| Highly Recommended Electives: | MATH 423 <i>Partial Differential Equations</i> |
| CAAM 415 <i>Theoretical Neuroscience</i> | MATH 425 <i>Real Analysis</i> |
| CAAM 420 <i>Computational Science I</i> | MATH 427 <i>Complex Analysis</i> |
| CAAM 436 <i>Partial Differential Equations of Mathematical Physics</i> | STAT 431 <i>Overview of Mathematical Statistics</i> |
| CAAM 460 <i>Optimization Theory</i> | |

DEGREE REQUIREMENTS FOR MCAM, MA, AND PHD IN COMPUTATIONAL AND APPLIED MATHEMATICS

Admission—Admission to graduate study in computational and applied mathematics is open to qualified students holding bachelor's or master's degrees (or their equivalent) in engineering, mathematics, or the physical, biological, mathematical, or behavioral sciences. Department faculty evaluate the previous academic record

and credentials of each applicant individually. For general information, see Graduate Degrees (pages 57-58) and Admission to Graduate Study (pages 56-57).

Applicants should be aware that it normally takes two years to obtain a master's degree and an additional two to four years for the doctoral degree.

MCAM Program—This professional degree program emphasizes the applied aspects of mathematics. The MCAM degree requires satisfactory completion of at least 30 semester hours of course work approved by the department.

MA Program—For an MA in computational and applied mathematics, students must:

- Complete at least 30 semester hours at the graduate level, including 5 courses in computational and applied mathematics, in addition to thesis work
- Produce an original thesis acceptable to the department
- Perform satisfactorily on a final public oral examination on the thesis

For students working toward the PhD, successful performance on the master's thesis may fulfill the PhD thesis proposal requirements upon approval by the thesis committee.

PhD Program—For a PhD in computational and applied mathematics, students must:

- Complete a course of study approved by the department, including at least 2 courses outside the major area
- Perform satisfactorily on preliminary and qualifying examinations and reviews
- Produce an original thesis acceptable to the department
- Perform satisfactorily on a final public oral examination on the thesis

Financial Assistance—Graduate fellowships, research assistantships, and graduate scholarships are available and are awarded on the basis of merit to qualified students. Current practice in the department is for most doctoral students in good standing to receive some financial aid.

DEGREE REQUIREMENTS FOR MCSE AND PHD IN COMPUTATIONAL SCIENCE AND ENGINEERING

CSE Program Area—Recognizing the increasing reliance of modern science and engineering on computation as an aid to research, development, and design, the Department of Computational and Applied Mathematics, in conjunction with the Departments of Biochemistry and Cell Biology, Earth Science, Computer Science, Chemical Engineering, Electrical and Computer Engineering, Environmental Science and Engineering, and Statistics, has established an advanced degree program in computational science and engineering (CSE). The program focuses on modern computational techniques and provides a resource for training and expertise in this area.

The program is administered by a faculty committee chosen by the deans of engineering and natural sciences, with ultimate oversight by the provost. The Computational Science Committee (CSC) helps students design an appropriate course of study and sets the examination requirements.

Students may enter the CSE program either directly or indirectly through one of the participating departments (see list above). In all cases, however, students must fulfill the admissions requirements of one department, which is their associated department. Students then meet the normal requirements for graduate study within

that department in every way (including teaching and other duties) except that the curriculum and examination requirements are set by the CSC.

MCSE Program—This program's intent is to produce professional experts in scientific computing able to work as part of an interdisciplinary research team. Training is concentrated in state-of-the-art numerical methods, high-performance computer architectures, use of software development tools for parallel and vector computers, and the application of these techniques to at least one scientific or engineering area. For general university requirements, see Graduate Degrees (pages 57-58).

Required Courses

COMP 412 *Compiler Construction*
(or ELEC 425 *Computer Systems Architecture*)
CAAM 420 *Computational Science I* (taken as soon as possible)
CAAM 520 *Computational Science II* (taken as soon as possible)

1 course from the following

CAAM 452 *Computational Methods for Differential Equations*
CAAM 453 *Numerical Analysis I*
CAAM 454 *Numerical Analysis II*
CAAM 464 *Numerical Optimization*
CAAM 551 *Numerical Linear Algebra*

Computational Science Electives

4 courses selected from an approved list of COMP or CAAM courses (at least 2 courses at the 500 level)

Open Electives

2 approved courses other than CAAM or COMP courses at the 300 level or above (a computational project taken within a participating department also satisfies this requirement)

Application Areas

An appropriate sequence of courses from a participating application area at the 300 level or above

For the MCSE degree, students must complete at least 30 semester hours of course work approved by the CSC; no more than 2 of the courses may be taken at the 300 level, taken outside the CSE program area, or satisfied by transfer credit. Each student's program of study must meet the requirements listed below. Modification of requirements can be requested by petition.

PhD Program—Study at the doctoral level seeks to advance the field through original research. For general university requirements, see Graduate Degrees (pages 57-58). For the PhD in computational science and engineering, students must:

- Complete a course of study approved by the CSC, including at least 2 courses outside the major area
- Perform satisfactorily on preliminary and qualifying examinations and reviews
- Complete 2 courses or a reading examination on an approved foreign language
- Produce an original thesis acceptable to the CSC
- Perform satisfactorily on a final public oral examination on the thesis

See CAAM in the Courses of Instruction section.

COMPUTER SCIENCE

THE GEORGE R. BROWN SCHOOL OF ENGINEERING

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Vikram Adve

SENIOR FACULTY FELLOW

John Mellor-Crummey

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Robert Fowler

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Doron Bustan

Arun Chauhan

Daniel Chavarria-Miranda

Mark Moll

Joël Ouaknine

Kedar Swadi

ASSISTANT PROFESSOR

Vijay Pai

Yehia Massoud

Kartik Mohanram

(with Chemistry)

PROFESSOR

James Tour

DEGREES OFFERED: BA, BSCS, MCS, MS, AND PHD

Computer science is concerned with the study of computers and computing, focusing on algorithms, programs and programming, and computational systems. The main goal of the discipline is to build a systematic body of knowledge, theories, and models that explain the properties of computational systems, and to show how this

body of knowledge can be used to produce solutions to real-world computational problems. Computer science is the intellectual discipline underlying information technology, which is widely accepted now as the ascendant technology of the next century. Students in computer science at Rice benefit from the latest in equipment and ideas as well as the flexibility of the educational programs. The research interests of the faculty include algorithms and complexity, artificial intelligence and robotics, compilers, distributed and parallel computation, graphics and visualization, operating systems, and programming languages.

The department offers two undergraduate degrees: the Bachelor of Arts degree (BA) and the Bachelor of Science in Computer Science degree (BSCS). The department offers two master's degrees: the professional Master of Computer Science degree (MCS) and the research-oriented Master of Science degree (MS). The department also offers a doctoral degree (PhD).

A joint MBA/Master of Engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

DEGREE REQUIREMENTS FOR BA IN COMPUTER SCIENCE

For general university requirements, see Graduation Requirements (pages 14–15). The undergraduate program in computer science has been designed to accommodate a wide range of student interests. The program is sufficiently flexible for a student to customize it to his or her interests. A student can develop a broad educational program that couples computer science education with a variety of other fields in engineering, natural sciences, the humanities, or social sciences. Alternatively, a program might be designed for a student preparing for graduate study in computer science or for a career in computing and information technology.

The undergraduate program consists of required core courses, which are introductory courses covering material required of all majors; required breadth courses, which are upper-level courses ensuring knowledge in a broad range of areas; and electives, which give students the freedom to explore specific interests. Students majoring in computer science must complete between 58 and 60 semester hours of courses in these three categories. Students graduating with a BA in computer science must have at least 120 semester hours.

Core Courses

8 courses for a total of 28 hours, required for all majors, usually taken in the freshman and sophomore years

MATH 101/102 *Single Variable Calculus I and II*

COMP 210 *Introduction to Principles of Scientific Computation*

COMP 212 *Intermediate Programming*

COMP 280 *Mathematics of Computer Science*

COMP 314 *Applied Algorithms and Data Structures*

COMP 320 *Introduction to Computer Organization*

1 course from the following:

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 221 *Honors Calculus III*

*Preferred choice

Breadth Courses

7 courses for a total of 23 hours, required for all majors, usually taken in the junior and senior years STAT 331* or 310 *Probability*

CAAM 353 *Numerical Analysis*

MATH 355* or CAAM 335 *Linear Algebra*

COMP 311 or 412 *Programming Languages*

COMP 481 or 482 *Theory*

COMP 421 *Operating Systems*

ELEC 220 *Computer Engineering Fundamentals*

Electives

2 courses for a total of 6 to 8 hours in computer science at the 300 level or higher. One of these may be an independent study project.

DEGREE REQUIREMENTS FOR BS IN COMPUTER SCIENCE

The BS degree is designed for students who are interested in a more in-depth study of computer science to prepare themselves for a professional career in the computing industry. To receive a BS degree, a student must complete all the requirements of the BA degree (i.e., core, breadth, and electives), with the addition of PHYS 101/102 (or PHYS 111/112) (7 hours) to ensure a strong scientific background. In addition, the student must complete the depth component. This component consists of a coherent set of four or five courses specializing in some area of computer science. The same course cannot satisfy both the breadth requirement and the depth requirement. Students can adopt a preset depth component or design their own components, consisting of at least 15 hours. BS degree plans have to be approved by departmental advisers by no later than the end of the junior year. Sample curricula are listed on the departmental website; more information is available from department advisers. The computer science requirements of the BS degree total 80 to 82 semester hours. For a BS degree in computer science, a total of 128 semester hours is required.

DEGREE REQUIREMENTS FOR MCS AND MS IN COMPUTER SCIENCE

For general university requirements, see Graduate Degrees (pages 57-58). The professional MCS degree is a terminal degree for students intending to pursue a technical career in the computer industry. To earn the MCS degree, students must successfully complete 30 semester hours of course work approved by the department and following the plan formulated in consultation with the department adviser.

Areas of concentration for the MCS include algorithms and complexity, artificial intelligence, compiler construction, distributed and parallel computing, graphics and geometric modeling, operating systems, and programming languages. The professional program normally requires three semesters of study.

The MCS degree with a concentration in Bioinformatics is for students intending to pursue a technical career in the biotechnology industry. Students learn to integrate mathematical and computational methods to analyze biological, biochemical, and biophysical data. This program requires prior background in computer science, biosciences, and mathematics. To earn this degree, students must successfully complete 40 hours of approved course work meeting departmental requirements. This program normally requires four semesters of study.

The MS degree is a research degree requiring a thesis in addition to course work.

DEGREE REQUIREMENTS FOR PHD IN COMPUTER SCIENCE

The PhD degree is for students planning to pursue a career in computer science research and education. The doctoral program normally requires four to six years of study. To earn a PhD in computer science, students must:

- Meet departmental course requirements
- Complete a COMP 590 project by the end of the third semester
- Complete a master's thesis by the end of the fifth semester, if a previous master's thesis has not been approved by the graduate committee
- Pass a qualifying examination in an area of specialization within seven semesters after entering the PhD program
- Conduct original research, submit an acceptable PhD thesis proposal, and successfully defend the thesis proposal
- Submit an acceptable PhD thesis that reports research results and pass a final oral defense

Students who successfully meet the first three requirements are awarded the Master of Science degree. Students successfully meeting all requirements, plus any departmental and university requirements, are awarded the PhD degree.

Financial Assistance—Fellowships and research assistantships are available to students in the PhD program. Both provide a monthly stipend for the academic year and cover all tuition expenses. More substantial monthly stipends may be available during the summer for students working on departmental research projects. In all cases, continued support is contingent on satisfactory progress in the program. PhD students also are expected to assist in the teaching and administration of undergraduate and graduate courses.

Additional Information—For further information and application materials, write the Department of Computer Science-MS 132, Rice University, P.O. Box 1892, Houston, Texas 77251-1892.

See COMP in the Courses of Instruction section.

EARTH SCIENCE

THE WIESS SCHOOL OF NATURAL SCIENCES

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ESCI DEGREES OFFERED: BA, BS, MS, PHD

All undergraduate majors in earth science take a 4-course core sequence, typically in the sophomore and junior years, on earth processes, materials, observations, and history. Majors also take introductory courses in mathematics, chemistry, and in many cases, physics and biology.

The selection of upper-division courses and additional science courses depends on which major, BA or BS, and, for the BS major, which of five tracks are chosen by the student: geology, geochemistry, geophysics, environmental earth science, or a track designed by the student subject to the approval of the Department Undergraduate Adviser. The program of study typically includes experience with analytical equipment, computer systems, and fieldwork.

The BS in earth science degree should be chosen by students planning a career or further study in earth science or a related field. The BA in earth science degree has fewer requirements and might be a good choice for students planning a career or further study to which earth science is incidental.

DEGREE REQUIREMENTS FOR BS IN EARTH SCIENCE

For general university requirements, see Graduation Requirements (pages 14–15).

BS majors must also complete the “Additional Requirements” for one track (described below).

The following courses are required for all tracks:

MATH 101/102 *Single Variable Calculus I and II*
 CHEM 121/122 or 151/152 *General Chemistry I and II with lab*

PHYS 101/102 or 111/112 *Introductory Physics I and II with lab*

ESCI 321 *Earth System Evolution and Cycles*

ESCI 322 *Earth Chemistry and Materials*

ESCI 323 *Earth Structure and Deformation with lab*

ESCI 324 *Earth's Interior*

ADDITIONAL REQUIREMENTS FOR THE GEOLOGY TRACK

The following courses are required:

MATH 211 *Ordinary Differential Equations and Linear Algebra*

ESCI 334 *Geological and Geophysical Techniques*

ESCI 390 *Field Camp*

Choose one of the following courses:

COMP 110 *Computation in Natural Science*

CAAM 210 *Introduction to Engineering Computation (FORTRAN)*

CAAM 211 *Introduction to Engineering Computation (C)*

COMP 210 *Principles of Computing and Programming*

Choose one of the following courses:

ESCI 412 *Advanced Petrology*

ESCI 430 *Principles of Trace-Element and Isotope Geochemistry*

Choose one of the following courses:

ESCI 427 *Sequence Stratigraphy*

ESCI 521 *Seminar in Applied Micropaleontology*

Choose one of the following courses:

ESCI 504 *Siliciclastic Depositional Systems*

ESCI 506 *Carbonate Depositional Systems*

ESCI 421 *Paleoceanography*

Choose one of the following courses:

ESCI 446 *Solid Earth Geophysics*

ESCI 442 *Exploration Geophysics I*

Choose one of the following courses:

ESCI 463 *Advance Structural Geology*

ESCI 428 *Geologic Interpretation of Reflection Seismic Profiles*

ESCI 464 *Global Tectonics*

ADDITIONAL REQUIREMENTS FOR THE GEOCHEMISTRY TRACK

The following courses are required:

BIOS 201 *Introductory Biology I*

A 6 hour field-based course or equivalent, approved by the department undergraduate adviser

Choose 9 hours from the following:

ESCI 412 *Advanced Petrology*

ESCI 421 *Paleoceanography*

ESCI 458 *Thermodynamics/Kinetics for Geoscientists*

ESCI 203 *Biogeochemistry*

ESCI 430 *Principles of Trace-Element and Isotope Geochemistry*

Choose 9 hours from the following:

All upper division ESCI courses

CEVE 401 *Introduction to Environmental Chemistry*

CEVE 403 *Principles of Environmental Engineering*

CEVE 434 *Chemical Transport and Fate in the Environment*

CEVE 532 *Physical-Chemical Processes in Environmental Engineering*

CEVE 534 *Transport Phenomena and Environmental Modeling*

CEVE 550 *Environmental Organic Chemistry*

BIOS 202 *Introductory Biology*

BIOS 211 *Introductory Lab Module in Biological Science*

CHEM 211/212 *Organic Chemistry*

CHEM 311/312 *Physical Chemistry*

CHEM 415 *Chemical Kinetics and Dynamics*

CHEM 495 *Transition Metal Chemistry*

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

COMP 110 *Computation Science and Engineering*

CAAM 210/211 *Introduction to Engineering Computation*

COMP 210 *Introduction to Principles of Scientific Computing*

ADDITIONAL REQUIREMENTS FOR THE GEOPHYSICS TRACK

The following courses are required:

MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

PHYS 201 *Waves and Optics*

PHYS 231 *Elementary Physics Lab II*

In addition, the student must complete a field experience, equivalent to 6 semester hours, approved by the department undergraduate advisor.

Choose one of the following courses:

COMP 110 *Computation in Natural Science*

CAAM 210 *Introduction to Engineering Computation (FORTRAN)*

CAAM 211 *Introduction to Engineering Computation (C)*

COMP 210 *Principles of Computing and Programming*

Choose 6 hours from the following:

ESCI 440 *Geophysical Data Analysis: Digital Signal Processing*

ESCI 441 *Geophysical Data Analysis: Inverse Theory*

ESCI 442 *Exploration Geophysics I*

ESCI 444 *Exploration Geophysics II*

ESCI 450 *Remote Sensing*

ESCI 454 *Geographic Information Science*

ESCI 461 *Seismology I*

ESCI 462 *Tectonophysics*

ESCI 464 *Global Tectonics*

ESCI 532 *Advanced Global Tectonics*

ESCI 542 *Seismology II*

Choose 6 hours from the immediately preceding or following lists:

Any 3- or 4- hour course in ESCI with a number between 411 and 475, except for research and special studies

Any 300- or 400-level MATH, CAAM, or PHYS class

CHEM 311 *Physical Chemistry*

CEVE 412 *Hydrology & Watershed Analysis*

ADDITIONAL REQUIREMENTS FOR THE ENVIRONMENTAL EARTH SCIENCE TRACK

The following courses are required:

MATH 211 *Ordinary Differential Equations and Linear Algebra*

BIOS 201 *Introductory Biology I*

Choose one of the following courses:

COMP 110 *Computation in Natural Science*

CAAM 210 *Introduction to Engineering Computation (FORTRAN)*

CAAM 211 *Introduction to Engineering Computation (C)*

COMP 210 *Principles of Computing and Programming*

Choose 14 hours from the following, including at least two courses in ESCI:

ESCI 451 *Analysis of Environmental Data*

ESCI 353 *Environmental Geochemistry*

ESCI 442 *Exploration Geophysics*

ESCI 454 *Geographic Information Science*

ESCI 463 *Advanced Structural Geology I*

ESCI 504 *Clastics*

ESCI 506 *Carbonates*

ESCI 568 *Paleoclimates and Human Response*

CEVE 306 *Global Environmental Law and Sustainable Development*

CEVE 434 *Chemical Transport and Fate in the Environment*

CEVE 412 *Hydrogeology and Watershed Analysis*

CEVE 401 *Environmental Chemistry*

CHEM 211 *Organic Chemistry*

CHEM 311 *Physical Chemistry*

CHEM 360 *Inorganic Chemistry*

PHYS 201 *Waves and Optics*

PHYS 231 *Elementary Physics Lab II*

BIOS 202 *Introductory Biology II*

ADDITIONAL REQUIREMENTS FOR THE SELF-DESIGNED TRACK

The department recognizes the interdisciplinary nature of modern earth science and the opportunity for students to specialize in nontraditional and emerging fields. Therefore, students can design their own specialty track, normally in close consultation with one faculty member and followed by approval from the department undergraduate adviser. In addition to required earth science courses and related courses, these tracks will generally comprise 15 additional hours that target a coherent theme from an approved list of 300- or higher-level courses, from inside or outside the department. Interested students are expected to submit a statement of rationale by the beginning of their third year.

Choose 9 hours from the following:

BIOS 201 *Introductory Biology I*
 COMP 110 *Computation in Natural Science*
 CAAM 210 *Introduction to Engineering Computation (FORTRAN)*
 CAAM 211 *Introduction to Engineering Computation (C)*
 COMP 210 *Principles of Computing and Programming*
 CHEM 311/312 *Physical Chemistry I and II*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*

MATH 212 *Multivariable Calculus*

PHYS 201 *Waves and Optics*

PHYS 203 *Atmosphere, Weather, and Climate*

Complete a field experience, equivalent to 4 semester hours, approved by the department undergraduate adviser.

Choose 15 hours of additional courses numbered 300 or higher targeting a coherent theme selected with approval of the department undergraduate adviser.

DEGREE REQUIREMENTS FOR BA IN EARTH SCIENCE

For general university requirements, see Graduation Requirements (pages 14-15).

The following courses are required:

MATH 101/102 *Single Variable Calculus I and II*
 CHEM 121/122 or 151/152 *General Chemistry I and II with lab*
 ESCI 321 *Earth System Evolution and Cycles*
 ESCI 322 *Earth Chemistry and Materials*
 ESCI 323 *Earth Structure and Deformation with lab*
 ESCI 324 *Earth's Interior*
 ESCI 334 *Geological and Geophysical Techniques*

Choose 6 hours from the following:

BIOL 201/202 *Introductory Biology I and II*
 BIOL 211, 213 *Biology Lab Modules*

MATH 211 *Differential Equations*

PHYS 101/102 or 125/126 *Introductory Physics*

COMP 110 *Computation in Natural Science* or CAAM 210 *Introduction to Engineering Computation (FORTRAN)* or CAAM 211 *Introduction to Engineering Computation (C)* or COMP 210 *Principles of Computing and Programming*

Choose four upper division ESCI courses, approved by the department undergraduate adviser.

Choose 6 hours in science and engineering (including ESCI) courses at the 200 level or above approved by the department undergraduate advisor.

UNDERGRADUATE INDEPENDENT RESEARCH

The department encourages, but does not require, earth science undergraduate majors to pursue independent supervised research in ESCI 481 *Research in Earth Science*. See also Honors Programs (page 26).

DEGREE REQUIREMENTS FOR MS AND PHD IN EARTH SCIENCE

All incoming students should have a strong background in physics, chemistry, and mathematics and should have, or should acquire, a broad grounding in fundamental earth science. The department encourages applications from well-qualified students with degrees in the other sciences and mathematics. For general university requirements, see Graduate Degrees (pages 57-58). The requirements for the MS and PhD in earth science are similar, but the PhD demands a significantly higher level of knowledge, research skills, and scholarly independence. Most students need at least two years beyond the bachelor's degree to complete the MS and at least two years beyond the MS degree for the PhD.

Candidates determine, with their major professor and thesis committee, a course of study following the *Guidelines for Advanced Degrees in the Department of Earth Science* distributed to all incoming students. For both degrees, candidates must:

- Complete 20 semester hours of course work at the 400 level and above (or other approved courses), not including research hours
- Pass a written preliminary exam
- Maintain a grade point average of 3.00 (B) or better
- Prepare a written thesis
- Produce a publishable thesis that represents an original contribution to science
- Defend the research and conclusions of the thesis in an oral examination

Students of exceptional ability with a bachelor's degree and department approval may work directly toward the PhD, in which case the course of study is equivalent to that required for both degrees; performance on the examinations and the thesis, however, should be at the level required for the PhD. Because the graduate programs require full-time study and close interaction with faculty and fellow students, the department discourages students from holding full (or nearly full) time jobs outside the university. Outside employment must be approved by the chair.

See ESCI in the Courses of Instruction section.

ECONOMICS

THE SCHOOL OF SOCIAL SCIENCES

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ADJUNCT PROFESSORS

Bruce M. Lairson

John Michael Swint

ADJUNCT ASSOCIATE PROFESSOR

Charles E. Begley

LECTURER

Kenneth Medlock

DEGREES OFFERED: BA, MA, PHD

Undergraduates may major in either economics or mathematical economic analysis. The latter is recommended for students who intend to continue on to graduate work in economics or pursue a business or governmental job in which analytical and quantitative skills are required.

The eight major fields available for graduate study are econometrics, economic development, economic theory, industrial organization and regulation, international trade and finance, labor, macroeconomics and/or monetary theory, and public finance.

REQUIREMENTS FOR MAJORING IN ECONOMICS

1. All economics majors must complete a minimum of 10 courses with a grade point average of at least 2.0. When students repeat courses or complete more than the minimally required number of courses, the departmental GPA will be based on the set of courses that (i) satisfies all requirements for the degree and (ii) results in the highest GPA for the student. Major requirements are not reduced for multiple majors, although some courses can satisfy the requirements for more than one major. (Please note that students may not pursue a double major in economics and mathematical economic analysis.)
2. The following courses are required for all economics majors:*

ECON 211 *Principles of Economics I*

ECON 370 *Microeconomic Theory*

ECON 375 *Macroeconomic Theory*

STAT 280 *Elementary Applied Statistics* (or STAT 310/ECON 382)

ECON 446 *Applied Econometrics* (or ECON 400).

Please note that ECON 370 requires MATH 101 (or both MATH 111 and 112) as prerequisites. We suggest that economics majors take ECON 211, ECON 370, MATH

101, STAT 280 (or STAT 310/ECON 382), and ECON 446 (or ECON 400) as early as possible. Please note that failure to take prerequisite courses in earlier years may cause scheduling problems in later years.

3. Given that item 2 has been satisfied, the five remaining required economics courses must be selected from the following:

| | |
|---|--|
| ECON 348 <i>Organization Design</i> | ECON 450 <i>World Economy and Social Development</i> |
| ECON 355 <i>Financial Markets</i> | ECON 451 <i>Economy of Latin America</i> |
| ECON 400 <i>Econometrics</i> | ECON 452 <i>Religion, Ethics, and Economics</i> |
| ECON 403/404 <i>Senior Independent Research</i> | ECON 455 <i>Money and Financial Markets</i> |
| ECON 415 <i>Labor Economics</i> | ECON 461 <i>Urban Economics</i> |
| ECON 420 <i>International Trade</i> | ECON 472 <i>Introduction to Game Theory</i> |
| ECON 421 <i>International Finance</i> | ECON 475 <i>Integer and Combinatorial Optimization</i> |
| ECON 435 <i>Industrial Organization</i> | ECON 477 <i>Mathematical Economics</i> |
| ECON 436 <i>Regulation</i> | ECON 480 <i>Environmental Economics</i> |
| ECON 437 <i>Energy Economics</i> | ECON 481 <i>Health Economics</i> |
| ECON 438 <i>Business, Law, and Economics</i> | ECON 482 <i>Distributive Justice</i> |
| ECON 439 <i>Torts, Property, and Contracts</i> | ECON 483 <i>Public Finance Tax Policy</i> |
| ECON 440 <i>Risk, Uncertainty, and Info</i> | ECON 484 <i>Public Finance Expenditure</i> |
| ECON 445 <i>Managerial Economics</i> | ECON 485/486 <i>Contemporary Economic Issues</i> |
| ECON 448 <i>Corporate Finance</i> | ECON 495/496 <i>Senior Seminar</i> |
| ECON 449 <i>Basics/Financial Engineering</i> | |

4. No more than three of the 10 economics courses may be transferred from other schools. Additional transfer credits in economics may count toward meeting University graduation requirements but not toward fulfillment of the departmental major requirements. AP credits do not count against the three allowed transfer credits. In order to transfer ECON 211, the student must pass a qualifying examination. Students wishing to take the ECON 211 qualifying examination must apply to the economics department office in Baker Hall 266A. For additional information on transfer credits, consult "Procedures for Transfer Credit," available in the economics department office.
5. Students may graduate with "Honors in Economics" by achieving a B+ (3.33) average in all economics courses and completing two semesters of independent research (for details, consult "Economics 403/404 - *Senior Independent Research*," available in the economics department office).
6. For additional course information, consult "Economics Course Descriptions," compiled by the Rice chapter of the Omicron Delta Epsilon National Economics Honor Society.
7. Please note that it is primarily the responsibility of the student to satisfy all degree requirements, including the "University Credit Requirements" and "University Distribution Requirements" specified in the General Announcements. Students are advised that the relevant departmental requirements are those in effect on the day that the student declares economics as their major. Consult with the appropriate departmental advisor, who must sign all registration forms for each major.

* The Department of Statistics has advised that they may introduce a new class especially for economics majors in place of STAT 280. If and when they do, we will replace STAT 280 by that new class. In the meantime, students should take STAT 280 (or STAT 310/ECON 382) before taking ECON 446 (or ECON 400).

8. Students who are considering either graduate work in economics or a business or governmental job in which analytical and quantitative skills are required, should seriously consider obtaining the alternative major in Mathematical Economic Analysis.

REQUIREMENTS FOR MAJORING IN MATHEMATICAL ECONOMIC ANALYSIS

1. The major in mathematical economic analysis (MTEC) is designed for students who are interested in either graduate work in economics or a business or governmental job in which analytical and quantitative skills are required.
2. Students must choose between the two majors offered by the economics department; that is, students may not double major in economics and mathematical economic analysis. Major requirements are not reduced for students with multiple majors.
3. All MTEC majors must complete a minimum of 16 courses in six areas with a grade point average of at least 2.0. These courses must include:

(a) Four courses in economic theory:

ECON 211 *Principles of Economics I*
 ECON 370 *Microeconomic Theory*
 ECON 375 *Macroeconomic Theory*
 ECON 477 *Mathematical Economics*

ECON 480 *Environmental Economics*
 ECON 481 *Health Economics*
 ECON 482 *Distributive Justice*
 ECON 483 *Public Finance Tax Policy*
 ECON 484 *Public Finance Expenditure*
 ECON 485/486 *Contemporary Economic Issues*

(b) Four courses in applied economics, selected from:

ECON 348 *Organizational Design*
 ECON 355 *Financial Markets*
 ECON 415 *Labor Economics*
 ECON 420 *International Trade*
 ECON 421 *International Finance*
 ECON 435 *Industrial Organization*
 ECON 436 *Regulation*
 ECON 437 *Energy Economics*
 ECON 438 *Business, Law, and Economics*
 ECON 439 *Torts, Property, and Contracts*
 ECON 440 *Risk, Uncertainty, and Info*
 ECON 445 *Managerial Economics*
 ECON 446 *Applied Econometrics*
 ECON 448 *Corporate Finance*
 ECON 449 *Basics of Financial Engineering*
 ECON 450 *World Econ and Social Development*
 ECON 451 *Economy of Latin America*
 ECON 452 *Religion, Ethics, and Economics*
 ECON 455 *Money and Financial Markets*
 ECON 461 *Urban Economics*
 ECON 472 *Game Theory*
 ECON 475 *Integer and Combinatorial Optimization*

(c) One additional 400-level course in applied economics as listed in (b) or a course in advanced analysis, selected from:

CAAM 452 *NUM Methods for PDES*
 CAAM 453 *Numerical Analysis I*
 CAAM 454 *Numerical Analysis II*
 CAAM 460 *Optimization Theory*
 CAAM 475 *Integer and Combinatorial Optimization*
 STAT 421 *Computation Finance II*
 STAT 450 *Statistical Modeling*
 STAT 486 *Computation Finance I: Market Models*

or an equivalent or higher-level course approved in advance by the chair of the undergraduate committee.

(d) One course in econometrics:

ECON 400 *Econometrics*

(e) Five courses in mathematics and statistics:

MATH 101 *Single Variable Calculus I*,
 MATH 102 *Single Variable Calculus II*, and
 MATH 211 *ORD Differential Equations*, or

MATH 355 *Linear Algebra*, or
 CAAM 335 *Matrix Analysis*, and
 MATH 212 *Multivariable Calculus* or
 221 *Honors Calculus III*, and
 ECON 382/STAT 310 *Probability and Statistics*, STAT 410 *Introduction to Regression and
 Statistical Computing*, or STAT 431 *Overview Mathematical Statistics*

(f) One semester of senior independent research or senior seminar (if offered):

ECON 495/496 or ECON 403/404

4. No more than three of the required economics courses and two of the required mathematics (or computational and applied mathematics or statistics) courses may be transferred from other schools. Additional transfer credits in economics, mathematics, computational and applied mathematics or statistics may count toward meeting university graduation requirements, but not toward fulfillment of the departmental major requirements. AP credits do not count against the allowed transfer credits. In order to transfer ECON 211, the student must pass a qualifying examination. Students wishing to take the ECON 211 qualifying examination must apply to the economics department office in Baker Hall 266A. For additional information on transfer credits, consult "Procedures for Transfer Credit," available in the economics department office.
5. Students may graduate with "Honors in Mathematical Economic Analysis" by achieving a B+ (3.33) average in the 16 courses required for the major. When students repeat courses or complete more than the minimally required number of courses, the departmental GPA will be based on the set of courses that (i) satisfies all requirements for the degree and (ii) results in the highest GPA for the student.
6. For additional course information, consult "Economics Course Descriptions," compiled by the Rice chapter of the Omicron Delta Epsilon National Economics Honor Society.
7. Please note that it is primarily the responsibility of the student to satisfy all degree requirements, including the "University Credit Requirements" and "University Distribution Requirements" specified in the General Announcements. Students are advised that the relevant departmental requirements are those in effect on the day that the student declares mathematical economic analysis as their major. Consult with the appropriate departmental advisor, who must sign all registration forms for each major.

CONCENTRATION IN BUSINESS ECONOMICS

Students who complete the requirements for a major in economics or a major in mathematical economics analysis may also request certification from the department that they have completed the requirements for a concentration in business economics if they complete the following courses with a minimum grade point average of at least 2.0:

1. ACCO 305 *Introduction to Accounting*
2. The following electives for the economics or mathematical economics analysis major:
 - ECON 348 *Organizational Design* or ECON 355 *Financial Markets and Institutions*
 - ECON 438 *Business, Law, and Economics*
 - ECON 445 *Managerial Economics*
 - ECON 448 *Corporate Finance*

3. Note that to complete their major requirements, economics majors will need to choose one additional elective beyond those chosen to satisfy requirement 2, and this could include either ECON 348 or ECON 355 if not taken already. Similarly, mathematical economic analysis majors can choose either ECON 348 and ECON 355, if not taken already, to fulfill the remaining requirements of their major. If students complete both ECON 348 and ECON 355 their grade point average for the concentration in business economics will include the course that results in the highest grade point average for the student.

Substituting Economics Graduate Courses for Undergraduate Courses—Undergraduate majors satisfying the course prerequisites may, subject to the approval of the instructor and of the departmental undergraduate committee chair, substitute certain graduate courses for undergraduate courses. Only highly motivated students with excellent aptitudes for economics and a strong background in mathematics should consider making such substitutions. Typically, but not necessarily, such students will be majors in mathematical economic analysis. Permitted substitutions are as follows:

- ECON 501 for ECON 370 (if student has completed ECON 211 at Rice)
- ECON 502 for ECON 375
- ECON 504 for ECON 382
- ECON 510 for ECON 400
- Furthermore, ECON 505 and ECON 508 also may be taken by undergraduates and may be used toward satisfying MTEC requirements. Specifically, ECON 505 could be used as one of the courses in the applied economics category or in the advanced analysis category, while ECON 508 could be used only in the advanced analysis category.

Note that this set of substitutable graduate courses includes six of the seven courses required during the first year of the PhD program at Rice. Accordingly, such advanced course work would be excellent preparation for graduate study in economics or in some related field such as finance. Taking such graduate courses should also open more opportunities for the student who will be seeking employment immediately after graduation.

THE FIVE-YEAR MA PROGRAM

Advanced undergraduate students can, subject to the approval of the departmental five-year MA adviser, enter our five-year MA program. In this program, a student who has taken advantage of the full menu of graduate course substitutions available could, with an additional year of study at Rice, earn an MA in economics.

To obtain the MA degree, students must satisfy all of the requirements for PhD candidacy. In particular, students must pass general examinations in microeconomic theory and in macroeconomic theory and econometrics, must pass an examination in a specialized field of study in economics, and must complete an original research project (a dissertation prospectus) that could be developed into a PhD dissertation under the supervision of a faculty member. This work could be an extension of a paper written as a senior independent research project (ECON 403/404). In some cases, at the discretion of the independent research adviser, the paper produced in ECON 403/404 may fulfill this requirement. Finally, the first-year graduate requirement to take ECON 507 Mathematical Economics would be waived with the approval of the departmental five-year MA adviser.

Note that any student who subsequently decides to enter the economics PhD program at Rice would be given graduate credit for all 500 level economics courses completed while an undergraduate. The completion of the PhD dissertation typically requires at least one additional year of research (but no additional courses) beyond the MA degree.

Students who opt for the five-year MA degree program will have different backgrounds and interests on entering Rice and will choose to pursue this option at different stages in their academic careers. The following illustrates two (of many) possible paths to satisfying the MTEC major requirements, while at the same time completing all of the requirements for the MA degree over a five-year period.

COURSES: SAMPLE PATH ONE

The student enters with AP credit for ECON 211 and MATH 101/102, and has an early interest in the five-year MA program.

Freshman Year

ECON 370, 375, 477, and MATH 211/212

Sophomore Year

ECON 501; 1 course from Applied Economics category; and MATH 355 or CAAM 310

Junior Year

ECON 502, 504, 505, 510, and 1 course from Applied Economics category

Senior Year

ECON 403/404 and ECON 508

Fifth Year

Complete all remaining graduate courses and pass all remaining examinations required to achieve PhD candidacy.

(Note that with AP credit for MATH 101/102, but not for ECON 211, the student could substitute ECON 370 for ECON 211 in the freshman year.)

COURSES: SAMPLE PATH TWO

The student has no relevant AP credit and/or decides to enter the five-year MA program only near the end of the sophomore year.

Freshman Year

ECON 211 and MATH 101/102

Sophomore Year

ECON 370, 375, 477, and 1 course from applied economics category; MATH 211/212

Junior Year

ECON 501, 502, 505, 508; MATH 355
or CAAM 310

Senior Year

ECON 504, 510, 403/404, and 1 course from applied economics category

Fifth Year

Complete all remaining graduate courses and pass all remaining examinations required to achieve PhD candidacy.

DEGREE REQUIREMENTS FOR PHD IN ECONOMICS

Preparation for PhD Program. Applicants to the PhD program should have had at least two semesters in calculus and one in linear algebra. Students who have not met these requirements may complete these prerequisites as Class III students (pages 74-75) before being admitted to the graduate program. All applicants are required to take the Graduate Record Exam.

Requirements. For general university requirements, see Graduate Degrees (pages 57-58). Candidates for the PhD degree usually spend from two to two and one-half years in full-time course work and at least one year writing the dissertation; four to five years is a reasonable goal for completing the program. For the PhD, students must:

- Complete an approved program of at least 14 courses not including ECON 593/594 *Workshop in Economics I* and ECON 595/596 *Workshop in Economics II*
- Complete an approved program of at least 4 sections of ECON 593/594 *Workshop in Economics I* and ECON 595/596 *Workshop in Economics II*

- Perform satisfactorily on written general examinations in economic theory and econometrics
- Demonstrate proficiency in a major field by taking the relevant courses in that field and performing satisfactorily on a written examination
- Complete and defend orally a doctoral dissertation setting forth in publishable form the results of original research

See ECON in the Courses of Instruction section.

EDUCATION

THE SCHOOL OF HUMANITIES

PROFESSOR

Linda M. McNeil

No degree is offered through the Education Department. This department offers opportunities for students to explore the background, purposes, and organization of American schools as well as the major issues facing education today. Research seminars allow students to engage in projects in a wide range of topics significant to education. Most courses require observation in the classroom.

Please see the section on Education Certification for information on the three teacher education plans offered at Rice:

1. A secondary teaching certificate in combination with the undergraduate degree in the elected subject field(s)
2. A Master of Arts in Teaching (MAT)
3. A postbaccalaureate plan for Class III students that involves taking those courses and state examinations needed for certification but that does not confer a degree

EDUCATION CERTIFICATION

CHAIR

Meredith Skura

DIRECTOR

Lissa Heckelman

PROFESSOR

Linda M. McNeil

ADJUNCT PROFESSOR

Roland B. Smith, Jr.

LECTURERS

Jean Ashmore

Eileen Coppola

Diana Norcross

Judy Radigan

Carolynne White

ADJUNCT LECTURERS

Wallace Dominey

Elnora Harcombe

Anne Papakonstantinou

DEGREES OFFERED: SECONDARY TEACHING CERTIFICATE IN CONJUNCTION WITH BA IN MAJOR FIELD, MAT

Students in the teacher education program at Rice show a commitment to teaching, a strong record of scholarship in their subject areas, and promise as thoughtful, engaging teachers. The program emphasizes a sound liberal arts education; extensive knowledge of the subject(s) or area(s) to be taught; professional knowledge, including the relevant historical, philosophical, social, and psychological bases of education; and skills in classroom teaching, which include working with both children and adults. Graduates emerge from the program fully prepared for the teaching profession, trained in a multitude of teaching styles and methods to meet the needs of the diverse student population in schools today.

Rice offers three teacher education plans: (1) a secondary teaching certificate in combination with the undergraduate degree in the elected subject field(s), (2) a Master of Arts in Teaching (MAT), and (3) a postbaccalaureate plan for Class III students that involves taking those courses and state examinations needed for certification but that does not confer a degree. All three plans include student teaching in the Rice Summer School for Grades 8-12. While maintaining its academic integrity, the Rice program complies with state of Texas certification requirements. Students seeking additional information about the teacher education program are encouraged to meet with education faculty.

Texas Teaching Credential—Rice is approved by the state of Texas to offer teacher preparation programs in the following fields: art, English language arts and reading, French, German, health science technology education, history, Latin, life sciences, mathematics, mathematics/physics, physical education, physical science, Russian, science, social studies, and Spanish.

After satisfactory completion of the Rice program, which includes the state-mandated TExES and/or ExCET examinations, students are recommended for a Texas teaching credential. The Texas Education Agency then awards a Texas Standard Teaching Certificate (Grades 8-12).

Student Teaching—Apprenticeship (Plan A) and Internship (Plan B) programs are available. Unpaid *apprenticeships* are for undergraduates who wish to complete the teacher education program in four years and two six-week summer sessions.

Candidates enroll for the summer sessions following their junior and senior years. Apprentices create and teach courses under the supervision of experienced mentor teachers and university faculty in the Rice Summer School for Grades 8-12.

Paid *internships* are undertaken by Master of Arts in Teaching candidates, by some Class III students, and by undergraduates who begin earning certification in their senior year. Under this plan, students serve one apprenticeship in the Rice Summer School and are then supervised through their first semester of a full-time, paid internship in a neighboring, cooperating school system. Permission for the internship is contingent upon completing a successful apprenticeship.

REQUIREMENTS FOR SECONDARY TEACHING CERTIFICATE

Admission—Students may apply to the Rice University Education Certification Office for admission to the teacher education program if they show:

- Attainment of junior standing at Rice (bachelor's degree for MAT candidates) by the semester of admission to the program
- Grades of C- or better in all semester hours attempted in their teaching field(s), with an overall grade point average of 2.5 or better
- Evidence of adequate physical vigor to perform as a teacher in a classroom
- Exemption or satisfactory scores on all required preprofessional skills tests
- A completed Plan of Study approved by department representatives and the major field adviser is required before admission to the program is complete

Completion of Program—To complete the program, students must:

- Be exempted from or pass the Texas Higher Education Assessment (THEA) exam prior to enrolling in any education courses
- Complete the courses specified by the major field adviser(s). Lists of courses for each subject are available in the Education Certification Office
- Complete 18 hours in professional education courses as follows:
 Either EDUC 301/501 *Philosophical, Historical, and Social Foundations of Education* or EDUC 330/530 *The American High School*
 EDUC 305/505 *Educational Psychology*
 EDUC 420 *Curriculum Development*
 3 hours in the appropriate seminar(s) in teaching methods
 6 hours in student teaching (see following)
- Satisfy a state requirement for computer literacy by completing one course in computer use. EDUC 340 *Computers in Education* is recommended
- Complete all university and program requirements specified for undergraduates, MAT candidates, or nondegree (Class III) candidates
- Make grades of C- or better in all teaching field courses and education courses (B- or better for MAT students)
- Pass appropriate TExES and/or ExCET exams

Apprenticeship Plan (Plan A)

(For students beginning certification in junior year and for some Class III students)

Junior Year

EDUC 301 *Philosophical, Historical, and Social Foundations of Education*

or EDUC 330 *The American High School*

EDUC 305 *Educational Psychology*

EDUC 410–416 *Relevant seminar(s) in teaching methods*

EDUC 420 *Curriculum Development*

EDUC 440 *Supervised Teaching: Summer School*

Senior Year

EDUC 420 *Curriculum Development*

After Graduation

EDUC 440 *Supervised Teaching: Summer School*

Internship Plan (Plan B)

(For students beginning certification in senior year, for some Class III students, and for MAT students)

Before Graduation

EDUC 301/501 *Philosophical, Historical, and Social Foundations of Education* or EDUC 330/530 *The American High School* or EDUC 305/505 *Educational Psychology*

EDUC 410–416 *Relevant seminar(s) in teaching methods*

EDUC 420 *Curriculum Development*

After Academic Year

EDUC 440 *Supervised Teaching: Summer School*

EDUC 540 *Internship* (paid internship in the fall in a local, accredited secondary school)

REQUIREMENTS FOR MAT

Admission—Applicants must have a bachelor's degree, scholarly ability, and an interest in teaching, and they must have taken the Graduate Record Examination (GRE) aptitude test. Education faculty review each application. A limited number of tuition waivers is available. See Admission to Graduate Study (pages 56–57). Admitted students must pass or be exempted from the state's Texas Higher Education Assessment (THEA) exam *prior* to enrolling in any education courses.

Degree Requirements—For general university requirements, see Graduate Degrees (pages 57–58). The MAT is a non-thesis degree program for students who want to qualify for secondary school teaching following a liberal arts education. Most candidates entering the program have had no professional education courses. By completing the program, candidates fulfill all requirements for a Texas Standard Teaching Certificate for grades 8–12. To earn the professional MAT degree, students must complete, with grades of B- or higher, at least 33 semester hours (the need to remove deficiencies may require additional courses for certification). Requirements are as follows:

- Courses in secondary school educational theory, teaching strategies, educational practice, and evaluation
- Graduate or upper-level courses in the relevant teaching field(s) taken at Rice
- Supervised full-time teaching for one summer in the Rice Summer School for Grades 8–12, including design and implementation of courses, teaching, and evaluation
- Approval to begin an internship, based on a successful summer school teaching experience

- Supervised teaching internship for one semester in a cooperating secondary school, including the accompanying seminar

The cooperating school districts pay a regular salary for internship teaching, which covers the small cost of graduate tuition.

REQUIREMENTS FOR CLASS III CERTIFICATION

A nondegree (Class III) plan leading to secondary teacher certification is available for those who have earned a BA but do not choose to pursue a graduate degree. Candidates complete all requirements for secondary teacher certification, including professional education courses and courses in their selected fields. Interested students should direct their queries to the Education Certification Office.

HIGHER EDUCATION ACT TITLE II REPORTS

The Higher Education Act (HEA) of the U.S. Congress requires each institution of higher education with a teacher preparation program enrolling students receiving federal assistance under this Act to report annually "to the State and the general public" certain information. This information consists of the pass rate of program completers on assessments required by the state for teacher licensure or certification, the statewide pass rate on those assessments, and other basic information on the teacher preparation program.

Rice University's Teacher Education program is accredited by the State of Texas. The first year pass rate for program completers on assessments required by the state for 2002-03 was 100% compared with 96% for the overall state pass rate. The combined cumulative pass rate for program completers on assessments required by the state for 2001-03 was 100% compared to 96% for the overall state pass rate. Twenty-nine students were enrolled in the program in 2003-04. The students spent an average of 40 hours per week in supervised student teaching with a student/faculty ratio of 2.6-to-1. Rice teacher education program graduates are regularly recruited by school districts in the Houston and surrounding areas because of their innovative ideas, leadership abilities, and dedication to the teaching profession.

See EDUC and PFDV in the Courses of Instruction section.

ELECTRICAL AND COMPUTER ENGINEERING

THE GEORGE R. BROWN SCHOOL OF ENGINEERING

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Behnaam Aazhang

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ASSISTANT PROFESSORS

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Hyeokho Choi

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Akhil Bidani

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Thomas Harman

Dirar Khoury

Jorma Lilleberg

Richard P. Massey

Robert Nowak

Steve Sheafor

Gennady Shvets

Markus Sigrist

Thanh Tran

LECTURERS

Katherine Fletcher

J. Patrick Frantz

Osama Mawlawi

James B. Sinclair

James D. Wise

The Department of Electrical and Computer Engineering (ECE) strives to provide high-quality degree programs that emphasize fundamental principles, respond to the changing demands and opportunities of new technology, challenge the exceptional abilities of Rice students, and prepare these students for roles of leadership in their chosen careers. Undergraduate and graduate programs in ECE offer concentrations in areas that include system and control theory, communications, quantum electronics and lasers, computer systems, and electronic materials, devices, and circuits. The latest information on the department's faculty, research areas, and degree programs and requirements can be found on the ECE website: <http://www.ece.rice.edu/>.

UNDERGRADUATE DEGREE PROGRAMS

The department offers two undergraduate degrees, the bachelor of arts (BA) and the bachelor of science in electrical engineering (BSEE). The BA degree provides a basic foundation in electrical and computer engineering that the student can build on to construct a custom program. Because of its flexibility and large number of free electives, the BA can be combined easily with courses from other departments to create an interdisciplinary program. This may be particularly appropriate for students planning further study in law, business, or medicine.

The BSEE degree is the usual degree taken by those students planning a career of engineering practice. It is accredited by the Accreditation Board for Engineering and Technology (ABET) and can reduce the time required to become a licensed professional engineer. The program for the BSEE requires more hours and greater depth than the BA degree but still provides considerable flexibility.

Both degrees are organized around a core of required courses and a selection of elective courses from four specialization areas. Each student's program must contain a depth sequence in one area and courses from at least two areas to provide breadth. The specialization electives provide a flexibility that can be used to create a focus that crosses traditional areas. Because of the number of options, students should consult early with department advisors to plan a program that meets their needs.

BSEE Degree Requirements—See Graduation Requirements (pages 14-15) for general university requirements. A BSEE program must have a total of at least 134 semester hours and include the following courses. A course can satisfy only one program requirement, except for design. Students who place out of required courses without transcript credit must substitute other approved courses in the same area. Current degree requirements and planning sheets may be found on the ECE website.

Mathematics and Science Courses

MATH 101 *Single Variable Calculus I*

MATH 102 *Single Variable Calculus II*

MATH 212 *Multivariable Calculus*

ELEC 331 *Applied Probability*

CAAM 335 *Matrix Analysis* or

MATH 355 *Linear Algebra*

PHYS 101 *Mechanics*

PHYS 102 *Electricity and Magnetism*

ELEC 261 *Introduction to Waves and Photonics*

CHEM 121 *General Chemistry*

Additional approved mathematics and science courses to bring the total to 32 hours.

ECE Core Courses

ELEC 220 *Fundamentals of Computer Engineering*

ELEC 241 *Fundamentals of Electrical Engineering I*

ELEC 242 *Fundamentals of Electrical Engineering II*

Specialization Area Courses

Upper-level ECE courses are organized into four specialization areas: computer engineering, systems, electronic circuits and devices, and quantum electronics. The computer engineering area provides a broad background in computer systems engineering, including computer architecture, digital hardware engineering, software engineering, and computer systems performance analysis. The systems area involves the study of processing and communicating signals and information through systems or devices, control theory, signal and image processing, and communications. The electronic circuits and devices area covers the design of

ELEC 301 *Introduction to Signals*

ELEC 305 *Introduction to Physical Electronics*

ELEC 326 *Digital Logic Systems*

ELEC 391 *Professional Issues in Electrical Engineering*

Computation Course: One from

COMP 201 *Principles of Computing and Programming*

CAAM 210 *Introduction to Engineering Computation*

Design Courses

ELEC 493 *Senior Design Seminar*

ELEC 494 *Senior Design Laboratory*

One from:

ELEC 422 *VLSI Design*

ELEC 432 *Digital Radio System Design*

ELEC 464 *Photonic Sensor System Design*

ELEC 491 *Independent Design Project*

analog circuits, electromechanical devices, and the design and manufacturing of semiconductor devices. The quantum electronics area encompasses studies of electronic materials, including nano-materials, semiconductor and optoelectronic devices, lasers and their applications, and photonics.

The BSEE program must include seven courses total from at least two areas, including at least 4 courses in one area. Graduate courses and equivalent courses from other departments may be used to satisfy area requirements with permission; consult the ECE website for the latest list of specialization area courses.

Unrestricted Electives

Additional courses to provide the BSEE minimum requirement of at least 134 semester hours.

BA Degree Requirements—See Graduation Requirements (pages 14-15) for general university requirements. A BA program must have a total of at least 120 semester hours and include the following courses. A course can satisfy only one program requirement, except for laboratory. Students who place out of required courses without transcript credit must substitute other approved courses in the same area. Current degree requirements and planning sheets may be found on the ECE website.

Mathematics and Science Courses

MATH 101 *Single Variable Calculus I*

MATH 102 *Single Variable Calculus II*

MATH 212 *Multivariable Calculus* or

CAAM 335 *Matrix Analysis*

CAAM 335 *Matrix Analysis* or

MATH 355 *Linear Algebra*

One from: ELEC 331 *Applied Probability*, MATH

355 *Linear Algebra*, MATH 381 *Introduction to Partial Differential Equations* or

CAAM 335 *Matrix Analysis*

PHYS 101 *Mechanics*

PHYS 102 *Electricity and Magnetism*

ELEC 261 *Introduction to Waves and*

Photonics or CHEM 121 *General Chemistry*

ECE Core Courses

ELEC 220 *Fundamentals of Computer Engineering*

ELEC 241 *Fundamentals of Electrical Engineering I*

ELEC 242 *Fundamentals of Electrical Engineering II*

ELEC 305 *Introduction to Physical Electronics*

ELEC 326 *Digital Logic Systems*

Computation Course: One from

CAAM 210 *Introduction to Engineering Computation*

COMP 201 *Principles of Computing and Programming*

Laboratory: One from

ELEC 201 *Introduction to Engineering Design*

ELEC 327 *Implementation of Digital Systems*

ELEC 342 *Electronic Circuits*

ELEC 433 *Architectures for Wireless Communications*

ELEC 434 *Digital Signal Processing Laboratory*

ELEC 442 *Advanced Electronic Circuits*

ELEC 443 *Power Electronic Circuits*

ELEC 444 *Electromagnetic Interference/Compatibility*

ELEC 445 *Wireless Electronics*

ELEC 465 *Physical Electronics Practicum*

ELEC 494 *Senior Design Seminar*

Specialization Area Courses

Upper-level ECE courses are organized into four specialization areas, as described above in the BSEE degree requirements. The BA program must include 4 courses total from at least two areas, including at least two courses in one area. Each course must be at least 3 semester hours. Graduate courses and equivalent courses from other departments may be used to satisfy area requirements with permission; consult the ECE website for the latest list of specialization area courses.

Unrestricted Electives

Additional courses to provide the BA minimum requirement of at least 120 semester hours.

GRADUATE DEGREE PROGRAMS

The ECE Department offers two graduate degree programs. The master of electrical engineering (MEE) degree is a course-based program designed to increase a student's mastery of advanced subjects; no thesis is required. The MEE prepares a student to succeed and advance rapidly in today's competitive technical marketplace. A joint MBA/MEE degree is offered in conjunction with the Jesse H. Jones Graduate School of Management. The doctor of philosophy (PhD) program prepares students for a research career in academia or industry. The PhD program consists of formal courses and original research conducted under the guidance of a faculty advisor, leading to a dissertation. Students in the PhD program complete a master of science (MS) degree as part of their program; the ECE department does not admit students for a terminal MS degree.

Information on admission to graduate programs is available from the ECE Graduate Committee and on the ECE website. See the section Information for Graduate Students (page 55) for the general requirements of graduate degrees at Rice. Students must achieve at least a B (3.0) average in the courses counted toward a graduate degree. In addition, no course in which the student earned a grade lower than a C may count toward a graduate degree.

MEE Degree Requirements—Students must prepare a MEE degree plan and have it approved by the ECE Graduate Committee. The plan must include at least 30 semester hours of courses, all at the 300 level or above. The program should include a major area of specialization (18 semester hours), a minor area (6 semester hours), plus free electives. At least 7 of the major and minor area courses must be at the 400 level or above, and at least 4 must be at the 500 level or above. ELEC 590 or ELEC 599 may not count as major area courses; no more than 3 semester hours can be transfer credit, and at most one one-hour seminar course may be included in the plan. A MEE degree planning form and current requirements may be found on the ECE website.

PhD Degree Requirements—Students are admitted to the PhD program only for the fall semester. ECE PhD students move through the program in stages, starting as first year student, advancing to MS candidate, PhD qualified student, and PhD Candidate; each advancement requires the approval of the ECE Graduate Committee. Students entering with previous graduate work may follow a hybrid program developed in consultation with the faculty and the Graduate Committee. The first academic year concentrates on foundation coursework and on developing a research area. Each student must successfully complete a project, ELEC 599, in his or her chosen area of research, in lieu of an oral or written qualifying exam. In addition to enabling the faculty to evaluate the student's research potential, the project encourages timely completion of the MS degree. The student must complete a master's thesis and successfully defend it in an oral examination. Students who have already acquired a master's degree elsewhere are still required to complete a first-year ELEC 599 project.

Completion of the MS degree, satisfactory performance in coursework, and a recommendation from the prospective PhD advisor is required for advancement to PhD candidacy. A candidate for the PhD degree must demonstrate independent, original research in electrical and computer engineering. After successfully presenting a PhD research proposal and completion of all coursework, a student is eligible

for PhD candidacy. The student then engages in full-time research, culminating in the completion and public defense of the PhD dissertation. Details of the PhD program requirements, the phases of study, and a timetable may be found on the ECE website.

See ELEC in the Courses of Instruction section for course descriptions.

ENGLISH

THE SCHOOL OF HUMANITIES

CHAIR

Susan Wood

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Terrence Arthur Doody

Linda P. Driskill

J. Dennis Huston

Walter Whitfield Isle

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Kirsten Ostherr

WRITER IN RESIDENCE

Tracy Barnwell

Marsha Recknagel

LECTURERS

Jill "Thad" Logan

Mary L. Tobin

LECTURERS ON THEATRE

Trish Rigdon

Matthew Schlieff

VISITING ASSISTANT PROFESSORS

Colene Bentley

Ryan Jay Friedman

COURSES

Detailed information on current semester course offerings can be found at www.english.rice.edu. Please note that undergraduate level courses range numerically from ENGL 100 through ENGL 499 and graduate courses begin with ENGL 500. Non-majors wishing to enroll in upper-level courses (400 and above), are encouraged to consult with the professor prior to enrollment. Current course information for the Theatre Program, THEA 100-499, can be found at www.theatre.rice.edu.

DEGREES OFFERED: BA, MA, PHD

The undergraduate program offers a broad spectrum of courses, including British and American literature, creative writing, women and gender studies, cultural studies, literary theory, media studies and film. Beyond a critical appreciation of literature, students will also sharpen their written communication and analytical skills. In addition, the department is home to the Theatre Program, which includes studies in theatre and dramatic literature. The graduate program in English offers concentrations in all fields of British and American literature and literary theory.

DEGREE REQUIREMENTS FOR BA IN ENGLISH

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in English must complete 36 semester hours in English with at least 24 hours in courses at the 300 level or above. A double major requires

30 hours in English with at least 18 hours in the upper-level courses. HUMA 101 and 102 may be counted toward the English major. All English majors must take the following:

- ENGL 200 *Seminar in Literature and Literary Analysis*
- ENGL 300 *Practices in Literary Study*
- 9 hours at the 300 level or above in periods before 1900 A.D.; 6 of the 9 hours must be in periods before 1800 A.D., but only one may be a Shakespearean course
- 3 hours at the 200 level or above in a course that focuses on noncanonical traditions, such as courses in women, African American, Chicano/a, Asian American, ethnic, global, and diasporic writers.

The department recommends that all English majors take courses in British and American history and, if they plan to do graduate work, at least 6 hours of upper-level courses in a foreign language.

DEGREE REQUIREMENTS FOR MA AND PHD IN ENGLISH

For general university requirements, see Graduate Degrees (pages 57–58). As part of their training, graduate students participate in both the teaching and research activities of the department. Upon entering, students will be assigned a Program Advisory Committee (PAC), consisting of two or three faculty members. In consultation with their PAC, students will design their own individualized program structured by the minimal requirements listed below. For more detailed information, please ask for a copy of the Department's *Program Outline*.

MA Program—The English department does not have an MA program, but offers the MA degree to those PhD students who have achieved candidacy and are in the process of completing their doctorate and to qualified PhD students who leave the program before completing their doctorate. To receive an MA students must:

- Satisfactorily complete at least 30 hours of graduate work in English at Rice University. Courses must be those that count towards the PhD in English. These include courses numbered in the 500s and 600s in the English department excluding 510, 601/602, 603/604; up to 2 approved graduate or equivalent courses taken in other departments; and up to 2 approved courses in the English department numbered 400 and above. Students must satisfactorily complete ENGL 600 and distribution requirements for the PhD (see below).
- Satisfactorily complete two teaching assistantships (ENGL 601/602). These do not count toward the 30-hour requirement.

PhD Program—To gain admission to PhD candidacy, students must satisfy the first seven of the following requirements, and they must receive approval for their dissertation prospectus from the Department's Graduate Committee. To earn a PhD in English, candidates must also complete the last 2 requirements. Students must:

1. Satisfactorily complete at least 33 hours of course work plus ENGL 510, exclusive of the thesis. Courses can include: graduate courses in the English department numbered 500 to 600, excluding 510, 601/602, 603/604; up to 2 approved undergraduate courses in the English department; and up to 2 approved courses in another department.
2. Satisfactorily complete the following 2 required courses: ENGL 600 *Professional Methods*, and ENGL 605 *Third-Year Writing Workshop*. These count toward the 33-hour requirement.
3. Satisfactorily complete the distribution requirement, which consists of 2 approved courses on literature before 1800 and 2 after 1800. These count toward the 33-hour requirement.

4. Satisfactorily complete the teaching requirement by serving twice as a teaching assistant, by completing ENGL 510/511 *Pedagogy*, and by teaching a lower-level course designed in conjunction with the instructor of ENGL 510. ENGL 510 does not count toward the 33-hour requirement.
5. Pass a six-hour written preliminary examination focusing on two lists of books: one representing the full range of a literary period as defined by the student and his or her preliminary committee, the other representing a second literary period, a single author, a genre traced over a period of time more comprehensive than that covered by the first list, or a particular theoretical or critical approach studied with reference to its own history and traditions as well as to the historical field of the first exam.
6. Complete a dissertation prospectus that proposes a topic and an approach, offers a context to the topic in terms of work already done, offers an outline of chapters or sections, and includes a substantial bibliography.
7. Complete a dissertation that demonstrates a capacity for independent and original work of high quality.
8. Pass an oral exam on the dissertation and related fields of study.

Financial Support—Within the limits of available funds, qualified students may receive graduate scholarships or fellowships for up to five years. To qualify for this continuing financial aid, students must be approved for candidacy for the PhD by the beginning of their ninth semester at Rice.

See ENGL and THEA in the Courses of Instruction section.

ENVIRONMENTAL ANALYSIS AND DECISION MAKING

THE WIESS SCHOOL OF NATURAL SCIENCES

DIRECTOR

Matthew P. Fraser

PROFESSORS

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Katherine B. Ensor

Neal F. Lane

Erzsébet Merényi

Dale S. Sawyer

Tayfun E. Tezduyar

ASSOCIATE PROFESSORS

Vicki L. Colvin

Matthias Heinkenschloss

ASSISTANT PROFESSORS

Evan H. Siemann

FACULTY FELLOW

Kristen M. Kulinowski

DEGREES OFFERED: MS

Rice University introduced a professional master's degree in environmental analysis and decision making in fall 2002. This degree is geared to teach students rigorous methods that are needed by industrial and governmental organizations to deal with environmental issues. As an interdisciplinary program, it aims to give students the ability to predict environmental problems, not just solve them. It emphasizes core quantitative topics such as statistics, remote sensing, data analysis, and modeling. In addition, it teaches laboratory and computer skills and allows students to focus their education by taking electives in relevant fields.

The environmental analysis and decision making degree is one of three tracks in the new Professional Master's Program at Rice housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communications skills. These degrees instill a level of scholastic proficiency that exceeds that of the bachelor's level, and they create the cross-functional aptitudes needed in modern industry. This program will allow students to move more easily into management careers in consulting or research and development, design, and marketing of new science-based products.

DEGREE REQUIREMENTS FOR MS IN ENVIRONMENTAL ANALYSIS AND DECISION MAKING

In addition to the core science courses, students are required to complete a three- to six-month internship and take a set of cohort courses focusing on business and communications. At the conclusion of the internship, students must present a summary of their internship project in both oral and written form as part of the Professional Master's Seminar.

Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer. For general university requirements for graduate study, see pages 56-58, and see also Professional Degrees, page 58.

ADMISSION

Admission to graduate study in environmental analysis and decision making is open to qualified students holding a bachelor's degree in a related field that includes general biology, chemistry, calculus, differential equations, and linear algebra.

Department faculty evaluate the previous academic record and credentials of each applicant individually.

Science core courses

CEVE 401 *Introduction to Environmental Chemistry with lab* (F)

ESCI 450 *Remote Sensing* (S)

STAT 305 *Introduction to Statistics for Biosciences* (F, S)

STAT 685 *Quantitative Environmental Decision Making* (S)

Plus a single course from each of the following:

Group A

ESCI 451 *Analysis of Environmental Data* (F)

STAT 305 *Introduction to Statistics for Biosciences* (F, S)

Group B

STAT 385 *Methods for Data Analysis* (S)

STAT 410 *Introduction to Statistical Computing and Linear Models* (F)

STAT 421 *Computational Finance II: Time Series Analysis* (S)

STAT 422 *Bayesian Data Analysis* (S)

STAT 509 *Advanced Psychological Statistics I* (F)

Group C

CEVE 411 *Air Resource Management* (S)

CEVE 412 *Hydrology and Watershed Analysis* (S)

CEVE 434 *Chemical Transport and Fate in the Environment* (F)

CEVE 511 *Atmospheric Chemistry and Physics* (F)

CEVE 550 *Environmental Organic Chemistry* (S)

Cohort Courses

MGMT 750 *Management in Science and Engineering* (F)

NSCI 501 *Professional Master's Seminar* (F, S)
[required for **two** semesters]

NSCI 512 *Professional Master's Project* (F,S)

Plus a single course from the following:

ENST 312 *Environmental Battles in the 21st Century: Houston as Microcosm* (S)

PHIL 307 *Social and Political Philosophy* (F)

POLI 338 *Policy Analysis* (S)

POLI 537 *Public Policy and Bureaucracy* (F)

PHIL 316 *Philosophy of Law* (F)

INTERNSHIP

An internship under the guidance of a host company, government agency, or national laboratory. A summary of the internship project is required in both oral and written form as part of the Professional Master's Project.

ELECTIVE COURSES

Note: Each of these electives is not offered every year, and some courses may have prerequisites or require instructor permission

Students will choose five elective courses, three of which should be from one of the focus areas. At least one elective should be from the management and policy focus area. Recommended courses include, but are not limited to, the following:

Sustainable Development

BIOS 322 *Global Ecosystem Dynamics* (S)

BIOS 325 *Ecology* (S)

CEVE 406 *Introduction to Environmental Law* (S)

CEVE 411 *Air Resource Management* (S)

CEVE 434 *Chemical Transport and Fate in Environment* (F)

ECON 480 *Environmental Economics* (S)

ESCI 353 *Environmental Geochemistry* (S)

MGMT 617 *Managerial Decision Making* (S)

MGMT 661 *International Business Law* (S)

MGMT 674 *Production and Operations Management* (F)

MGMT 676 *Project Management/Project Finance* (S)

MGMT 721 *General Business Law* (S)

SOCI 367 *Environmental Sociology* (S)

Management and Policy

CEVE 322 *Engineering Economics for Engineers* (F)

CEVE 406 *Introduction to Environmental Law* (S)

ECON 480 *Environmental Economics* (S)

MGMT 721 *General Business Law* (S)

MGMT 661 *International Business Law* (S)

MGMT 617 *Managerial Decision Making* (S)

MGMT 751 *New Venture Creation in Science and Engineering* (S)

MGMT 674 *Production and Operations Management* (F)

MGMT 676 *Project Management/Project Finance* (S)

MGMT 636 *Systems Analysis and Database Design*

SOCI 367 *Environmental Sociology* (S)

Biological Sciences

BIOS 322 *Global Ecosystem Dynamics*

BIOS 324 *Wetland Ecosystems*

BIOS 325 *Ecology*

BIOS 424 *Microbiology and Biotechnology*

BIOS 425 *Plant Molecular Biology* (F)

CEVE 536 *Environmental Biotechnology*

ESCI 468 *Climate Change and Human Civilization* (S)

Chemistry

CENG 630 *Chemical Engineering of Nanostructured Materials* (S)

CEVE 511 *Atmospheric Chemistry and Physics* (F)

CEVE 550 *Environmental Organic Chemistry* (S)

ESCI 353 *Environmental Geochemistry* (S)

Fluid Dynamics and Transport

CENG 571 *Flow and Transport in Porous Media I* (S)

CENG 671 *Flow and Transport in Porous Media II* (F)

MECH 371 *Fluid Mechanics I* (F)

MECH 372 *Fluid Mechanics II* (S)

MECH 454/554 *Finite Element Methods in Fluid Mechanics* (F)

Engineering

CEVE 411 *Air Resource Management* (S)

CEVE 434 *Chemical Transport and Fate in the Environment* (F)

CEVE 530 *Physical/Chemical Processes in Environmental Engineering* (S)

CEVE 640 *Advanced Topics in Environmental Engineering* (F)

Advanced Computation

CAAM 378 *Introduction to Operations Research and Optimization* (F)

CAAM 420 *Computational Science I* (F)

CAAM 451 *Numerical Linear Algebra* (F)

CAAM 452 *Computational Methods for Differential Equations* (S)

CAAM 454 *Optimization Problems in Computational Engineering and Science* (S)

ESCI 441 *Geophysical Data Analysis* (F)

ESCI 451 *Analysis of Environmental Data* (F)

ESCI 454 *Geographic Information Systems* (F)

MECH 454/554 *Finite Element Methods in Fluid Mechanics* (F, S)

MECH 343 *Modeling of Dynamic Systems* (F)

MECH 417/517 *Finite Element Analysis* (S)

MECH 420 *Feedback Control of Dynamical Systems* (F)

MECH 563/ CAAM 563 *Engineering Approach to Mathematical Programming* (F)

MECH 679 / CEVE 679 *Applied Monte Carlo Analysis* (F)

STAT 421 *Methods in Computational Finance II* (S)

STAT 422 *Bayesian Data Analysis* (S)

STAT 431 *Mathematical Statistics* (F)

STAT 540 *Practicum in Statistical Modeling* (S)

STAT 541 *Multivariate Analysis* (S)

STAT 546 *Design and Analysis of Experiments and Sampling Theory*

STAT 553 *Biostatistics* (S)

ENVIRONMENTAL STUDIES

DIRECTORS

Paul A. Harcombe (*Ecology and Evolutionary Biology*)
 Walter W. Isle (*English*)

PROFESSORS

Arthur A. Few (*Physics and Environmental Science*)
 Stephen Klineberg (*Sociology*)
 Neal Lane (*University Professor*)
 Ronald J. Parry (*Chemistry*)
 Mark R. Wiesner (*Civil and Environmental Engineering*)

Gordon G. Wittenberg (*Architecture*)
 Kyriacos Zygourakis (*Chemical Engineering*)

ASSOCIATE PROFESSOR

Gerald R. Dickens (*Earth Science*)
 Melissa J. Marschall (*Political Science*)

ASSISTANT PROFESSOR

Carrie Masiello (*Earth Science*)

LECTURER

Donald Ostdiek (*Political Science*)

The Environmental Studies Program offers several interdisciplinary courses for students interested in broadening their understanding of environmental issues. These courses are often team-taught by faculty from various areas of study.

Students wishing to major in an environmental program have three options: Environmental Science, Environmental Engineering (see Civil and Environmental Engineering), or Environmental Policy (see Policy Studies).

Students seeking advice regarding environmental programs may contact Dr. Isle, Dr. Harcombe, or the coordinator of the Center for the Study of Environment and Society.

Courses:

- ENST 101 *The Sustainable Environment*
- ENST 113 *Environmental Crisis Seminar*
- ENST 301 *Introduction to the Environment*
- ENST 302 *Environmental Issues—Rice into the Future*
- ENST 350 *Environmental Internship*
- ENST 400 *Independent Study*

See ENST in the Courses of Instruction section.

DEGREE REQUIREMENTS FOR BA IN ENVIRONMENTAL SCIENCE

Environmental Science is an interdisciplinary program that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues, as well as exposure to the technologies of pollution control. The double major is designed to accommodate:

- Students wishing to obtain a solid preparation for later graduate study in environmental science or other careers as environmental professionals (e.g., environmental economics, or environmental law)
- Students pursuing other careers (e.g., historians, lawyers, mechanical engineers, chemists) who hope to contribute to solutions to one of the major global issues of the 21st Century.

Students may take environmental science *only as a second major*. The 67-semester-hour (minimum) double major in environmental science may be taken in conjunction

with *any* stand-alone major offered in any school of the university.

The key components of the double major include:

- Foundation course work in mathematics, physics, chemistry, and biology
- A set of 5 undergraduate core courses, required of all double majors, that acquaint undergraduates with a range of environmental problems encountered by scientists, engineers, managers, and policy makers. Core courses stress the components of the global environment and their interactions.
- 24 semester hours of environmental electives from four categories (1) social sciences and economics, (2) humanities and architecture, (3) natural sciences, and (4) engineering. Students may petition to have electives, in addition to those currently listed, apply toward the double major.

Major tracking forms are available in the Center for the Study of Environment and Society (CSSES) office for declared Environmental Science majors.

Specific Course Requirements for a Double Major (BA) in Environmental Science include:

General Prerequisites

CHEM 121 or 151 *General Chemistry with Laboratory*

CHEM 122 or 152 *General Chemistry with Laboratory*

MATH 101 or 111 *Single Variable Calculus I*

MATH 102 or 112 *Single Variable Calculus II*

PHYS 101 or 125 or 111 *Mechanics*

PHYS 102 or 126 or 112 *Electricity and Magnetism*

BIOS 201 *Introductory Biology*

BIOS 202 *Introductory Biology*

Core Courses

BIOS 325 *Ecology*

ESCI 221 *Earth System Evolution and Cycles*

One of the following two courses

CEVE 411 *Air Resource Management*

PHYS 443 *Atmospheric Science*

2 of the following 3 courses

CEVE 401 *Introduction to Environmental Chemistry*

CEVE 412 *Hydrology and Watershed Analysis*

ESci 451 *Analysis of Environmental Data*

Advanced Electives (24 hours; at least 6 semester hours from each category)

Category A—Social Sciences and Economics

CEVE 306 *Global Environmental Law and Sustainable Development*

CEVE 406 *Environmental Law*

ECON 480 *Environmental and Natural Resource Economics*

ENST 302/UNIV 303 *Environmental Issues: Rice into the Future*

POLI 317 *Congress*

POLI 331 *Environmental Politics and Policy*

POLI 332 *Urban Politics*

POLI 334 *Political Parties and Interest Groups*

SOCI 331 *Demography*

SOCI 367 *Environmental Sociology*

SOCI 411 *Social Change: Making Sense of Our Times*

Category B—Humanities and Architecture

ANTH 468/ESCI 468 *Climate Variability and Human Response*

ARCH 313 *Sustainable Architecture*

ARCH 351 *Social Issues and Architecture*

ENGL 367 *American Ecofeminism*

ENGL 378 *Literature and the Environment*

ENST 301/UNIV 300 *Introduction to the Environment: Environmental History and Literature*

Category C—Natural Sciences

BIOS 316 *Lab Module in Ecology*

BIOS 321 *Animal Behavior*

BIOS 322 *Global Ecosystem Dynamics*

BIOS 323 *Conservation Biology*

BIOS 324 *Wetland Ecosystems*

- BIOS 334 *Evolution*
 CHEM 211 *Organic Chemistry*
 CHEM 395 *Advanced Module in Green Chemistry*
 ESCI 323 *Earth Structure and Deformation*
 ESCI 326 *Environmental Geology*
 ESCI 353 *Environmental Geochemistry*
 ESCI 421 *Paleoceanography*
 ESCI 430 *Trace Element and Isotope Geochemistry for Earth and Environmental Sciences*
 ESCI 442 *Exploration Geophysics*
 ESCI 450 *Remote Sensing*
 ESCI 454 *Geographic Information Science*
 ESCI 468/ANTH 468 *Climate Variability and Human Response*
Category D—Engineering
 CENG 503 *Chemical Engineering Process I: Air Pollution Control*
 CEVE 201 *Introduction to Environmental Systems*
 CEVE 315 *Sustainable Development*
 CEVE 401 *Introduction to Environmental Chemistry*
 CEVE 403 *Principles of Environmental Engineering*
 CEVE 411 *Air Resources Management*
 CEVE 412 *Hydrology and Watershed Analysis*
 CEVE 434 *Chemical Transport and Fate in the Environment*
 CEVE 451 *Introduction to Transportation*
 CEVE 470 *Basic Soil Mechanics*
 CEVE 490 *Undergraduate Research in Environmental Engineering*
 STAT 300 *Model Building*
 STAT 305 *Introduction to Statistics for the Biosciences*
 STAT 310 *Probability and Statistics*
 STAT 339/PSYC 339 *Statistical Methods—Psychology*

FRENCH STUDIES

THE SCHOOL OF HUMANITIES

CHAIR

Michel Achard

PROFESSORS

Bernard Aresu

Jean-Joseph Goux

Deborah Nelson-Campbell

PROFESSOR EMERITA

Madeleine Alcover

ASSOCIATE PROFESSORS

Michel Achard

Deborah A. Harter

Philip R. Wood

ASSISTANT PROFESSOR

Julie Fette

Louisa Shea

DEGREES OFFERED: BA, MA, PHD

Courses in this department hone language skills in French while placing a diverse, generalized knowledge of French literature within a broad spectrum of cultural, historical, philosophical, and theoretical concerns. Students are also urged to take courses in fields closely related to French studies, including European and English history, literature, and philosophy. The department encourages students to spend time studying in a francophone country and to that end the French Studies department and Office of Student Advising will help students select an appropriate program.

DEGREE REQUIREMENTS FOR BA IN FRENCH STUDIES

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in French studies must complete at least 30 semester hours in upper-level courses (at the 300 or 400 level). A double major or an area major must complete 24 hours in upper-level courses.

Required Courses

FREN 311 *Major Literary Works and Artifacts of Pre-Revolutionary France*

FREN 312 *Major Literary Works and Artifacts of Post-Revolutionary France: The Romantic Legacy*

FREN 336 *Writing Workshop*

Electives

7 additional courses (for single majors)—at least 3 courses at the 400 level and at least 1 course from Group III (culture, history, and civilization)

5 additional courses (for double majors)—at least 2 courses at the 400 level and at least 1 course from Group III (culture, history, and civilization)

As many as 2 French courses taught in English may count toward a major in French studies. Students who have taken 300- and 400-level French courses (except those taught in English) cannot enroll simultaneously or afterward in 200-level French courses for credit. Over half of the courses for the major must be taken at Rice University. The department normally requires that the basic courses for the major (FREN 311, 312, and 336) be taken at Rice. Students who matriculate before 2003 may choose to graduate with the requirements listed in the *General Announcements* of the year of their matriculation or of their graduation.

Students with diplomas from French-speaking institutions must consult with the department before enrolling in courses, and all majors and prospective majors

must have their programs of study approved by an undergraduate adviser. Students wishing to complete the honors program in French studies should also consult one of the advisers.

Campus Activities—To acquaint students with French language and culture, the department sponsors a weekly French Table that meets at lunch in a college. The Club Chouette also organizes outings to French movies, sponsors guest lectures, and, in cooperation with the department, helps to produce a play during the spring semester. Students who maintain at least a B average in 2 or more advanced French courses and have a GPA of at least B, are invited to join the Theta chapter of the honorary Pi Delta Phi.

Travel Abroad—The department encourages majors to spend time living and studying in a francophone country. The Alliance Française of Houston offers a summer scholarship of \$3,000 each year to a qualified sophomore or junior for six weeks' study in France. The Clyde Ferguson Bull Traveling Fellowship is awarded each year to an undergraduate to spend the junior year studying in France with a program approved by the department. Candidates must have taken at least one 300-level course in the department and have a GPA of at least 3.0. Information about study abroad is available from the department faculty and in the Office of Academic Advising.

DEGREE REQUIREMENTS FOR MA AND PHD IN FRENCH STUDIES

Admission to graduate study in French, granted each year to a limited number of qualified students, requires a distinguished undergraduate record in the study of French literature or a related field and a capacity for independent work. All candidates should have a near-native command of the French language. For general university requirements, see Graduate Degrees (pages 57-58).

MA Program—In most cases students take two years to complete work for the MA degree in French studies. While graduate students normally take 500-level courses, as many as 2 courses at the 400 level may count toward fulfillment of the following course requirements. MA candidates must:

- Complete with satisfactory standing 27 semester hours (in addition to BA course work) of upper-level courses, plus 6 hours of independent study in the preparation of three advanced research papers to be defended before their MA committee. The selection of the paper topics must receive preliminary approval from the examination committee.
- Perform satisfactorily on a reading examination in one department-approved language other than French or English
- Perform satisfactorily on preliminary written and oral examinations conducted in French on works specified on the department reading list

PhD Program—Candidates normally take 500-level courses, but students entering with a BA may count toward their PhD degree as many as 3 courses at the 400 level; those entering with an MA may count 2 such courses. Graduate student enrollment in a course listed only at the 400 level, however, is subject to the instructor's approval. Candidates for the PhD degree must meet the following criteria, ensuring that they complete the language requirement and their preliminary exams one year before they submit a dissertation:

- In a program approved by the department, complete with high standing at least 57 semester hours of course work plus 36 thesis hours (for those already holding an MA degree, the requirement is 39 hours of course work plus 36 thesis hours). Six of these units may be fulfilled with a 600-level independent study course.

- Satisfactorily complete 1 course at the 300 level or above in a language other than French or English. With the permission of the graduate committee, this requirement may also be met through satisfactory performance on a written language examination or by such other means as the graduate committee may direct.
- Perform satisfactorily on preliminary written and oral examinations based on readings comprising both required and individually selected texts, including readings in French literature from all major periods and readings in philosophy and theory; history, cultural studies, and film; and postcolonial and gender studies. The oral exam can be taken only after successful completion of the written exam.
- Complete a dissertation, approved by the department, that represents an original contribution to the field of French studies.
- Perform satisfactorily on a final oral examination on the dissertation.

See FREN in the Courses of Instruction section.

GERMAN AND SLAVIC STUDIES

THE SCHOOL OF HUMANITIES

CHAIR

John Zammito

PROFESSORS

Peter Caldwell

Steven Crowell

Margret Eifler

Ewa M. Thompson

Klaus Weissenberger

ASSOCIATE PROFESSORS

Maria-Regina Kecht

Uwe Steiner

Sarah Westphal

ASSISTANT PROFESSOR

Christian Emden

VISITING LECTURER

Malgorzata Dabrowska

DEGREES OFFERED: BA IN GERMAN STUDIES, BA IN SLAVIC STUDIES

GERMAN

The department offers instruction in the German language, in German literature (studied in the original and in translation), and in the achievements of German culture surveyed as a whole and in particular themes, genres, and periods. The department stresses linguistic competence, interdisciplinary study, and the role of German culture within the broad context of European history. Studies in film, cultural theory, and gender complement traditional studies of German literature, philosophy, history, and art.

The BA in German prepares students for graduate study in German, as well as for careers in law, business, international affairs, economics, and other academic fields. Our language acquisition courses maximize linguistic proficiency and prepare students for study abroad. Our freshman seminars are conducted in small groups and stress written and oral communication. Culture courses under the rubric "Mapping German Culture" are taught in English and consider major cultural and literary topics. For students who have some proficiency in German, the Mapping German Culture courses are accompanied by sections that conduct discussions and study sources in German. Upper-level literary courses and special topics seminars both polish linguistic skills and offer intensive study at a high level.

The department encourages and, by means of the Mitchell Fellowships, facilitates study abroad in Germany and Austria. There are weekly German tables in the colleges.

DEGREE REQUIREMENTS FOR BA IN GERMAN STUDIES

For general university requirements, see Graduation Requirements (pages 14-15). Students who have German as their only major must complete at least 30 semester hours above the 200 level. These 30 hours above 200 level = 9 three hour courses + 3 one-hour FLAC sections or 10 three-hour courses.

- GERM 303 or 304 (bridge course in German literary/cultural language)
- GERM 411, 412 (basic German literature survey courses)
- 2 Special Topics Seminars (GERM 351 to any other 400-level Special Topics)
- 3 Mapping German Culture courses with attached one-hour FLAC sections (GERM 321-350)

Students who have German as a double major must complete at least 23 semester hours above the 200 level. These 23 hours above 200 level = 7 three-hour courses + 2 one-hour FLAC sections or 8 three hour courses.

- GERM 303 or 304 (bridge course in German literary/cultural language)
- GERM 411, 412 (basic German literature survey courses)
- 1 Special Topics Seminar (GERM 351 to any other 400-level Special Topics)
- 2 Mapping German Culture courses with attached one-hour FLAC sections (GERM 321-350)

Honors—Outstanding students are presented annually with the Max Freund Prize. The department also offers an honors program for majors excelling in their studies. Honors work consists of readings and research leading to a substantial honors essay under the supervision of a department faculty member (GERM 403). Students should consider this work to enhance preparation for graduate school.

SLAVIC

The School of Humanities is currently reviewing the status of the Slavics majors program. At this time, the School is not registering new majors in the Slavics program. The School of Humanities is committed, however, to courses in Russian language, Slavic culture, and East European history, which are expected to be offered next year and in the future.

DEGREE REQUIREMENTS FOR BA IN SLAVIC STUDIES FOR EXISTING MAJORS

For general university requirements, see Graduation Requirements (pages 14-15). Single majors in Slavic studies must complete 24 semester hours at the 300 level or above. Double majors must complete 18 semester hours at the 300 level or above. At least one of these courses must cover the entire Slavic area (e.g., SLAV 320 *Slavic Cultures*, RUSS 411 *Contemporary Russia*, or SLAV 412 *Contemporary Eastern and Central Europe*).

Courses in Polish are offered subject to availability of an instructor. Students may take two Slavic studies-related courses from outside the department, subject to approval by the Slavic studies advisor (Professor Thompson).

Currently there is a moratorium on new majors in Slavic Studies, approved by the Dean of Humanities at the request of the department.

See GERM, PLSH, RUSS, and SLAV in the Courses of Instruction section.

HISPANIC STUDIES

THE SCHOOL OF HUMANITIES

CHAIR

Maarten van Delden
Beatriz González-Stephan,
Acting Chair (Fall 2005)

PROFESSORS

James A. Castañeda

ASSOCIATE PROFESSORS

Robert Lane Kauffmann
J. Bernardo Pérez
Rafael Salaberry

VISITING PROFESSOR

Evodio Escalante

DEGREES OFFERED: BA AND MA IN HISPANIC STUDIES

The department offers courses on the literatures and cultures of the Spanish-speaking nations of the world, and on Spanish linguistics. The department stresses linguistic competence, interdisciplinary study, and a transnational perspective on Spanish and Spanish American literature and culture. In addition to courses on the novel, poetry, and the essay, the department also offers the opportunity to study film, art, cultural theory, translation, and gender. Our freshman seminars are conducted in English and stress written and oral communication. Qualified students may undertake independent work.

DEGREE REQUIREMENTS FOR BA IN HISPANIC STUDIES

For general university requirements, see Graduation Requirements (pages 14-15). Both single and double majors must take at least one course in Hispanic linguistics, one course in Spanish literature and/or culture, and one course in Latin American literature and/or culture. No more than two courses taught in English may count toward the major in Hispanic studies. More than half of the courses for the major must be taken at Rice University.

Single Majors—Students majoring in Hispanic studies must complete at least 30 semester hours in upper-level courses (SPAN 330 and above) as follows:

- 1 course between SPAN 330-SPAN 359
- 4 courses between SPAN 360-SPAN 399
- 4 courses at the 400 level
- 1 elective course

Double Majors—Students double majoring in Hispanic Studies must complete at least 24 semester hours in upper-level courses (SPAN 330 and above) as follows:

- 1 course between SPAN 330-SPAN 359
- 3 courses between SPAN 360-SPAN 399
- 3 courses at the 400 level
- 1 elective course

For a list of recommended elective courses, please see department coordinator.

Honors—Every year, the department presents the *Cervantes Award for Outstanding Seniors* to its top students. The department also offers an honors program for majors excelling in their studies. Honors work consists of an independent research project leading to a substantial essay. It is undertaken in close cooperation with a departmental faculty member, who must first approve the thesis proposal.

DEGREE REQUIREMENTS FOR MA IN HISPANIC STUDIES

For general university requirements, see Graduate Degrees (pages 57-58). For the MA degree, candidates must:

- Complete with high standing an approved program that normally includes 27 semester hours in advanced courses, plus 6 hours of thesis work
- Pass a reading examination in one foreign language (other than Spanish) that has been approved by the department
- Perform satisfactorily on a written comprehensive examination in Spanish, which tests students' competence in Hispanic literature and linguistics
- Take SPAN 507 *Teaching College Spanish*
- Complete an acceptable thesis
- Perform satisfactorily on a final oral examination on the thesis

See SPAN in the Courses of Instruction section.

HISTORY

THE SCHOOL OF HUMANITIES

CHAIR

Peter C. Caldwell

PROFESSORS

John B. Boles

Peter C. Caldwell

Ira D. Gruber

Thomas L. Haskell

Michael Maas

Allen J. Matusow

Atieno Odhiambo

Patricia Seed

Richard J. Smith

Martin J. Wiener

John H. Zammito

PROFESSORS EMERITI

Katherine Fischer Drew

Harold Hyman

Gale Stokes

Albert Van Helden

ASSOCIATE PROFESSORS

Edward L. Cox

Alex Lichtenstein

Ussama Makdisi

Carol E. Quillen

Paula A. Sanders

Lora Wildenthal

Joel W. Wolfe

ASSISTANT PROFESSORS

Alexander X. Byrd

G. Daniel Cohen

Eva Haverkamp

Allison Sneider

Kerry R. Ward

AUTREY VISITING ASSISTANT PROFESSOR

Moramay Lopez-Alonso

LECTURERS

Eric Adler

Carl W. Pearson

DEGREES OFFERED: BA, MA, PHD

The undergraduate program offers courses in the four main areas of ancient and medieval history, modern European history, U.S. history, and the histories of Asia, Latin America, and Africa. Faculty interests range from ancient Greek and medieval Jewish history to modern British and German; from areas in American history that include Colonial America, the Old and New South, the Civil War, and intellectual history; and from general global history to specific areas such as East Asian, Caribbean, and Middle Eastern history. The department encourages its majors to acquaint themselves with other humanistic disciplines, such as literature, fine arts, and philosophy; the contributions of political science, sociology, economics, and anthropology also are vital to historical studies. The graduate program, which trains a limited number of carefully selected students, offers studies in U.S., Europe, Atlantic, and African, and graduate certificate in Study of Women and Gender.

DEGREE REQUIREMENTS FOR BA IN HISTORY

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in history must complete a minimum of 30 semester hours (10 courses) in history. No less than 18 hours (6 courses) should be taken at Rice. No more than 6 hours (2 courses) may be satisfied by advanced placement (AP) credit. Transfer credit, foreign or domestic, when combined with AP cannot count for more than 12 hours (4 courses). At least 18 hours (6 courses) are required on the 300 or 400 level. Two courses must be chosen from a departmental list of seminars devoted mainly to writing and discussion. In addition, majors are expected to distribute their 10 courses over four fields (AP credit may not be used for these):

Ancient or medieval—1 course minimum

Modern Europe—2 course minimum

United States—2 course minimum

Africa, Asia, Latin America—2 course minimum

Some foreign language proficiency is desirable and the department highly recommends that students contemplating graduate work in history study at least one foreign language in some depth.

Transfer Credit—The Department of History grants transfer credit on a case-by-case basis to enrolled undergraduates (the registrar determines the credit hours). Courses taken at another institution must be the equivalent in required reading, writing, and testing of a Rice history course. It does not have to have an equivalent in the Rice history offerings. For the current procedures to request transfer credit see the department home page <http://history.rice.edu>. Rice students planning to study at a foreign university must also obtain approval from the Office of International Programs.

Honors Program—Qualified undergraduates may enroll for 6 semester hours of directed honors research and writing, completing an honors thesis in their senior year (these 6 hours are in addition to the 30 hours required for the major). Application to the program is required. For current procedures see the department home page, <http://history.rice.edu>. Students must complete both semesters of HIST 403 and 404 to receive credit; the grade for the final project applies to the full 6 hours. Limited financial assistance is available to conduct related research during the summer between the junior and senior year for all students accepted into the Honors Program.

DEGREE REQUIREMENTS FOR MA AND PHD IN HISTORY

The Rice University graduate program in history is primarily a PhD program. Students who have a BA in history (or its equivalent) from an acceptable institution are eligible to apply to the PhD program. Although many successful candidates to the PhD program have an MA or other advanced degree, advanced study is not a requirement for admission. Graduate study is offered in U.S., European, intellectual, and other areas of history. Further information is available on request from the department. For general university requirements, see Graduate Degrees (pages 57-58).

The department awards graduate tuition waivers and fellowship stipends, within the limits of available funds, to qualified PhD candidates with demonstrated ability. University funding is not available for masters program study only. All graduate students in the history department are expected to participate in the professional activities of the department as part of their training. These include, but are not limited to, assisting with the *Journal of Southern History* or the *Papers of Jefferson Davis* and serving as research assistants or teaching assistants for department members. Insofar as possible, these assignments are kept consistent with the interests of the students.

MA Program—The department gives priority to applicants for the PhD. Completion of the MA degree usually takes two years; no more than three years may elapse between graduate admission and the completion of the degree unless the department Graduate Committee approves an extension. MA degrees are awarded in two ways: (1) completion of one year of course work (24 credit hours) and a thesis written and defended in an oral examination during the second year; and (2) completion of two years of course work (48 credit hours), normally including at least 2 seminar research papers.

PhD Program—Doctoral candidates must prepare themselves in three fields of history: two in their major area of concentration, whether European, U.S., or other

history, and a third in an area outside of that concentration (e.g., if the major area is European history, the third field must be in U.S. or other non-European history, and if the major area is U.S. history, the third field must be in European or other non-U.S. history, and so on). Students who wish to pursue a third field in an area outside the department should petition the Graduate Committee by the end of their second semester.

The requirements for completing the degree will be administered as flexibly as possible within the bounds of the general university regulations. These requirements state that the PhD degrees "will be awarded after successful completion of at least 90 semester hours of advanced study and an original investigation reported in an approved thesis." Passing the qualifying exam and receiving approval of a dissertation prospectus allows the student to apply for formal admission to candidacy for the PhD degree.

For the PhD, candidates must:

- Prepare themselves thoroughly in three examination fields.
- Take 8 graduate seminars, including Introduction to Doctoral Studies.
- Pass reading examinations in the principal language of research (unless it is English) and one other language (not English).
- Perform satisfactorily on written and oral examinations. For students entering with a BA, those examinations will normally be taken before the beginning of the fifth semester and no later than the beginning of the sixth semester. Students entering with an MA may take their examinations earlier, with departmental approval.
- Complete a dissertation presenting the results of original research.
- Defend the thesis in a public oral examination.

See HIST in the Courses of Instruction section.

KINESIOLOGY

THE SCHOOL OF HUMANITIES

CHAIR

Bruce Etnyre

PROFESSORS

Bruce Etnyre

Nicholas K. Iammarino

PROFESSORS EMERITI

Eva J. Lee

Hally B.W. Poindexter

Dale W. Spence

ASSOCIATE PROFESSOR

James G. Disch

ASSISTANT PROFESSORS

Clark Haptonstall

Peter G. Weyand

ADJUNCT PROFESSORS

Becky Gorham

Mark Jenkins

Cathy Sunday

LECTURERS

John F. Eliot

Richard Nisbett

Carwyn Sharp

Ryan Zapalac

PART-TIME LECTURERS

Roberta Anding

Cassius B. Bordelon, Jr.

Brian T. Gibson

Elaine Heywood

Emily Page

DEGREE OFFERED: BA

The department was one of the first of its kind in the nation to institute an academic program structure that allows students to concentrate their efforts on a specific subdiscipline. Academic programs include sports medicine, sport management, and health science. Detailed requirements of each program can be obtained on the departmental webpage at <http://kinesiology.rice.edu>.

DEGREE REQUIREMENTS FOR THE BA IN KINESIOLOGY

For general university requirements, see Graduation Requirements (pages 14-15). A minimum of 120 semester hours is required for a bachelor of arts degree in kinesiology. Because of the interdisciplinary and diverse nature of the field of kinesiology, each student is required to specify an academic program concentration within the major.

SPORTS MEDICINE PROGRAM

Advisor: Dr. Peter Weyand

Students who choose the sports medicine program of the kinesiology department typically continue their education at the graduate level or plan on attending medical school or other medically related professional schools such as physical therapy. Graduates may also be directly employed in medical and corporate settings, which include both preventative and rehabilitative programs. Graduates who choose not to seek post-baccalaureate education are generally encouraged to obtain certification for exercise testing, physical fitness evaluation, or exercise prescription through the American College of Sports Medicine at <http://www.acsm.org/>.

The sports medicine curriculum intends to provide a strong natural science foundation and to interface this foundation with application to the human body. Prerequisite courses in chemistry and physics, elective courses in biology and biochemistry, as well as an array of required and elective courses offered within the department provide this foundation. The sports medicine program is the only academic specialization on campus that provides detailed exposure to human anatomy and human physiology. In addition, students receive a solid foundation in nutrition, biomechanics,

sports psychology, motor learning, measurement and statistics, exercise physiology, and sports medicine. Practical experience is afforded through several academic labs. Other elective courses include writing for professional communication, epidemiology, case studies in human performance, motor control, advanced exercise physiology and preventative medicine, research methods, and muscle physiology and plasticity. During advising sessions, students are encouraged to select from these electives according to their respective career goals. Students in the sports medicine program are expected to develop a strong scientific knowledge base as well as adept critical reading, writing, and oral communication skills.

Qualified students of the sports medicine program will be encouraged to participate in an independent study. This independent study allows integral involvement in basic or applied research directed by a faculty adviser. The application (proposal) process for independent studies is outlined in the webpage listed below. Qualified students are also encouraged to apply for any one of a variety of highly competitive internships. The internships generally provide students with an opportunity to experience the application of preventative and rehabilitative sports medicine concepts and practice at a health care or corporate setting.

SPORT MANAGEMENT PROGRAM

Director: Dr. Clark Haptonstall

Sport management is an interdisciplinary field of study of fairly modern development. It first appeared in the curricula of American universities under a variety of designations in the early to mid-1980's. Rice University became a pioneer institution in integrating this field into the traditional academic area known as kinesiology by making sport management one of the original programs when the department was reorganized into its present configuration.

As a distinct body of knowledge and field of study, sport management draws from a wide range of academic disciplines: economics, sociology, political science, psychology, law, communication, and managerial studies. Each discipline can be applied to the business enterprise of amateur and professional sport, as well as the management of highly effective teams in sport, corporate America, or other management related professions. While public and private sector sport operation is the topic of a large segment of the curriculum, the thoroughly interdisciplinary emphasis aims at educating students in the skills and theory necessary to assume responsible leadership roles in and out of sport.

Career preparation for leadership and entrepreneurial positions is the ultimate goal of sport management at Rice. Students will acquire a solid foundation in public speech, professional writing, and leadership and thus will be competitive for opportunities at the country's best law and business schools, as well as with journalism programs and premier consulting corporations.

Students wishing to gain employment in the sport industry should pay particular attention to practical experience. Networking and out-of-class development often plays the most significant role in obtaining jobs and promotions along high profile career paths such as those in collegiate or professional sports organizations. Students interested in careers in public relations, media, event direction, or promotion, office management, management of coaching and scouting, human resources, business development, sports information, or advertising will therefore need to demonstrate a commitment to securing and completing internships. Membership in national sport societies, specifically the North American Society for Sport Management (NASSM)—the leading academic association in this field and governing body from which Rice is in the process of obtaining national accreditation—is strongly recommended.

Highly qualified students will also be encouraged to seek an honors major, a double major, and/or consider pursuit of an advanced degree in business, law, sport management, or organizational psychology.

HEALTH SCIENCES PROGRAM

Advisor: Dr. Nicholas K. Iammarino

The goal of the health science program is to provide students with a fundamental background in health promotion and disease prevention. This background will enable them to understand the complexities of maintaining an optimal level of personal health while also considering the role that health promotion plays in society and the mechanisms that affect community health. The health science program is viewed as an excellent option for undergraduate students who are preparing to enter graduate school in health education, health promotion, or public health, as well as other health-related graduate or professional programs such as medicine or dentistry.

Students must complete a total of 42 semester hours in addition to the general university requirements (see pages 14-15). Six lecture courses are required for a total of 18 required hours. These required courses cover the structure and function of the human body (Human Anatomy), an introductory course designed to acquaint students with the fundamental concepts of health and models of health promotion (Concepts of Health Science), understanding and assessing community health needs (Principles of Community Health), methods of understanding the disease process (Epidemiology), a course that introduces statistics and measurement (Measurement and Statistics), and a professional preparation course (Foundations of Health Promotion/Health Education) that introduces students to the profession.

The remaining 24 semester hours are drawn from elective courses that are both within the kinesiology department and, at present, more than 20 courses from other academic departments. In keeping with the university's interest in an interdisciplinary approach to undergraduate education, this allows students to choose health-related courses within the natural sciences, social sciences, and humanities divisions.

See HEAL and KINE in the Courses of Instruction section.

LEADERSHIP RICE

DIRECTOR

Susan A. Lieberman, PhD

ASSISTANT DIRECTOR

Natalia Ksiezuk

The mission of Leadership Rice is to help Rice University undergraduates from all disciplines build their leadership capacities to create and manage change effectively. Leadership Rice explores how heart and mind, theory and practice, and ideas and actions come together to facilitate change.

The introductory course, Leadership:Theory to Practice (UNIV 309), is required to apply for participation in the Summer Mentorship Experience and the Leadership Certificate. UNIV 309 is only offered during the fall. Other courses may be taken independently. Leadership Rice's Summer Mentorship Experience places 40 to 50 students each summer in full-time, paid summer mentorships in Houston or nationally. Students are accepted by application between December and February and, if accepted, become part of the Leadership Rice program.

Leadership Rice courses, however, are open to undergraduates from all disciplines:

UNIV 309: Leadership:Theory to Practice

UNIV 310: Leadership Certificate Seminar

UNIV 311: Creativity

HUMA 311: Leadership Communication

UNIV 313: Entrepreneurial Leadership

PHIL 120: Applied Ethics

UNIV 409: Leadership Practicum (for UNIV 309 teaching assistants)

THE LEADERSHIP CERTIFICATE:

The program offers a Leadership Certificate for students eager to experience personal growth and reflect deeply on their activities while at Rice. The intention of the certificate is not to have students burdened by doing more but to get more from what they will already be doing. More details about the Leadership Certificate can be found on the Leadership Rice website.

Certificate requirements, which can be met in a variety of ways, include:

ACADEMIC WORK

UNIV 309

Communications

Public policy/leadership theory

Ethics

EXPERIENTIAL COMPONENTS

Summer work experience

Community service

International experience

Campus engagement

CAPSTONE PROJECT:

At the end of the process, certificate students address their understanding of leadership by tackling a “real world” problem, either on campus or beyond. Students are expected to make a public presentation of their work and include documentation in their portfolio.

More information about the program may be found at www.rice.edu/leadership

LIFETIME PHYSICAL ACTIVITY PROGRAM

STUDENT AFFAIRS

DIRECTOR

Dr. Daniel N. McMasters

INSTRUCTORS

Mauro Hamza

Tracy King

Christine Lidvall

Chris Shouts

Evan Stein

Heather Thompson

Rebecca Valls

The mission of the Lifetime Physical Activity Program (LPAP) is to provide a multifaceted learning experience via a program of physical activity to foster physical, social, and emotional wellness. The ultimate goal of the LPAP is to provide each student with:

- Knowledge of health-related concepts of physical activity
- Cognitive and behavioral skills
- An understanding of physical activity as a mode of improved quality of life throughout the life-span
- A sense of emotional well-being
- Satisfying social interaction
- Knowledge of rules and strategies
- An opportunity to learn an activity which is not necessarily mainstream in U.S. culture
- Professional instruction specific to the course material
- An introduction to intramural sports, sport clubs, dance theatre, and recreational programs
- Improved quality of life at Rice University

Lifetime physical activity classes are strongly recommended for all first-year students, including transfers who have not had an equivalent course elsewhere. To satisfy the LPAP requirement, students must complete 2 different courses in the Lifetime Physical Activity Program that do not carry degree credit and do not count toward the total semester hours at graduation. Students with disabilities may make special arrangements to satisfy this requirement. Students may not repeat LPAP courses and students can only take four hours of LPAP courses for credit that count toward the total semester hours at graduation.

The LPAP offers approximately 40 courses each semester. Within scheduling constraints, a student may select a course which offers activities that satisfy his/her interests. The LPAP offers a variety of activities. Some of the current activities offered include racquet sports (tennis, racquetball, badminton), fitness activities (aerobics, personal fitness, weight training, cycling), aquatics, dance (Latin ballroom, ballroom, modern, ballet, country western, Middle Eastern, classical Indian), martial arts, team sports (flag football, basketball, volleyball, soccer, softball), and other activities such as fencing, self defense for women, golf, disc golf, yoga, and nutrition.

See LPAP in the Courses of Instruction section.

LINGUISTICS

THE SCHOOL OF HUMANITIES

CHAIR

Masayoshi Shibatani

PROFESSOR

Stephen A. Tyler

PROFESSORS EMERITI

James E. Copeland

Philip W. Davis

Sydney M. Lamb

ASSOCIATE PROFESSORS

Michel Achard

Suzanne E. Kemmer

Nanxiu Qian

Rafael Salaberry

ASSISTANT PROFESSORS

Claire Bown

Katherine Crosswhite

Robert Englebretson

Nancy Niedzielski

LECTURER AND PLAYWRIGHT IN RESIDENCE

E. Douglas Mitchell

DEGREES OFFERED: BA, MA, PHD

BA IN LINGUISTICS

The department offers both a major program in linguistics and a Certificate in Teaching English as a Second Language, which may be earned with or without a linguistics major. For general university requirements, see Graduation Requirements (pages 14-15). In addition, students must satisfy the distribution requirements and complete no fewer than 60 semester hours for a total of at least 120 semester hours.

Because human language is a multifaceted object of study, linguistics is, by its nature, an interdisciplinary field. The undergraduate major in linguistics provides both an in-depth grounding in the field as well as cross-disciplinary breadth. Students beginning a linguistics major should take LING 200, which is a prerequisite for many upper-level courses in the department. All majors are required to take at least 8 courses (24 semester hours) in linguistics at the 300 level or above, including 4 core courses listed below:

Core Courses

LING 300 *Linguistic Analysis*

LING 301 *Phonetics* or LING 311 *Phonology*

LING 402 *Syntax and Semantics* or LING 416 *Linguistic Universals and Typology*

LING 305 *Historical Linguistics* or LING 315 *Semantics: Introduction to the Study of Meaning*
or LING 415 *Sociolinguistics*

No more than 1 independent study course may be counted toward the major requirements. In addition, competency in 1 language other than English is required. This requirement may be satisfied by 2 courses in a foreign language at the 200 level or above or equivalent, or at the 100 level or above for non-European languages. The general linguistics major requires, in addition to the 4 core courses and the language requirement, at least 4 upper-level linguistics electives.

Students may elect either a general linguistics major or one of four areas of concentration. Majors who plan to pursue graduate training in linguistics are recommended to choose one of the areas of concentration. These students also are urged to apply for admission to the honors program by the end of their junior year. The requirements for the various concentrations include additional courses, as follows.

- **Language Concentration.** In addition to the basic language competency required of all majors, the language concentration requires an advanced level competency in a different language. This can be satisfied by 2 language courses taught in a language other than English at the 300 level or above, or equivalent. In addition to the core courses, 4 advanced linguistics electives also are required, which should be chosen in consultation with the linguistics adviser. Courses in the structure or history of the languages studied are especially appropriate.
- **Cognitive Science Concentration.** This concentration requires 3 additional courses focused on the cognitive aspects of human language, selected from LING 306, 315, 317, 411, and 412; 2 courses from cognitively related disciplines (psychology, computer science, anthropology, philosophy) as approved by the major adviser; and 2 other advanced linguistics electives.
- **Language, Culture, and Society Concentration.** For an in-depth grounding in a particular language and culture, this concentration requires 2 language courses at the 300 level or above. The language may be the same as that used to satisfy the basic language competency. Besides the 4 core courses, the student must select 2 courses from LING 313, 406, 415, 419, 421, or 424; and 2 more linguistics electives. Finally, 2 courses in sociocultural studies outside the department are required, and the selection must be approved by the major adviser. Examples of appropriate courses are ANTH 353, PSYC 202, RELI 393, or HIST 250.
- **Second Language Acquisition Concentration.** Two language courses at the 300 level or above are required; the language may be the same as that used to satisfy the basic language competency. In addition to the linguistics core courses, 4 additional courses are required as follows: LING 340, LING 394 or a foreign language equivalent (e.g., Structure of Spanish, Structure of Japanese, etc.) as approved by the major advisor, and two of the following: LING 309, LING 313, LING 370, LING 415, LING 418, LING 419, LING 420, LING 422, or LING 490.

Honors Program—The departmental honors program provides selected undergraduate majors with the opportunity to conduct supervised research within their area of specialization in the major. Majors planning to pursue graduate training in linguistics or a related field are strongly encouraged to apply, as well as others who wish to add the experience of an intensive, individualized research project to their undergraduate education.

Application to the honors program should be made in person to the undergraduate adviser in the second semester of a student's junior year. In support of the application, the student should prepare a brief description of the proposed project signed by the faculty member who is to supervise the work. Acceptance into the program is by agreement of the linguistics faculty. On acceptance, the student will enroll in LING 482, with the supervising faculty member named as instructor.

The honors program framework is designed to facilitate the development of a mentoring relationship between student and faculty member. Students are thus expected to consult with the project supervisor periodically regarding their progress; the supervisor will provide research guidance and general support.

With the appropriate completion of major requirements and the honors project or thesis, the student will graduate with departmental honors as follows: "With Distinction," "With High Distinction," or "With Highest Distinction," as determined by the linguistics faculty.

Certificate in Teaching English as a Second Language—This program is designed for students who plan to teach English to nonnative speakers in the U.S. or abroad. The Certificate in Teaching English as a Second Language provides undergraduate-level training in applied linguistics and the English language, as well as some practical preparation for English language teaching. It can be easily combined with a major in linguistics, education, or English. To enroll in the program, see the director of the TESL Certificate Program (for 2005, Claire Bovern) or the linguistics undergraduate advisor.

The program consists of 4 required courses and a practical component.

Required Courses

LING 200 *Introduction to the Scientific Study of Language*

LING 340 *Theory and Methods of Teaching ESL*

LING 394 *Structure of the English Language*

LING 205 *Language and Society*, LING 309 *Psychology of Language*, LING 313 *Language and Culture*, LING 415 *Sociolinguistics*, or LING 306 *Language, Thought, and Mind*

Practical Component—The practical component consists of a total of 20 contact hours of language teaching/tutoring experience. This requirement may be filled by tutoring in the Rice Student Volunteer Program or by teaching in a high school or community TESL program. Students will be expected to write a short report on their teaching experience.

Successful completion of the certificate program must be certified by the director of the TESL Certificate Program and will be indicated on the Rice transcript upon completion of degree requirements.

PHD IN LINGUISTICS

The doctoral linguistics program at Rice emphasizes the study of language use and functional/cognitive approaches to linguistic theory. Areas of particular research strength in the department include field studies of particular languages (e.g., languages of North and South America; Australia; Austronesia; Africa; Europe; and East Asia), typology, language and mind (cognitive linguistics, neurolinguistics, schema-based theories, lexical semantics), language change (diachronic typology, grammaticalization theory, semantic change, language classification, and (Indo-European linguistics), phonetics and phonology, and discourse analysis, including corpus linguistics. Additional research areas represented are second language acquisition and applied linguistics.

The program only admits students planning to study for the PhD degree full time. Undergraduate preparation should ideally include language study and course work in linguistics or disciplines related to linguistics, such as anthropology, applied linguistics, psychology, or computational modeling. Interdisciplinary interests are encouraged. A master's degree may be earned during progress to the PhD degree. Admission to the program is competitive, and an advanced degree is not required. Students admitted to the program are generally offered financial support in the form of tuition scholarships and/or stipends for living expenses.

During the first year of residence, each entering student works closely with the graduate adviser to choose a plan of study congruent with the demands of the program and the student's interests. Emphasis throughout the program is on a close working relationship with faculty. Students should select areas of specialization that fit well with faculty research interests and activities. See the departmental homepage at <http://linguistics.rice.edu>.

Students with a master's degrees in linguistics will progress through the degree

program in four years; those without in five. With no prior linguistics background, course work in the first two years will include:

- 2 courses in the area of phonetics/phonology
- 2 courses in the area of syntactic/semantic analysis
- 1 two-course sequence in field methods
- 1 problem-solving course in linguistic analysis
- 2 courses in other subfields of linguistics

Prior preparation in linguistics will be assessed with regard to its equivalence to particular Rice courses. Students are also normally expected to serve as teaching assistants for 1 course per year during the time they are receiving departmental support; such service is included in the normal course load. Graduate students are required to register for at least 12 hours credit per semester before advancing to candidacy.

In each of the second and third years in addition to course work, students prepare an in-depth research paper on a topic chosen in consultation with two separate committees of the faculty. These two papers must represent different areas of the field, as determined by the linguistics faculty. A separate committee of the three faculty members, to be approved by the student's advisor, referees each paper. In addition, one of the papers must be presented in the departmental colloquium, and it is expected that students submit their work for presentation at relevant professional meetings, and publish such work in conference proceedings and/or journals (funds may be available to defray the cost of the travel to meetings). Finally, students must demonstrate reading competency in two research languages.

In the course of the second and third years, the student should work toward establishing a close working relationship with various members of the faculty such that multiple faculty members are familiar with the student's work. After the student's second paper is accepted, a dissertation advisor is selected and a doctoral committee is formed, by mutual agreement of the student and the anticipated committee members.

During the fourth year, students present to their committee members a third research paper consisting of a substantial dissertation proposal and a comprehensive bibliography. This proposal may take the form of a grant proposal to an external funding agency, particularly in the case of proposed fieldwork. Upon completion of the prospectus, students will submit to an oral qualifying exam, to be administered by the dissertation committee. The exam will consist of two parts, a general exam, demonstrating the student's knowledge of the field, and a dissertation prospectus hearing. Upon completion of this qualifying examination, the student will advance to candidacy.

The doctoral research project may require fieldwork before writing the dissertation; however, the student is expected to consult regularly with the committee members during the writing process. After a complete draft of the dissertation is submitted, the student defends the dissertation publicly. When the final version of the dissertation is accepted by the doctoral committee and filed with the university, and all other requirements are certified as filled, the degree is then granted.

See LING and SANS in the Courses of Instruction section.

MANAGEMENT

THE JESSE H. JONES GRADUATE SCHOOL OF MANAGEMENT

DEAN

William H. Glick

PROFESSORS

Richard P. Bagozzi

Bala G. Dharan

Jennifer M. George

G. Anthony Gorry

George Kanatas

H. Albert Napier

Ronald N. Taylor

Wilfred C. Uecker

Robert A. Westbrook

Gilbert R. Whitaker, Jr.

Edward E. Williams

Duane Windsor

Stephen A. Zeff

RESEARCH PROFESSORS

Bob Bixby

Marc J. Epstein

ASSOCIATE PROFESSORS

Shannon Anderson

Richard R. Batsell

Steven C. Currall

Jeff Fleming

Karen Nelson

Barbara Ost diek

Douglas A. Schuler

Seethu Seetharaman

D. Brent Smith

Jing Zhou

ASSISTANT PROFESSORS

Sharad Borle

Maragret Cording

Utpal Dholakia

Christopher Dowing

Jill Foote

Gustavo Grullon

Evgeny Lyandres

Bradley Paye

Andrew Perkins

Francisco Roman

Brian R. Roundtree

Siddharta Singh

Shane Underwood

Fu-Kuo Albert Wang

Masahiro Watanabe

Carmen Wigelt

James P. Weston

Sally Widener

Yuhang Xing

Yeosun Yoon

Yan Anthea Zhang

Rui Zhu

SENIOR LECTURERS

Deborah J. Barrett

Pamela Kennedy

ADJUNCT PROFESSORS

Roberto Abib

Anne Marie Ainsworth

Stephen J. Banks

Marc Boom

Cheyenne Currall

Rodney Eads

Jerry E. Finger

Robert N. Flatt

Joseph R. Gagliardi

Jack M. Gill

Terry Hemeyer

Vincent Kaminski

Robert Lesnick

Leo Linbeck III

Dennis Loughridge

Shahid Malik

Upendra Marathi

Timothy Nash

Robert B. Parke, Jr.

Nicholas R. Rasmussen

David Ross, III

Armand Shapiro

Joan E. Shook

Robert B. Stobaugh

Laurence Stuart

Stephen Whitney

LECTURERS

Shahid Ansari

W. Clifford Atherton

David M. Austgen

John A. Baker

Lovett Baker

E. Scott Crist

Lawrence Hampton

John Kehoe

Steven F. Koch

Kenny Kurtzman

James P. Mandel

Dennis E. Murphree

Elizabeth O'Sullivan

Phaedon Papadopoulos

Elizabeth A. Peters

David Skinner

James R. Sowers

V. Richard Viebig, Jr.

Stuart Wagner

Alan Westheimer

Gale Wiley

VISITING ASSOCIATE

PROFESSOR

Steven J. Maranville

DEGREES OFFERED: MBA, MBA/MASTER OF ENGINEERING

The Jesse H. Jones Graduate School of Management was established in 1974 through a gift from Houston Endowment, Inc. The school provides its highly select graduate students with unique opportunities for professional training in management. The master of business administration (MBA) program includes elective offerings in accounting, entrepreneurship, finance, international business, information technology, marketing, operations management, organizational behavior and human resource management, healthcare management, and strategic management and planning.

The MBA is also offered in a format designed for executives who do not wish to interrupt their careers while they pursue their degrees. Meeting every other weekend, the MBA for Executives Program features the same content and faculty as the traditional two-year MBA program, and is completed in 21 months. This general management program offers no tracks for specialization; however, much of the content of elective courses in the two-year MBA has been incorporated into the course modules for the executive format. The MBA for Executives Program offers 4 electives at the end of the 21-month period.

A joint MBA/master of engineering degree offered by the Jones Graduate School and the George R. Brown School of Engineering, in any of the departments of engineering or in statistics, prepares students to become managers in organizations requiring a high level of technical expertise and management skills.

A joint MBA/MD offered by the Jones Graduate School and Baylor College of Medicine prepares students to become both physicians and managers in institutions involved in the delivery of high-quality health care, as well as biotechnology-focused industries, health insurance/managed healthcare firms, and pharmaceutical and medical supply and equipment companies.

Although no undergraduate major is offered, undergraduate accounting courses are available.

ADMISSION REQUIREMENTS FOR JONES GRADUATE SCHOOL

For general information, see Admission to Graduate Study (pages 56-57). Applicants to the MBA program must submit scores on the Graduate Management Admission Test (GMAT) rather than the Graduate Record Examination (GRE), and, unless they received an undergraduate degree from a U.S. college or university, foreign nationals whose native language is not English must submit recent scores on the Test of English as a Foreign Language (TOEFL). Admission to the Jones Graduate School is open to students regardless of their undergraduate major, but it is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT.

MBA Program—Although the MBA program has not established specific prerequisite courses for admission, students may find it beneficial to have a background that includes undergraduate course work in principles of accounting, principles of microeconomics, and mathematics. Because spreadsheet and word-processing software are used extensively in course work, students should have a thorough understanding of these types of software packages before enrolling.

MBA for Executives—In addition to meeting the standards for admission to the MBA program, students admitted to the executive program typically have at least 10 years of relevant work experience.

Joint MBA/Master of Engineering Program—To enter the joint degree program, applicants must be accepted by both the Jones Graduate School and the engineering department in which they wish to enroll. The program requires the Jones Graduate School application and the GRE, rather than the GMAT. Some engineering departments require advanced tests as well.

Joint MBA/MD Program—To enter this joint degree program, applicants must first be accepted by Baylor College of Medicine and then apply separately to the Jones Graduate School. The MCAT is accepted rather than the GMAT. Two years of medical school are required before starting MBA classes.

DEGREE REQUIREMENTS FOR MBA

For the MBA degree, students must:

- Spend at least 2 academic years in residence at Rice

- Complete at least 60 semester hours in course work
- Register for no fewer than 15 hours and no more than 18 hours each semester (any other registration requires special permission)

All registration and drop/add forms require the signature of the MBA program director or a designee. The school, which must approve all courses, specifies the sequence of required first-year courses at registration for each entering class.

Waivers and Transfers of Credit—At its sole discretion, the school may allow students to transfer credits. This does not necessarily reduce the residence requirement, but it does make additional elective courses available. Students otherwise must follow the prescribed curriculum of study and are not allowed to waive any core requirements.

First-Year Courses—Students must complete at least 32 approved credit hours. The modular core curriculum includes financial accounting, data analysis, business ethics, information technology, marketing, finance, managerial economics, organization behavior, competitive strategy, managerial and leadership skills, managerial communication, economic environment of business, globalization of business, cost management, operations management, business-government relations, organization theory and change management, and 2 electives. During the second semester, teams of students participate in an action learning project in which they work at a company to solve a specific problem. This project allows them to integrate the business disciplines they studied and to turn knowledge into action. The core courses serve as prerequisites for required and elective courses taken in the second year.

Second-Year Courses—Students must complete at least 28 credit hours that include required courses in entrepreneurship and strategy formulation and implementation, and 25 credit hours of electives.

Areas of Interest—Although MBA students are not required to select a formal elective concentration for degree purposes, they may wish to choose 1 or more areas of interest from among the following: accounting, entrepreneurship, finance, general management, international business, information technology, marketing, operations management, organizational behavior and human resource management, healthcare management, and strategic management and planning. The MBA program director and individual faculty members offer students advice on course selection. Students may also take upper-level or graduate courses from other departments at Rice. Students may not credit basic foreign language courses toward the MBA degree, but advanced language courses may qualify with approval from the MBA program director.

DEGREE REQUIREMENTS FOR MBA FOR EXECUTIVES

This degree requires completion of 11 mini-semesters totaling 56 credits, including Extended Learning Labs. The program is a lock-step progression in which all students take required courses in an identical sequence, except for the 4 elective courses at the end of the 21-month period.

DEGREE REQUIREMENTS FOR JOINT MBA/MASTER OF ENGINEERING

Students may earn this nonthesis engineering degree in the fields of chemical engineering, civil engineering, computational and applied mathematics, computer science, electrical and computer engineering, environmental science and engineering, mechanical engineering and materials science, and statistics. Ordinarily, the engineering degree takes one academic year to complete, whereas the MBA requires two. Joint-degree candidates, however, can fulfill requirements for both degrees in two academic years.

For the joint MBA/master of engineering degree, students must complete:

- At least two academic years in residence at Rice
- 63 semester hours in approved course work:
 - 24 hours in an engineering discipline
 - 39 hours in business administration

Students plan their course schedules in consultation with the engineering department in which they are enrolled and with the MBA program director.

DEGREE REQUIREMENTS FOR THE JOINT MBA/MD PROGRAM

Students may earn both MBA and MD degrees in five years. They divide their time as follows:

- Years one and two—medical training at Baylor College of Medicine
- Year three—core MBA courses at Rice
- Year four—MBA courses at Rice, including 3 semester hours of required courses and 12 semester hours of healthcare electives during the fall semester, and medical training at Baylor College of Medicine during the spring semester
- Year five—medical training at Baylor College of Medicine

Students use the summer between the third and fourth years to perform healthcare research programs or externships. Students receive their MBA degree from Rice after they have completed 45 hours of approved management course work; they receive their MD degree after they have completed the requirements specified by Baylor College of Medicine.

ACADEMIC AND PROFESSIONAL STANDARDS

Students must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the MBA degree program, all students agree to be governed by the standards and procedures for dismissal or disciplinary action stated below.

Academic Standards—A minimum cumulative grade point average of 3.00 (B) is required for graduation. All courses taken for the MBA degree (including approved courses taken at the university but outside the Jones Graduate School) are counted in the cumulative grade point average calculation.

Students with a cumulative grade point average lower than 3.00 at the end of any semester will be notified of dismissal and may no longer register for courses. A student who has been notified of dismissal may appeal to the Academic Standards Committee of the Jones Graduate School. The committee will decide, based on the circumstances of the appeal, whether the student (1) may resume studies on probation, (2) is to be suspended for one semester or an academic year, or (3) is to be dismissed from the MBA program.

Students proposing to return after a period of academic suspension must apply to the Academic Standards Committee and receive permission to be readmitted.

Only grades of C and higher are counted for credit toward graduation. If students receive a grade lower than C in a course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the hours.

Students may retake a failed course only once and then only if their cumulative grade point average is 3.00 or higher, or they have received the permission of the Academic Standards Committee to do so. Students who fail a course twice will be

notified of dismissal. (Students may not take any course for which the failed course is a prerequisite until they pass the prerequisite course.)

Students on academic probation cannot be candidates for student offices, cannot graduate or drop courses, and must complete all future courses with a grade of C or above. Students are removed from probation only upon achieving a cumulative grade point average of at least 3.00 at the end of the following semester of work.

Students who have completed the required number of hours for the MBA degree, the joint MBA/master of engineering degrees, or the joint MBA/MD degree, but who have a cumulative grade point average lower than 3.00, are dismissed without graduation. If, in an appeal to the Academic Standards Committee, a student can substantiate a claim of extenuating circumstances, i.e., those beyond the student's control, the student will be permitted to take additional course work at the university within the next year to raise his or her grade point average to 3.00.

Professional Standards—MBA students are held to the high standards of professional conduct expected of managers—standards substantially exceeding those expected of them simply as students. Students may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct. The dean may place a student on disciplinary probation for unacceptable conduct, giving oral and written notice that future misconduct will lead to filing of specific charges. (This probationary notice, however, is not required as a precondition for filing specific charges.)

ACADEMIC REGULATIONS

Grading Policy

For All Courses:

- The grade of A+ should be given only as an exceptional grade reflecting extraordinary achievement by a student.
- Only grades of C and higher are counted for credit toward graduation. If students receive a grade lower than C in a (core) course required for graduation, they must repeat the course. If students receive a grade lower than C in an elective course, they need not repeat the specific course, but they must make up the hours.
- Grades are considered final and are rarely, if ever, changed for any reason other than calculation errors.
- Jones School students may not take courses pass/fail to count toward their degree requirements.
- Jones School students may audit course with departmental approval. The course will not count towards the MBA or appear on the transcript.

For Core Courses:

- No more than half of all grades assigned by an instructor may be an A- or above.
- A course GPA (combining multiple sections where necessary) between 3.30 and 3.50 should be used as a "target" for assigning grades.
- Instructors in multi-section courses should coordinate the assignment of final grades such that they reflect a consistent grading philosophy for the overall course.

For Elective Courses:

- Regardless of class size, instructors "target" the course GPA (combining multiple sections where necessary) to fall between 3.50 and 3.80.

- To the extent that such course exists, instructors in multi-section electives should coordinate the assignment of final grades such that grades reflect a consistent grading philosophy for the overall course.

GUIDELINES FOR APPEALING ACADEMIC DISMISSAL

The Process—A student who wishes to appeal a dismissal should address the following issues in a letter to the Academic Standards Committee. The student must send the letter to the chairman of the Academic Standards Committee. The following questions should be answered in the appeal letter.

1. What circumstances led to your academic performance last semester and to what degree were those circumstances beyond your control?
2. If your performance in a particular course(s) last semester was below par, describe any circumstances specific to that course that explain your performance.
3. Do you expect the circumstances that created the problems for you last semester to change next semester? If so, how?

You may include any other information that you deem relevant in your appeal letter

Timing—Timing is critical in the appeals process because classes start immediately after the grades are distributed in January. The student must inform the director of the MBA/E program (by email or written note) immediately of the intention to appeal. The appeal letter to the committee must be filed expediently, within or sooner than the first week of classes. If a student plans to appeal, he/she should attend classes in January without registering. It is important to keep up in his/her studies during the appeal process. If his/her appeal is accepted, the student may register later with a letter from the MBA program office.

Grades are considered final, and are rarely changed for any reason other than calculation errors.

Appeals—Appeals beyond the Academic Standards committee must go to the dean of the Jones Graduate School, who may seek guidance from the Dean's Advisory Council. All decisions rendered by the dean are final.

Confidentiality—The Family Educational Rights and Privacy Act of 1974 and amendments govern the records of actions related to appeals.

GRADE APPEAL PROCESS

The procedure below outlines the process by which a student may appeal a grade in a course.

1. The student should first pursue any grading question with the professor following whatever formal or informal process the professor has outlined for the course.
2. If the matter is not resolved in step 1 above, the student must file a written appeal to the professor and send a copy to the director of the MBA/E program. This written appeal must be filed no later than 45 days after the last day of finals for the module (mini-semester) in which the course was offered.
3. The professor must schedule a meeting with the student within two weeks of receiving the written appeal to further discuss the appeal with the student. Notice of the appeal time and date will be provided by the professor to the director of the MBA/E program.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Dean's Advisory Committee by sending a written

notice describing the grounds for the appeal within 2 weeks of the date of the scheduled meeting in step 3.

5. The Dean's Advisory Committee will seek out information on the appeal from the professor and the student and, at its discretion, hold a hearing to further consider the matter. The decision of the Dean's Advisory Committee will be rendered within 6 weeks of receiving a written notice of appeal (step 4).
6. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
7. All decisions rendered by the Dean's Advisory Committee are final.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

ALP GRADE APPEAL POLICY FOR INDIVIDUAL STUDENT

The procedure below outlines the process by which an individual student may appeal a grade in the ALP course.

1. The student must send a letter of intent to appeal the grade to the director of ALP. This written appeal must be filed no later than 30 days after the last day of module 6. A copy of the letter must be sent to the director of the MBA program.
2. The director of ALP must schedule a meeting with the student and director of the MBA program by the end of module 1 during the following year to discuss the appeal with the student further. The purpose of the meeting is to review with the student the basis for the individual grade. The director of ALP will provide the meeting time to the director of the MBA program.
- 2a. Up until this time, all information relevant to the case is confidential. If the student desires to talk with the ALP faculty or ALP team members about the matter, this will require the student to waive confidentiality with respect to the matter of the downgrade status. The student must notify the director of ALP about his/her preference to waive confidentiality. Upon receiving the request to waive confidentiality from the student, the director of ALP will apprise all related parties that an appeal is underway, that they are not obligated to discuss the matter with the appealing student, and that their confidential peer evaluations have not been shared with the appealing student. The student must wait for permission from the director of ALP before contacting team members and/or faculty liaisons.
3. If step 2 does not resolve the issue to the satisfaction of both parties, the student may appeal to the director of ALP by sending a written notice describing the grounds for the appeal within 2 weeks of the date of the scheduled meeting in step 2. A copy of the letter must be sent to the director of the MBA program. The director of ALP will render a decision within 3 weeks of receiving the written notice.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student may appeal to the Dean's Advisory Committee by sending a written notice describing the grounds for the appeal within 2 weeks of the decision rendered by the director of ALP in step 3. A copy of the letter must be sent to the director of ALP and the director of the MBA program.
5. The Dean's Advisory committee will seek out information on the appeal from the professor and the student and at its discretion hold a hearing to further consider the matter. The decision of the Dean's Advisory Committee will be rendered within 6 weeks of receiving a written notice of appeal (step 4).
6. All decisions rendered by the Dean's Advisory Committee are final.

7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

ALP GRADE APPEAL POLICY FOR STUDENT TEAM

The procedure below outlines the process by which an individual student may appeal a grade in the ALP course.

1. The student team must send a letter of intent to appeal the grade to all members of the faculty team. This written appeal must be filed no later than 30 days after the last day of module 6. All team members must sign the letter. A copy of the letter must be sent to the director of ALP and to the director of the MBA program.
2. The faculty team must schedule a meeting with the student team by the end of module 1 during the following year to further discuss the appeal with the student team. The professors will provide the meeting time to the director of ALP and to the director of the MBA program.
3. If the matter is not resolved in step 2 above, the student team must file a written appeal to the director of ALP within 2 weeks of the date of the scheduled meeting in step 2. All team members must sign the letter. The director of ALP must schedule a meeting with the student team within 2 weeks of receiving the written appeal to further discuss the appeal with the student team. The director of ALP will provide the meeting date to the director of the MBA program.
4. If step 3 does not resolve the issue to the satisfaction of both parties, the student team may appeal to the Dean's Advisory Committee by sending a written notice describing the grounds for the appeal within 2 weeks of the date of the scheduled meeting in step 3. All team members must sign the letter. A copy of the letter must be sent to the director of ALP and to the director of the MBA program.
5. The Dean's Advisory committee will seek out information on the appeal from the professors, the director of ALP, and the student team and, at its discretion, hold a hearing to further consider the matter. The decision of the Dean's Advisory Committee will be rendered within 6 weeks of receiving a written notice of appeal (step 4). A copy of the decision must be sent to the director of ALP and to the director of the MBA program.
6. All decisions rendered by the Dean's Advisory Committee are final.
7. In the event that the protested grade is necessary for the student to graduate, an accelerated schedule will be followed.
8. The Family Educational Rights and Privacy Act of 1974 and amendments govern records of these actions.

DROP/ADD POLICY AND PROCEDURES

Due to the unique module schedule by which the Jones School abides, MBA students have special procedures by which they follow to make schedule changes. The MBA Program Office has implemented an add/drop policy which allows students the opportunity to add/drop courses at various times throughout the semester. Below are the procedures for adding or dropping a course and students should contact the MBA Program Associate for assistance.

All schedule changes must be approved by the MBA Program Associate prior to the add/drop deadline (either via email or in person) before the student may make

schedule changes on Esther (<http://esther.rice.edu/>). All class rosters are updated in the MBA Program Office and sent to professors for enrollment counts and attendance records and students are responsible to communicate with the MBA Program Associate regarding all proposed schedule changes.

If student is taking a ONE CREDIT course:

1. A student may add/drop a class, including section changes for core courses, with permission from the MBA Program Associate during the first week of the module without penalty.
2. A student must attend the first class, and may not miss class during the first week.
3. A student may not add or drop a course after the first week of class (see add/drop deadlines below for the 2004–2005 academic year).

If student is taking a TWO CREDIT course:

1. A student may add/drop a class with permission from the MBA Program Associate, during the first two weeks of module in which the class begins without penalty.
2. A student must attend the first class and may not miss class during the first week.
3. A student may not add or drop a course after the second week of class.

If student is taking a THREE CREDIT course:

1. A student may add/drop a class with permission from the MBA Program Associate, during the first three weeks of module in which the class begins without penalty.
2. A student must attend the first class, and may not miss class during the first week.
3. A student may not add or drop a course after the third week of class.

2005–2006 ADD/DROP DEADLINES

Fall 2005

| Add/Drop Period | Module(s) | Credits |
|-------------------------|------------------|----------------|
| August 23–30 | 1 | 1 |
| August 29–September 6 | 1–2 | 2 |
| August 29–September 12 | 1–3 | 3 |
| September 26–October 3 | 2 | 1 |
| September 26–October 10 | 2–3 | 2 |
| November 7–November 14 | 3 | 1 |

Spring 2006

| Add/Drop Period | Module(s) | Credits |
|-------------------------|------------------|----------------|
| January 16–24 | 4 | 1 |
| January 16–31 | 4–5 | 2 |
| January 16–February 7 | 4–6 | 3 |
| February 21–February 28 | 5 | 1 |
| February 21–March 7 | 5–6 | 2 |
| March 28–April 5 | 6 | 1 |

All schedule changes must be submitted and approved by Christa VanDrie no later than 5 P.M.

Office: 210-2 Jones School Building
 Phone: 713-348-6223
 Email: cvandrie@rice.edu

INDEPENDENT STUDY

Minimum Hours Requirement—Each 1-unit credit for independent study should contain approximately as much time content as a 1-module course at JGSM, which is 12 hours of class time, plus an average of at least 24–36 outside-class hours, for a minimum total of 36–48 hours of work. Most independent study projects can probably be accommodated in a 1- or 2-unit independent study; 3-unit independent study projects should be less frequent. Occasionally, a group independent study project may arise, though most independent studies will be undertaken by individual students.

The number of credits for an independent study should be negotiated at the beginning of a project. Increases to the number of project credit hours after the project overview has been filed with the MBA program office must be approved by the Academic Standards Committee. The committee will rely on input from sponsoring faculty in making its decision about ex post credit increases. Requests to increase the number of project credit hours must be made before the end of the second week of classes in the module in which the project begins, except when a student is in their last semester, in which case such requests must be made before the end of the second week of the semester.

Restrictions—No student may take more than 3 credit hours of independent study during the course of the degree program without the approval of the Academic Committee. If an independent study is proposed that would cause a student to exceed the three credit limit, the Academic Standards Committee will select two faculty members, other than the faculty member who will supervise the project, within the area most closely related to the study's academic contact to review and approve the study. Independent study exceeding three credits in total should consider current policies restricting use of independent study as well as the incremental value of additional independent study in light of past independent studies. If the study does not align with any of the JGSM academic groups, the Academic Standards Committee will perform the review and make the final approval decision.

Independent study projects are for academic credit, not for hire. Students may not earn credit for paid research assistance.

Faculty Sponsorship—Independent study projects are normally sponsored only by full-time JGSM faculty. Students wishing for sponsorship by a part time faculty member must submit a project overview to the Academic Standards Committee and obtain the committee's approval, before the module(s) in which the project is to begin.

Common Requirements—The goal of independent study projects is to advance or deepen a student's knowledge or competency in a business discipline or activity.

To facilitate these goals, independent study projects generally fall into two broad categories: (1) directed reading and study resulting in a research paper, or (2) an experiential or hands-on project resulting in an outcome such as an empirical analysis or a webpage/site with an executive summary of the "deliverable."

While the content of individual independent study projects are at the discretion of a student and the sponsoring faculty member, JGSM would like to ensure relatively equal workloads per unit of independent study credit, and some common requirements between independent study projects. To that end, students and/or sponsoring faculty should:

1. Prepare and submit to the MBA program office an overview of the independent study project with number of project credits, anticipated final results and a broad timeline of anticipated project milestones.

2. Meet to discuss the project, after the initial agreement on the project scope, at least once every 2–3 weeks.
3. Prepare a final paper (in the case of directed reading and research projects), or complete a concrete deliverable (for example, a completed webpage, computer program, survey results, empirical analyses, etc.) together with an executive summary of the project (in the case of experiential projects).
4. File a copy of each student's final paper, or executive summary, with the MBA program office.

Applications—Independent Study Applications are available for interested students to pick up in the MBA Program Office. Complete and approved applications are due to the MBA Program Associate by the first week of the module in which the project will be completed. The student will be registered for MGMT 700 Independent study for the appropriate credit amount, only when the MBA Program Associate send the approved application information to the registrar for processing.

CLASS ATTENDANCE POLICY

Students are expected to be in class on the first day of each module. The faculty reserves the right to exclude students from their courses who do not show up on the first day. For special circumstances, see faculty and/or director of MBA program immediately.

WITHDRAWAL POLICY

A Jones School student may voluntarily withdraw from school at any time. Rice University applies a sliding scale to tuition and fees, so early action to withdraw saves money.

JONES SCHOOL STUDENT HANDBOOK

Generally, the Jones School adheres to the academic regulations of Rice University. However, the Jones School has unique policies and procedures that vary from the Office of Graduate Studies regarding, but not limited to, leave of absence, withdrawals and readmission, drop/add, academic discipline, dismissal, procedures for resolution of problems, and appeal of academic regulations. All Jones School students are responsible for adhering to policies and procedures listed in the *Jones School Student Handbook* given to students during pre-term. A copy of the handbook may also be obtained from the MBA program office.

FINANCIAL AID

Financial assistance by the Jones Graduate School is awarded only for a given semester or year. Continuation of assistance depends upon satisfactory academic performance, professional behavior, and availability of funds. Academic or disciplinary probation, suspension, or more than three grades below B- result in the removal of all forms of school financial assistance, whether scholarship, loan, or employment. Scholarships are awarded for a combination of need and academic merit.

See ACCO and MGMT in the Courses of Instruction section.

MANAGERIAL STUDIES

THE SCHOOL OF SOCIAL SCIENCES

PROGRAM DIRECTOR

Ronald Soligo

DEGREE OFFERED: BA

The major in managerial studies is an interdepartmental, nonprofessional program designed to provide undergraduates with an understanding of the environment in which businesses and other organizations exist today, and of some of the tools employed by management in the commitment of its financial and human resources. All students taking the managerial studies major must also complete at least one of the established departmental or interdepartmental majors, other than an area major. Managerial studies is not the equivalent of an undergraduate business major at other universities.

DEGREE REQUIREMENTS FOR BA IN MANAGERIAL STUDIES

For general university requirements, see Graduation Requirements (pages 14–15). For the BA degree, students majoring in managerial studies must complete the following 10 core courses in addition to satisfying all the requirements for their second departmental or interdepartmental major:

ACCO 305 *Introduction to Accounting*

ECON 211 *Principles of Economics I*
(microeconomics)

ECON 448 *Corporation Finance* or ENGI 303
Engineering Economics and Management

*MANA 404 *Management Communications in
a Consulting Simulation*

PSYC 101 *Introduction to Psychology*

PSYC 231 *Industrial and Organizational
Psychology*

**STAT 280 *Elementary Applied Statistics*

***STAT 385 *Methods for Data Analysis and
System Optimization*

2 courses from the following:

ACCO 406 *Management Accounting*

ECON 355 *Financial Markets and Institutions*

ECON 358/POLI 358 *Organizational Design*

ECON 370 *Microeconomics Theory*

ECON 421 *International Finance*

ECON 435 *Industrial Organization*

ECON 437 *Energy Economics*

ECON 438 *Business, Law, and Economics*

ECON 439 *Torts, Property, and Contracts*

POLI 335 *Political Environment of Business*

POLI 338 *Policy Analysis*

STAT 420 *Statistical Process Control and
Experimental Design*

UNIV 309 *Leadership: Theory to Practice*

* MANA 404 is a capstone course that may not be taken until 8 of the 10 other required courses in the major have been completed.

** Psychology and sociology majors may satisfy this requirement with PSYC 339/STAT 339 or SOCI 398, respectively. Students with a calculus background should take STAT 305, STAT 310/ECON 382, or STAT 331/ELEC 331.

*** or CAAM 378, ECON/STAT 400, STAT 410, 421, 486.

Honors Program—To apply for admission to the honors program, students must have completed eight of the regular managerial studies courses and have a B+ (3.33) average in those courses. All applications must be approved by the Director of Managerial Studies.

The Honors Program consists of taking 2 additional courses from:

MANA 497/498 *Independent Research*

ECON 440 *Risk, Uncertainty, and Information*

ECON 445 *Managerial Economics*

ECON 449 *Basics of Financial Engineering*

STAT 486 *Methods in Computational Finance*

I: Market Models

STAT 421 *Methods in Computational Finance*

II: Time Series

MANA 497/498 are offered in collaboration with faculty in the Jesse H. Jones Graduate School of Management. Admission to these courses must be approved by a participating faculty member. A list of participating faculty and their research interests is available from the director of Managerial Studies.

For more information, students should consult the program director in 268 Baker Hall.

See MANA in the Courses of Instruction section.

MASTER OF LIBERAL STUDIES

THE SCHOOL OF CONTINUING STUDIES

DEAN

Mary B. McIntire

DIRECTOR

TBA

Please refer to the program website <http://www.mls.rice.edu> for program information and academic policies.

DEGREE OFFERED: MLS

Fall 2005 marks the inaugural session of the Rice University Master of Liberal Studies program. The part-time interdisciplinary program is founded on the principle that, in an increasingly complex and fragmented world, a liberal arts education becomes all the more important. Though exploring the liberal arts at a highly integrated level is not frequently possible in a career-focused undergraduate curriculum, it is both possible and well suited to a master's level program designed for committed, energetic adults. Courses in the Master of Liberal Studies program will be taught by distinguished Rice faculty and invited visiting faculty who appreciate the opportunity to teach more-experienced adults.

The program is designed for working adults and does not follow the traditional university schedule of fall and spring semesters. Classes meet one evening per week for 10-11 weeks with two or three Saturday morning classes. Sessions are offered in the fall, winter, and spring.

Fall classes begin in September and end before Thanksgiving; winter classes begin in January and end in March; spring courses begin in April and end in early June. No classes are held in July or August. Courses will be taught by distinguished Rice faculty and invited visiting faculty who appreciate the opportunity to teach more experienced adults.

DEGREE REQUIREMENTS

For general university requirements for graduate study, see pages 56-58. The program consists of 33 credit hours, which include three core courses, seven electives, and a capstone course. A student may take only one course in his or her entering session. The core courses—one in humanities, one in social sciences, and one in natural sciences—are designed to acquaint first-year students with the contrasting perspectives and methodological approaches that define academic inquiry in the three broad fields. Core courses must be completed before electives may be taken. Electives may focus on just one "track" (science, social science, or humanities) or may be chosen more broadly. All courses will require research papers; some may require tests or oral presentations.

The capstone course is designed to help students integrate their knowledge through writing an extended paper or completing a project to be presented to the class orally. A thesis is not part of the degree program. The program can be completed

in approximately four years if one class is completed every session.

ADMISSION

Admission to graduate study is open to qualified students holding a bachelor's degree (or equivalent) from an accredited university or college. A minimum GPA of 3.0 from the applicant's undergraduate work is expected, though the admissions committee also gives consideration to applicants' postgraduate experience and recent accomplishments.

COURSES

Please refer to the Master of Liberal Studies website for current course listings, <http://www.mls.rice.edu>

MATHEMATICS

THE WIESS SCHOOL OF NATURAL SCIENCES

CHAIR

Robin Forman

PROFESSORS

Michael Boshernitzan

Tim D. Cochran

Robert M. Hardt

John Hempel

Frank Jones

John C. Polking

Stephen W. Semmes

Richard A. Stong

William A. Veech

Michael Wolf

PROFESSOR EMERITUS

F. Reese Harvey

ASSOCIATE PROFESSOR

Brendan Hassett

Zhiyong Gao

INSTRUCTORS

Pralay Chatterjee

Stefan Friedl

Taehee Kim

Christopher Rosmussen

Ilie D. Ugarcovici

DEGREES OFFERED: BA, MA, PHD

The program in mathematics provides undergraduates with a spectrum of choices, from nontheoretical treatments of calculus and courses in modern algebra, combinatorics, elementary number theory, and projective geometry to a broad variety of sophisticated mathematics, including real and complex analysis, differential geometry, abstract algebra, algebraic and geometric topology, algebraic geometry, and partial differential equations.

Faculty research interests range from differential geometry, ergodic theory, group representation, partial differential equations, and probability, to real analysis, mathematical physics, complex variables, algebraic geometry, combinatorics, geometric topology, and algebraic topology.

DEGREE REQUIREMENTS FOR BA IN MATHEMATICS

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in mathematics may choose between the regular math major and the double major. Regular math majors must complete:

- MATH 101 and 102 *Single Variable Calculus I and II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra* and MATH 212 *Multivariable Calculus* or MATH 221 and 222 *Honors Calculus III and IV*
- At least 24 semester hours (8 courses) in departmental courses at the 300 level or above (in many instances, the math department will waive the 100- and 200-level courses for a math major)

The requirements for the double major are the same except that students may substitute approved mathematics-related courses for up to 9 of the 24 hours required at the 300 level or above.

Students receive advanced placement credit for MATH 101 by achieving a score of 4 or 5 on the AP AB-level test and for MATH 101 and 102 by achieving a score of 4 or 5 on the BC-level test. Students who have had calculus but have not taken the AP test may petition the department for a waiver of the calculus requirements. Entering students should enroll in the most advanced course commensurate

with their background; advice is available from the mathematics faculty during Orientation Week.

DEGREE REQUIREMENTS FOR MA AND PHD IN MATHEMATICS

Admission to graduate study in mathematics is granted to a limited number of students who have indicated an ability for advanced and original work. Normally, students take one or two years after the BA degree to obtain an MA degree, and they take four or five years to obtain a PhD. An MA is not a prerequisite for the PhD. For general university requirements, see Graduate Degrees (pages 57-58).

A number of graduate scholarships and fellowships are available, awarded on the basis of merit. As part of the graduate education in mathematics, students also engage in teaching or other instructional duties, generally for no more than 6 hours a week.

MA Program—Candidates for the MA in mathematics must:

- Complete with a grade of B or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on an examination in at least 1 approved foreign language (French, German, or Russian)
- Either complete all requirements for qualification as a candidate for the PhD (see below) or present, and provide an oral defense of, an original thesis acceptable to the department

PhD Program—Candidates for the PhD in mathematics must:

- Complete with a grade of B or better a course of study approved by the department (students may transfer credits from another university only with the approval of both the department and the University Graduate Council)
- Perform satisfactorily on qualifying examinations (see below)
- Perform satisfactorily on examinations in 1 approved foreign language (French, German, or Russian)
- Write an original thesis acceptable to the department
- Perform satisfactorily on a final oral examination on the thesis

Qualifying Examinations—The qualifying examinations in mathematics consist of the general examinations and the advanced oral examination.

To complete the **general examinations**, students must take 3 exams, 1 each in algebra, analysis, and topology. Exams are offered every August and January. First-year students may take any combination of exams at any time. After two semesters of study, students must attempt to pass all remaining exams at each offering. Students must perform satisfactorily on all 3 by the start of their fifth semester. Students may take an exam several times.

To complete the **advanced oral examination**, students must select a special field (e.g., homotopy theory, several complex variables, or group theory) and submit it to the department Graduate Committee for approval. The committee schedules an advanced examination in the selected field, normally six to nine months after the student completes the general examinations. While students failing the advanced examination may, with the approval of the committee, retake it on the same or possibly on a different topic, they generally are not allowed to take the advanced examination more than twice.

See **MATH** in the **Courses of Instruction** section.

MECHANICAL ENGINEERING AND MATERIALS SCIENCE

THE GEORGE R. BROWN SCHOOL OF ENGINEERING

CHAIR

Enrique V. Barrera

PROFESSORS

John E. Akin

Andrew R. Barron

Yildiz Bayazitoglu

Michael M. Carroll

Fathi Ghorbel

Rex B. McLellan

Andrew J. Meade

Pol D. Spanos

Tayfun E. Tezduyar

James Tour

Boris I. Yakobson

PROFESSORS EMERITI

Franz R. Brotzen

Alan J. Chapman

Angelo Miele

Ronald P. Nordgren

Chao-Cheng Wang

ASSOCIATE PROFESSORS

Chad M. Landis

Satish Nagarajiah

ASSISTANT PROFESSORS

Marcia E. O'Malley

ADJUNCT PROFESSORS

John J. Bertin

Thomas J.R. Hughes

ADJUNCT ASSOCIATE PROFESSORS

Aladin Boriek

Michael Massimino

Keith Stein

ADJUNCT ASSISTANT PROFESSORS

Sarmed Adnan

James B. Dabney

LECTURERS

Robert Cunningham

Peter J. Loos

David M. McStravick

DEGREES OFFERED: BA, BSME, BSMS, MME, MMS, MS, PHD

Studies in mechanical engineering may lead to specialization in one of several areas, including mechanics, computational mechanics, stochastic mechanics, fluid dynamics, heat transfer, dynamics and control, robotics, biomedical systems, and aerospace sciences. Studies in materials science may lead to specialization in one of several areas, including nanotechnology, metals physics, statistical mechanics, metallic solid thermodynamics, materials chemistry, aspects of composites, coatings and thin films, and interface science.

The graduate program offers professional degrees in both materials science and engineering, which is based on undergraduate preparation in a number of related fields, and mechanical engineering, which permits specialization in the areas mentioned in the previous paragraph. Graduate students may also pursue research degrees. Faculty research areas are indicated in the previous paragraph. A joint MBA/Master of Engineering degree is available in conjunction with the Jesse H. Jones Graduate School of Management. Also, a combined MD and advanced research degree for research careers in medicine is available with Baylor College of Medicine.

The graduate program collaborates with other departments in its comprehensive educational and research activities. The Department of Computational and Applied Mathematics supports research in applied analysis and computational mathematics.

Work on expert systems and robotics is done in cooperation with the Departments of Electrical and Computer Engineering and Computer Science. Computer graphics research involves the cooperation of the Department of Computer Science and the School of Architecture. The campus-wide Rice Quantum Institute is also active in the research of electronic materials and other aspects of materials science. Finally, biomechanics and biomaterials research involves several institutions in the Texas Medical Center.

DEGREE REQUIREMENTS FOR BA, BSME IN MECHANICAL ENGINEERING OR BA, BSMS IN MATERIALS SCIENCE AND ENGINEERING

For general university requirements, see Graduation Requirements (pages 14–15). The BA program in either mechanical engineering or materials science and engineering is highly flexible, involves less technical content than the BS, and allows students greater freedom to pursue areas of interest outside of engineering.

The two BS programs prepare students for professional practice of engineering. During their senior year, mechanical engineering students in the BS program take courses in design application while completing a major design project, and materials science and engineering students in the BS program work on a design problem in an industrial setting. The BSME program is accredited by the Accreditation Board for Engineering and Technology (ABET). Departmental goals and objectives are available at <http://mems.rice.edu/undergraduate/goals.html>.

BSME Program—Lists of representative undergraduate courses and the usual order in which students take them are available from the department for either the BA or BS programs in both mechanical engineering and materials science and engineering. The BSME degree contains a core of required courses and selected electives from 1 of 6 specialization areas. The requirements (for a total of 131 hours) are:

Basic Mathematics and Science (26 hours)

CHEM 121 Chemistry
MATH 101 *Single Variable Calculus I*
MATH 102 *Single Variable Calculus II*
MATH 211 *Ordinary Differential Equations
and Linear Algebra*
MATH 212 *Multivariable Calculus*
MSCI 301 *Materials Science*
PHYS 101 *Mechanics*
PHYS 102 *Electricity and Magnetism*

Computational and Applied Mathematics (12 hours)

COMP 110 *Computation in Science
and Engineering*
CAAM 210 *Engineering Computation*
CAAM 335 *Matrix Analysis*
CAAM 336 *Differential Equations in Science
and Engineering*

Senior Design (7 hours)

MECH 407 *Mechanical Design Project I*
MECH 408 *Mechanical Design Project II*

Labs (3 hours)

MECH 331 *Mechanics Lab*
MECH 332 *Thermo/Fluids Lab*
MECH 431 *Senior Lab*

Mechanical Engineering (32 hours)

MECH 200 *Classical Thermodynamics*
MECH 211 *Engineering Mechanics*
MECH 311 *Mechanics-Deformable Solids*
MECH 340 *Industrial Process Lab*
MECH 343 *Modeling of Dynamic Systems*
MECH 371 *Fluid Mechanics I*
MECH 401 *Machine Design*
MECH 412 *Vibrations*
MECH 420 *Fundamentals of Control Systems*
MECH 481 *Heat Transfer*

Limited Electives: 3 hours in any 300-level or higher MATH, CAAM, STAT, or MECH course

Distribution Electives (24 hours)

Free Electives (15 hours)

Specialization Area Options—The specialization area can be 1 of the following 5 clusters. Students must take at least 2 of the following required cluster courses for their selected cluster and 2 from the departmental list of the suggested cluster elective courses, for a total of not less than 12 hours. The cluster advisors will maintain updated lists of electives in the department. The choices for the required cluster courses are:

1. **Biomechanics**
BIOE 372 *Intro Biomechanics*
MECH 380 *Tissue Mechanics*
2. **Computational engineering**
MECH 417 *Finite Element Analysis*
MECH 454 *Finite Elements in Fluids*
3. **Fluid mechanics and thermal science**
MECH 372 *Fluid Mechanics, II*
MECH 471 *App. of Thermodynamics*
4. **Solid Mechanics and Materials**
CEVE 400 *Mechanics of Solids II*
MSCI 402 *Mech. Properties of Materials*
5. **System dynamics and control**
MECH 498 *Intro to Robotics*
MECH 435 *Electromechanical Systems*
or ELEC 243 *Intro to Electronics*
6. **General mechanical engineering**
Any 4 required courses listed above may be taken to define a general cluster.

BA in Mechanical Engineering Program—Students seeking the BA degree with a major in mechanical engineering must complete 120 hours with at least 66 semester hours in courses specified by the department along with 24 hours of university distribution electives and 30 hours of free electives. Lists of courses, including general university requirements and the usual order in which students take them are available from the department. The BA program mirrors the BSME program in the freshman and sophomore years with the exceptions that MECH 340 and MECH 331 are not required. Specific major requirements are completed in the junior and senior years along with electives. A summary appears below:

Freshman Year

Same as BS with 23 major and 9 elective hours for 32 hours.

Sophomore Year

Same as BS (except MECH 340 and 331 are not required) with 18 major and 15 elective hours for 33 hours.

Junior and Senior Years

25 major and 30 electives for 55 hours. The following courses are required in junior and senior years:

- | | |
|---|---|
| CAAM 335 <i>Matrix Analysis</i> (3) | MECH 401 <i>Machine Design</i> (3) |
| CAAM 336 <i>Differential Equations in Science and Engineering</i> (3) | MECH 412 <i>Vibrations</i> (3) |
| MECH 343 <i>Modeling of Dynamic Systems</i> (4) | MECH 420 <i>Fundamentals of Control Systems</i> (3) |
| MECH 371 <i>Fluid Mechanics I</i> (3) | MECH 481 <i>Heat Transfer</i> (3) |

BA in Materials Science and Engineering Program—Students seeking the BA degree with a major in materials science and engineering must complete at least 52 hours in courses specified by the department plus additional hours for a total of 120 hours at graduation.

BSMS Program—Students seeking the BSMS must complete at least 91 semester hours in courses specified by the department within the total requirements of 134 hours. Basic departmental course requirements for the BSMS are as follows:

CHEM 121–122 *General Chemistry*
 MATH 101 and 102 *Single Variable Calculus I and II*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 MECH 211 *Engineering Mechanics*
 MSCI 301 *Materials Science*
 PHYS 101 *Mechanics*
 PHYS 102 *Electricity and Magnetism*

Specific requirements

CAAM 210 *Introduction to Engineering Computation*
 CAAM 335 *Matrix Analysis*
 CEVE 300 *Mechanics of Solids*
 ELEC 241 *Fundamentals of Electrical Engineering I* (or ELEC 243 *Introduction to Electronics*)
 MSCI 301 *Materials Science*
 MSCI 303 *Materials Science Junior Lab*
 MSCI 311 *Introduction to Design*
 MSCI 401 *Thermodynamics and Transport Phenomena in Materials Science*

MSCI 402 *Mechanical Properties of Materials*
 MSCI 404 *Materials Engineering and Design*
 MSCI 406 *Physical Properties of Solids* (or MSCI 415 *Ceramics and Glasses*)
 MSCI 411 *Metallography and Phase Relations* (or MSCI 415 *Ceramics and Glasses*)
 MSCI 500/501 *Materials Science Seminar*
 MSCI 535 *Crystallography and Diffraction*
 MSCI 537 *Materials Science Senior Lab*
 MSCI 594 *Properties of Polymers*

1 course from the following

PHYS 201 *Waves and Optics*
 CHEM 211 *Organic Chemistry*
 CHEM 311 *Physical Chemistry*

Electives

1 approved science elective (at the 200 level or higher)
 1 approved engineering science elective (not MSCI)
 1 approved technical elective

DEGREE REQUIREMENTS FOR MME, MMS, MS, AND PHD IN MECHANICAL ENGINEERING OR MATERIALS SCIENCE AND ENGINEERING

Professional Degree Programs—The professional degrees offered by this department, the Master of Mechanical Engineering (MME) and the Master of Materials Science (MMS), involve a fifth year of specialized study, which is integrated with the four undergraduate years leading to either the BA or the BS degree in the same areas of interest. The professional degree programs are open to students who have shown academic excellence in their undergraduate studies.

For general university requirements, see Graduate Degrees (pages 57–58). For both the MME and MMS degrees, students must complete 30 semester hours of course work. Lists of suggested courses are available from the department. Students should develop a specific plan of study based on their particular interests.

Research Degree Programs—The programs leading to the MS and PhD degrees are open to students who have demonstrated outstanding performance in their undergraduate studies. The granting of a graduate research degree presupposes academic work of superior quality and a demonstrated ability to do original research.

For general university requirements, see Graduate Degrees (pages 57–58). Course requirements for the research degrees vary, depending on the extent of individual undergraduate preparation as well as each student's performance in graduate courses and on qualifying examinations. For both the MS and PhD degrees, students must present a thesis that comprises an original contribution to knowledge and defend it in a public oral examination.

See MECH and MSCI in the Courses of Instruction section.

MEDIEVAL STUDIES

THE SCHOOL OF HUMANITIES

DIRECTOR AND ADVISOR

Jane Chance

PROFESSORS

Jane Chance

Gilbert Morris Cuthbertson

Michael Maas

Donald Ray Morrison

Deborah Nelson-Campbell

ASSOCIATE PROFESSORS

Linda E. Neagley

Nanxiu Qian

Carol E. Quillen

Paula Sanders

Sarah Westphal

ASSISTANT PROFESSORS

David Cook

Eva Haverkamp

Scott McGill

LECTURER AND PLAYWRIGHT IN RESIDENCE

E. Douglas Mitchell

DEGREE OFFERED: BA

This interdisciplinary major enables students to compare medieval cultures, noting both their differences and their common traditions, in the period between 500 and 1500 AD. The program combines a broad background in various aspects of medieval culture with more specialized study in a selected field. These fields of emphasis include art history, history, medieval literature (English, French, or Latin), music, philosophy, or religion.

DEGREE REQUIREMENTS FOR BA IN MEDIEVAL STUDIES

For general university requirements, see Graduation Requirements in this publication. Students majoring in medieval studies must complete at least 30 semester hours (10 courses); the minimum for double majors is 30 hours. All majors must complete five (5) of these medieval studies courses at the 300 or 400 level.

Required and recommended courses include the following:

A minimum of 30 semester hours (10 semester courses), of which at least five courses must be at the 300/400 level. Double majors must complete a minimum of 24 semester hours.

One course in medieval literature or medieval art or medieval music

Recommended Courses:

- MDST 316 Chaucer
- MDST 317 Arthurian Literature
- MDST 368 Mythologies
- MDST 414 Literature and Culture of the Middle Ages: Saints and Sinners
- MDST 425 Courtly Love in Medieval France
- MDST 330 Early Medieval Art
- MDST 331 Gothic Art and Architecture in Northern Europe, 1140-1300
- MDST 332 Late Gothic Art and Architecture in Northern Europe, 1300-1500
- MDST 222 Medieval and Renaissance Eras
- MDST 429 Music in the Middle Ages

One of the following courses

- MDST 201 History of Philosophy I
- MDST 257/357 Jews and Christians in Medieval Europe
- MDST 382 Classical Islamic Culture

Two semesters of foreign language study, determined in consultation with the medieval studies advisor.

Three courses (at least two at the 300 or 400 level) in the student's chosen field of emphasis—one of these may be a directed reading course

Recommended Courses:

- MDST 315 Introduction to Medieval Culture

For single majors, 3 additional courses in the medieval period, one of which may be a senior thesis (1 semester) on a topic in the student's field of emphasis; for double majors, 1 additional course in the medieval period.

Students work out their programs of study in consultation with the program director. Those contemplating graduate work in medieval studies should study at least one foreign language in some depth (as most graduate schools require a reading knowledge or French and German for the PhD)

Students may select from among the following to fulfill the course requirements for the major in medieval studies.

Please note that not all courses listed below will be offered during the academic year. For a current list of courses that will be offered in fall 2005 and spring 2006, please visit the Medieval Studies web site at <http://medieval.rice.edu>.

Classical Studies

- MDST 101 *Elementary Latin I*
- MDST 102 *Elementary Latin II*
- MDST 211 *Intermediate Latin I*
- MDST 212 *Intermediate Latin II*

English

- MDST 300 *Medieval Women Writers*
- MDST 310 *Dante in Translation*
- MDST 311 *Old English*
- MDST 315 *Introduction to Medieval Culture*
- MDST 316 *Chaucer*
- MDST 317 *Arthurian Literature*
- MDST 318 *J. R. R. Tolkien*
- MDST 368 *Mythologies*

French Studies

- MDST 410 *The Literary and Historical Image of the Medieval Woman*
- MDST 414 *Literature and Culture of the Middle Ages: Saints and Sinners*
- MDST 425 *Courtly Love in Medieval France*
- MDST 436 *Literature and Culture of the Middle Ages: King Arthur*

German Studies

- MDST 126 *Freshman Seminar: The Legend of King Arthur in the Middle Ages*

MDST 330 *Mapping German Culture: Courtship, Love and Marriage in the Age of Chivalry*

History of Art

- MDST 108 *Art in Context: Late Medieval and Renaissance Culture*
- MDST 111 *Introduction to the History of Western Art I: Prehistoric to Gothic*
- MDST 238 *Special Topics in Medieval Art*
- MDST 239 *Independent Study in Medieval Art*
- MDST 330 *Early Medieval Art*
- MDST 331 *Gothic Art and Architecture in Northern Europe, 1140–1300*

The Age of Cathedrals

- MDST 332 *Late Gothic Art & Architecture in Northern Europe, 1300–1500*
- MDST 440 *Jan van Eyck: Problems of Interpretation*
- MDST 457 *Bosch and Bruegel*

History

- MDST 168 *The World of Arabian Nights*
- MDST 223 *Medieval Empires*
- MDST 257 *Jews and Christians in Medieval Europe*
- MDST 281 *Pre-Modern Middle East History: The Middle East from the Prophet Muhammad to Muhammad Ali*

MDST 303 *Undergraduate Independent Reading*
 MDST 304 *Undergraduate Independent Reading*
 MDST 308 *The World of Late Antiquity*
 MDST 321 *Directed Readings in Medieval History*
 MDST 322 *Directed Readings in Medieval History*
 MDST 323 *Medieval Empires* (enriched version)
 MDST 345 *Humanism and Expansion*
 MDST 357 *Jews and Christians in Medieval Europe* (enriched version)
 MDST 358 *European Intellectual History from Augustine to Descartes*
 MDST 382 *Classical Islamic Cultures*
 MDST 384 *The Crusades: Holy War in Medieval Christendom and Islam*
 MDST 387 *Life on the Nile*
 MDST 438 *Women and Gender in Medieval Islamic Societies*
 MDST 444 *Memory and Commemoration in the Middle Ages*
 MDST 446 *Jewish and Christian Communities in the Middle Ages*

MDST 447 *The Age of the Crusades*
 MDST 488 *Topics in Medieval History*

Linguistics

MDST 311 *Old English*

Music

MDST 222 *Medieval and Renaissance Eras*
 MDST 429 *Music of the Middle Ages*
 MDST 441 *Hildegard of Bingen*
 MDST 456 *Collegium*
 MDST 486 *Illuminated Music Manuscripts*

Philosophy

MDST 201 *History of Philosophy I*
 MDST 301 *Ancient and Medieval Philosophy*
 MDST 481 *Seminar in Ancient and Medieval Philosophy*

Religious Studies

RELI 443 *Maimonides' Guide for the Perplexed*

See MDST in the Courses of Instruction section.

MILITARY SCIENCE

CHAIR AND PROFESSOR

Lieutenant Colonel Brian Whalen

ASSISTANT PROFESSORS

Sergeant First Class Michael Kelley

Major Dexter Caston

Captain Renee Russo

Master Sergeant Thomas Braaten

DEGREES OFFERED: NONE

The goal of the U.S. Army ROTC program is to develop technically competent, physically fit, and highly motivated men and women for positions of responsibility as commissioned officers in the active army, the army reserve, and the National Guard. Upon completion of the curriculum, students will have an understanding of the fundamental concepts and principles of the military as an art and as a science. The leadership and managerial experience gained through ROTC provides great benefit for students in both their civilian endeavors and in their military careers.

DEGREE REQUIREMENTS

Rice does not offer a bachelor's in Military Science. However, interested students can obtain a degree in any of the other programs offered by Rice, with a minor in Military Science obtained by attending courses at the University of Houston. The financial aid available to a ROTC student may be used for Rice courses as well as the University of Houston ROTC courses.

For general university requirements, see Graduation Requirements (pages 14-15). For requirements for a specific degree program, see the pages for that degree program. Further details on ROTC programs at Rice are available on page 27. For more information on the Army ROTC program in particular, contact the military science department at the University of Houston by calling 713-743-3875.

Statutory Authority—General statutory authority for establishment and operation of the ROTC program, including the scholarship program, is contained in Title 10, United States Code, Chapter 103 (Sec. 2102-2111). Specific rules and procedures are found in U.S. Army Regulation 145-1.

Course Credit. ROTC classes may be taken for elective credit toward any degree plan at the University of Houston or Rice University. Freshman and sophomore-level classes are open to all students, regardless of age or physical condition. *No military obligation is incurred as a result of enrollment in these courses.* Junior- and senior-level courses are more restrictive and do require a military obligation. ROTC scholarship students also incur a military obligation.

Four-Year Program—The four-year program is divided into two courses: the basic course, which is normally attended by students during their freshman- and sophomore years, and the advanced course, attended during the junior and senior years. Advanced course students attend a six-week advanced camp in Fort Lewis, Washington, normally between their junior and senior years.

The Basic Course—The basic course consists of four semesters of military science, which include MILI 121, MILI 122, MILI 201, and MILI 202. These freshman- and sophomore-level classes are open to all students without obligation.

The Advanced Course—Students entering the advanced course must enter into a contract to pursue and accept a commission in the active Army, the Army Reserve,

or the National Guard. To be considered for contracting into the advanced course, the student must be a full-time student in a course of instruction that leads to a degree in a recognized academic field, have a minimum of two years of academic work remaining in a curriculum leading to a baccalaureate or advanced degree, be under age 30 when commissioned, and pass a physical and medical examination.

Two-Year Program—The two-year program is designed for students who did not take the basic course but are otherwise eligible to enroll in the advanced course. This program allows students completing their sophomore year to attend a four-week Leader's Training Course during June and July at Fort Knox, Kentucky, in lieu of taking the first two years of ROTC. *There is no military obligation for attending Leader's Training Course.* The army provides transportation, room, and board. Students are **paid** approximately \$500 for the four-week period.

Laboratory Requirements—A military science laboratory is required for students enrolling in MILI 121, MILI 122, MILI 201, MILI 202, MILI 301, MILI 302, MILI 401, and MILI 402. This laboratory provides opportunities for marksmanship training, rappelling, drill and ceremonies, communications training, and other activities.

Veterans—Veterans who have served on active duty or in the army reserve or National Guard are also eligible for the ROTC program. Although veterans are not required to take the basic course, they are encouraged to do so. All students, including veterans, must have a minimum of 54 credit hours prior to enrolling in the advanced course.

National Guard and Army Reserve Members—Students enrolled in ROTC may also be members of the Army Reserve/National Guard. Through the Simultaneous Membership Program (SMP), those students enrolled in the advanced course will be placed in a leadership position as a cadet and will receive pay and entitlements from the National Guard or Army Reserve in the pay grade of Sergeant (E-5).

Financial Assistance—The United States Army offers, on a competitive nationwide basis, four-, three-, and two-year scholarships. The scholarships cover up to \$20,000 of tuition. Recipients also receive benefits for educational fees (to include lab fees), a book allowance, and a subsistence allowance ranging from \$200 to \$400 per month. Applicants must be U.S. citizens and must be under age 27 on the anticipated graduation date. Applications are available from the military science department. Veteran applicants can extend the age limit up to a maximum of three years, based on prior active duty service.

Other Financial Aid—All students enrolled in the advanced course will receive a subsistence allowance of \$350 per month junior year and \$400 per month senior year. For more information, contact the military science department. GI Bill recipients still retain benefits.

Tuition—Members of the Army or the Army Reserve, National Guard, Texas State Guard, or other reserve forces may be exempted from the nonresident tuition fee and other fees and charges.

Special Training—Basic- and advanced-course students may volunteer for and may attend the U.S. Army Airborne and Air Assault courses during June, July, and August. Cadet Troop Leadership training positions are also available to advanced-course cadets during the summer months.

Miscellaneous—All participating cadets are eligible for our internal scholarships provided by our alumni and sponsors of the program.

The Corps of Cadets sponsors an annual military ball in addition to other social events throughout the school year. The Department of Military Science sponsors extracurricular activities such as the University of Houston Color Guard and the Ranger Challenge Team.

Minor in Military Science—To qualify for a minor in military science, students must complete a minimum of 18 semester hours of course work, of which 12 must be advanced. Nine semester hours must be completed in residence, of which 6 must be advanced. Students must also attend advanced camp. Students must attain a 3.0 grade point average or higher in military science courses attempted at this university. Students may receive credit for 100- and 200-level courses based on prior military training, completion of ROTC Basic Camp, completion of JROTC training, or completion of one year at a service academy.

See MILI in the Courses of Instruction section (these are University of Houston listings).

MUSIC

THE SHEPHERD SCHOOL OF MUSIC

DEAN

Robert Yekovich

PROFESSORS

Robert Atherholt

Richard Bado

Richard Brown

Leone Buyse

Marcia J. Citron

James Dunham

Paul V. H. Ellison

Norman Fischer

Kenneth Goldsmith

Arthur Gottschalk

Lynn Harrell

Clyde Holloway

Thomas I. Jaber

Benjamin C. Kamins

Kathleen Kaun

Stephen King

Richard Lavenda

Sergiu Luca

Jon Kimura Parker

Larry Rachleff

Robert Roux

Marie Speziale

William VerMeulen

Kathleen Winkler

PROFESSOR EMERITUS

Raphael Fliegel

ASSOCIATE PROFESSORS

Walter B. Bailey

Anthony K. Brandt

David Ferris

Pierre Jalbert

David E. Kirk

Thomas LeGrand

Paula Page

Timothy Pitts

Karen Ritscher

Brinton Smith

David L. Waters

Michael Webster

ASSISTANT PROFESSORS

Karim Al-Zand

Gregory Barnett

Shih-Hui Chen

Kurt Stallmann

INSTRUCTOR

Joan DerHovespian

ARTIST TEACHERS

Brian Connelly

Jan de Chambrier

Debra Dickinson

Jeanne Kierman Fischer

Michael Franciosi

Christopher French

Hans Graf

Janet Rarick

C. Dean Shank, Jr.

LECTURERS

Nancy Gisbrecht Bailey

Susan Dunn

Phillip Kloeckner

David B. Rosenfield

ADJUNCT LECTURERS

Robert Simpson

C. Richard Stasney

Pieter A. Visser

DEGREES OFFERED: BA, BMUS, BMUS/MMUS, MMUS, DMA

At the undergraduate level, the Shepherd School of Music offers both professional training and a broad liberal arts curriculum. Degree programs include a BA degree in music and a BMus degree in performance, composition, music history, and music theory. Acceptance into a five-year honors program leads to the simultaneous awarding of the BMus and MMus degrees.

At the graduate level, the school offers professional music training for qualified students who concentrate on music composition, performance, or research that is supported by lab or performing ensembles. This training includes theory and history seminars. Advanced degree programs include a MMus degree in composition, choral and instrumental conducting, historical musicology, performance, and music theory and a DMA degree in composition and selected areas of performance.

REQUIREMENTS FOR ALL MUSIC MAJORS

For general university requirements, see Graduation Requirements (pages 14–15). All students majoring in music must participate in core music, applied music, and other required music courses, as well as in chamber music and large ensembles, plus electives. They are entitled to one hour of private lessons each week of each semester they are enrolled as a music major; private or group lessons beyond this may result in additional fees. Students in the BA program who wish to continue taking private lessons beyond the required four semesters of instrumental or vocal study must obtain permission from the dean of the Shepherd School.

Examinations—At the end of each semester, a jury examination in applied music is given over the material studied during the semester. (All degree candidates except BA students must demonstrate keyboard proficiency in an examination. If students have little or no knowledge of the keyboard, they should enroll in secondary piano at the beginning of their first semester and continue study until they can meet the examination requirements.)

Performance—Students are expected to perform frequently during their residence at Rice. Performance majors must present at least 2 full recitals. Composition and conducting students should present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors must participate in the school's conducted ensembles as assigned.

DEGREE REQUIREMENTS FOR BA IN MUSIC, BMUS, AND BMUS/MMUS

Admission—An audition, either in person or on tape, is required of each undergraduate applicant. The Shepherd School faculty and the university's Committee on Admission jointly determine admission, the latter basing its evaluation upon successful academic achievement and other standards of college admission. Transfer applicants from other colleges, conservatories, and universities must also provide an audition, personal or taped, and take placement exams in both music history and music theory. Once admitted, their prior preparation in music is assessed, which may reduce the required period of study at Rice.

BA and BMus Program—For general university requirements, see Graduation Requirements (pages 14–15).

For either bachelor's degree, students majoring in music must have a total of at least 120 semester hours at graduation. The complete curriculum for each major in music is available in the *Shepherd School Student Handbook* or in the undergraduate music office on the second floor of Alice Pratt Brown Hall. While the number of required hours vary according to major area, all music students must take the following core courses (those in the BA program are not required to take MUSI 331, 332 and 431).

- *Music Theory*: MUSI 211, 212, 311, 312, and a theory elective chosen from MUSI 416, 512, 513, or 613.
- *Music History*: MUSI 222, 321, 322, and 421.
- *Aural Skills and Performance Techniques*: MUSI 231, 232, 331, 332, and 431.

BMus/MMus Honors Program—The same general university requirements apply, but students seeking the combined BMus/MMus degree must complete a total of at least 150 semester hours by graduation. The number of required hours varies according to major area.

The first five semesters of course work in this program parallel the core curriculum of the bachelor's degrees. The sixth semester is a transitional semester during which students qualify for admission to the combined program. For further information, including application procedures, see the *Shepherd School Student Handbook*.

DEGREE REQUIREMENTS FOR MMUS AND DMA IN MUSIC

Admission—For instrumental, voice, and conducting applicants, an audition is required. Composition majors must submit portfolios, and musicology and theory majors must provide samples of their written work. The Graduate Record Examination (GRE) is required of graduate applicants in musicology and theory. Musicology applicants must also complete the advanced music tests.

Requirements—For general university requirements, see Graduate Degrees (pages 57–58). For the MMus degree, candidates must complete at least two semesters of full-time study at Rice. Semester hour minimums for the MMus degree vary according to major area. For the DMA, candidates must complete a total of 90 hours beyond the bachelor's degree, attending Rice full time for at least four semesters after receiving their MMus degree.

Thesis—A thesis is required of both music history and music theory majors. In lieu of a thesis, composition majors must produce an original work of extended scope, and conducting majors must present an extended composition or project.

ACADEMIC STANDARDS

Curriculum and Degree Requirements—Further information on curricular requirements for all majors and degree programs is available from The Shepherd School of Music.

Grading Policy—All music students must achieve at least a B- in course work in their major applied area. Students who receive a C+ or lower in their major applied area are placed on music probation. Music probation signifies that the work of the student has been sufficiently unsatisfactory to preclude graduation unless marked improvement is achieved promptly. While on probation, they may not be absent from class except for extraordinary reasons, and they may not represent the school in any public function that is not directly part of a degree program. After receiving a second C+ or lower in their major area, whether in consecutive semesters or not, students are discontinued as music majors.

Leaves of Absence and Voluntary Withdrawal—Music majors must obtain permission in writing from the dean of the Shepherd School before requesting a leave of absence from the university. Requests must be in the dean's office before the first day of classes in the semester for which leave is requested.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. Students should explain the reasons for their withdrawal to the dean before leaving campus.

OTHER MUSICAL OPPORTUNITIES

For Nonmajors—Students who are not music majors may take the following courses designed for the general student (other music courses require the permission of the instructor and the approval of the dean of the Shepherd School).

- MUSI 111 *Musical Lives*
- MUSI 112 *Great Literature in Great Music*
- MUSI 117/118 *Fundamentals of Music I and II*

- MUSI 317/318 *Theory for Nonmajors I and II*
- MUSI 327/328 *Music Literature for Nonmajors I and II*
- MUSI 334/335 *Campanile Orchestra and Rice Chorale*
- MUSI 141-197 for individual instruction in all instruments
- MUSI 340 *Concert Band*
- MUSI 342 *Jazz Ensemble*
- MUSI 345 *Jazz Improvisation*
- MUSI 415 *Band Arranging*

Lectures and Performances—A visiting lecturer series, a professional concert series, and numerous distinguished visiting musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Texas Opera Theater, Houston Ballet, Houston Oratorio Society, Da Camera, Context, and Houston Friends of Music, as well as the activities of other institutions of higher learning in the area, also provide exceptional opportunities for students to enjoy a wide spectrum of music.

See MUSI in the Courses of Instruction section.

NANOSCALE PHYSICS

THE WIESS SCHOOL OF NATURAL SCIENCES

DIRECTOR

F Barry Dunning

PROFESSORS

Andrew R. Barron

Neal F. Lane

ASSOCIATE PROFESSOR

Vicki L. Colvin

ASSISTANT PROFESSORS

Jason H. Hafner

Thomas C. Killian

Douglas A. Natelson

Frank R. Toffoletto

FACULTY FELLOW

Kristen M. Kulinowski

DEGREES OFFERED: MS

Rice University introduced a professional master's degree in Nanoscale Physics in fall 2002. This program combines a strong component in quantum theory, which governs the behavior of systems at the nanoscale, with the study of practical nano- and mesoscale devices. The program provides the student with the knowledge required to successfully navigate the emerging field of nanotechnology. New courses cover cutting-edge areas such as quantum behavior of nanostructures, quantum nanotechnology, nanoscale imaging, and the fabrication of nanostructures. In addition, a year-long course in methods of experimental physics ensures that students obtain the advanced practical skills valuable to industry.

The Nanoscale Physics degree is one of three tracks in the new Professional Master's Program at Rice housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communication skills. These degrees instill a level of scholastic proficiency that exceeds that of the bachelor's level and creates the cross-functional aptitudes needed in modern industry. This will allow students to move more easily into management careers in consulting or research and development, design, and marketing of new science-based products.

DEGREE REQUIREMENTS FOR THE MS IN NANOSCALE PHYSICS

In addition to the core science courses, students are required to complete a three- to six-month internship and take a set of cohort courses focusing on business and communication. At the conclusion of the internship, students must present a summary of the internship project in both oral and written form as part of the Professional Master's Seminar.

Part-time students who already work in their area of study may fulfill the internship requirement by working on an approved project with their current employer. Certain course requirements may be waived based upon prior graduate coursework or industrial experience. For general university requirements for graduate study, see pages 64-70, and see also Professional Degrees, page 58.

ADMISSION

Admission to graduate study in nanoscale physics is open to qualified students holding a bachelor's degree in physics, electrical engineering, or a related field that includes intermediate level work in mathematics, electrodynamics, and quantum physics. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Science core courses:

- PHYS 533 *Nanostructures and Nanotechnology I* (F)
 PHYS 539 *Characterization and Fabrication at the Nanoscale* (F)
 PHYS 537 *Methods of Experimental Physics I* (F)
 PHYS 534 *Nanostructures and Nanotechnology II* (S)
 PHYS 538 *Methods of Experimental Physics II* (S)
 PHYS 416 *Computational Physics* (S)

Cohort courses:

- MGMT 750 *Management in Science and Engineering* (F)
 NSCI 501 *Professional Master's Seminar* (F, S)
 [required for two semesters]
 NSCI 512 *Professional Master's Project* (F, S)
Plus a single course from the following:
 ENST 312 *Environmental Battles in the 21st Century: Houston as Microcosm* (S)
 PHIL 307 *Social and Political Philosophy* (F)
 POLI 338 *Policy Analysis* (S)
 POLI 537 *Public Policy and Bureaucracy* (F)
 PHIL 316 *Philosophy of Law* (F)

INTERNSHIP

An internship under the guidance of a host company, government agency, or national laboratory. A summary of the internship project is required in both oral and written form as part of the Professional Master's Project.

ELECTIVE COURSES

Note: Each of these electives is not offered every year, and some courses may have prerequisites or require instructor permission.

Students will choose four elective courses, two of which must be science or engineering 500 level or above. Recommended courses include, but are not limited to, the following:

- | | |
|--|---|
| CAAM 378 <i>Introduction to Operations Research</i> (F) | ELEC 685 <i>Fundamentals of Medical Imaging</i> (F) |
| CENG 630 <i>Chemical Engineering of Nanostructured Materials</i> (S) | ENGI 303 <i>Engineering Economics and Management</i> (S) |
| CHEM 533 <i>Nanostructure and Nanotechnology</i> | MGMT 617 <i>Managerial Decision Making</i> (S) |
| CHEM 547 <i>Supramolecular Chemistry</i> (F) | MGMT 636 <i>Systems Analysis and Database Design</i> |
| CHEM 630 <i>Molecular Spectroscopy and Group Theory</i> (F) | MGMT 661 <i>International Business Law</i> (F) |
| ELEC 561 <i>Topics in Semiconductor Manufacturing</i> (S) | MGMT 674 <i>Production and Operations Management</i> (F) |
| ELEC 562 <i>Submicrometer and Nanometer Device Technology</i> (S) | MGMT 676 <i>Project Management/Project Finance</i> (S) |
| ELEC 568 <i>Laser Spectroscopy</i> (F) | MGMT 721 <i>General Business Law</i> (S) |
| ELEC 603 <i>Nano-Optics and Nanophotonics</i> (F) | MGMT 751 <i>New Venture Creation in Science and Engineering</i> (S) |
| ELEC 645 <i>Thin Films</i> (F) | PHYS 569 <i>Ultrafast Optical Phenomena</i> (S) |

PROFESSIONAL SCIENCE MASTER'S 5TH YEAR DEGREE OPTION FOR RICE UNDERGRADUATES

Rice students have an option to achieve the MS in nanoscale physics by adding an additional 5th year to the four undergraduate years of science studies. Advanced Rice students in good standing apply during their junior year, then start taking required core courses of the nanoscale physics program during their senior year. A plan of study based on their particular focus area will need to be approved by the track director and the PSM coordinator.

NAVAL SCIENCE

CHAIR

Larry J. Watson

ASSOCIATE PROFESSOR

Antonio J. Cerrillo

ASSISTANT PROFESSORS

Matthew M. Mazat

Geoff McKeel

James R. Neal

DEGREES OFFERED: NONE

Students enroll in the Navy Reserve Officers' Training Corps (ROTC) program as scholarship or nonscholarship students. Sophomores may apply for the optional two-year program. The Department of Naval Science is administered by a senior U.S. Navy officer, assisted by officers and enlisted personnel of the U.S. Navy and Marine Corps.

DEGREE REQUIREMENTS

Rice does not offer a bachelor's in Naval Science. However, interested students can obtain a degree in any of the other programs offered by Rice, with a minor in Naval Science. Financial aid may be available to a Navy ROTC student.

For university requirements for a specific degree, see Graduation Requirements and the section pertaining to that degree. Program requirements differ slightly depending on the student's scholarship status.

Scholarship Navy ROTC students are appointed midshipmen, U.S. Naval Reserve, on a nationwide competitive basis. They receive stipend pay of \$250-\$400 per month for a maximum of four academic years, with all tuition, fees, and equipment paid for by the Navy. Additionally, students receive \$300 per semester for books. Midshipmen must complete the prescribed naval science courses and participate in drills and three summer cruises. After graduating with a bachelor's or graduate degree, they accept a commission as an ensign in the U.S. Navy or as a second lieutenant in the U.S. Marine Corps.

Nonscholarship Navy ROTC students enter into a mutual contract with the Secretary of the Navy to take naval science courses and to participate in drills and one summer training cruise. On a competitive basis, students may apply to continue in the Navy ROTC program through their junior and senior years. The U.S. Navy pays these continuing students \$300-\$400 per month during their junior and senior years, offering them a commission in the U.S. Navy or Marine Corps upon graduation. The program chair may recommend nonscholarship students, on a local competitive basis, for scholarship status.

Two-Year Program Option—In their sophomore year (junior year for five-year Rice students), students may apply for the two-year Navy ROTC program, competing nationwide for available scholarships. If selected, they attend the six-week Naval Science Institute (NSI) at Newport, Rhode Island, during July and August. NSI provides students with course material and training normally covered during the first two years of the regular Navy ROTC program. Successful completion of NSI

qualifies students for enrollment in the advanced Navy ROTC program on an equal footing with the four-year students. Usually about 15 percent of the nonscholarship students finishing NSI are offered two-year Navy ROTC scholarships. Additional scholarships occasionally may be awarded to others upon the recommendation of the program chair.

U.S. Marine Corps Program—Navy ROTC students, either scholarship or nonscholarship, may apply for the U.S. Marine Corps program. Students selected for that program are referred to as “Marine Corps option students” and attend separate classes under a U.S. Marine officer instructor during their junior and senior years.

See NAVA in the Courses of Instruction section.

NEUROSCIENCES

THE SCHOOL OF SOCIAL SCIENCES

DIRECTOR

James R. Pomerantz

PROFESSORS

Steven J. Cox

John W. Clark

James L. Dannemiller

Raymon M. Glantz

Don H. Johnson

Randi C. Martin

James R. Pomerantz

Michael Stern

Devika Subramanian

Moshe Y. Vardi

Rick K. Wilson

PROFESSOR EMERITUS

Sydney M. Lamb

ASSOCIATE PROFESSORS

Tony Ro

ASSISTANT PROFESSORS

Darcy Burgund

Denise Chen

Mary E. Lane

Geoffrey F. Potts

Robert Raphael

DEGREES OFFERED: NONE

In the 1999-2000 academic year, Rice University began offering a new set of courses in the area of neuroscience to supplement a set of courses already offered by various departments in closely allied areas. These courses, which carry the designation NEUR, are offered in part by faculty associated with the Division of Neurosciences at Baylor College of Medicine, in part by faculty at the University of Texas Medical School at Houston, and in part by faculty at Rice in several different departments (including biochemistry and cell biology, computer science, electrical and computer engineering, linguistics, and psychology.) They are intended primarily for Rice graduate students but, with permission, are available to advanced undergraduates. Some of these classes are taught at the nearby Texas Medical Center campus, and some are taught according to Baylor's or UT's academic calendars, which is different from Rice's. For further information on what courses are available and for instructions on how to apply to enter these classes, consult Rice's neuroscience website at <http://www.ruf.rice.edu/~neurosci/>.

See NEUR in the Courses of Instruction section.

PHILOSOPHY

THE SCHOOL OF HUMANITIES

CHAIR

Steven G. Crowell

PROFESSORS

Baruch Brody

Hugo Tristram Engelhardt, Jr.

Richard E. Grandy

Mark Kulstad

Donald Ray Morrison

George Sher

ASSOCIATE PROFESSORS

Alastair Norcross

ASSISTANT PROFESSORS

Sherrilyn Roush

Hanoch Sheinman

Rachel Zuckert

ADJUNCT PROFESSOR

Laurence McCullough

VISITING PROFESSOR

Dermot Moran

DEGREES OFFERED: BA, MA, PHD

Philosophy is best described as the attempt to think clearly and deeply about the fundamental questions that arise for us as human beings. What is the nature of knowledge (epistemology)? How are we to distinguish between what really is and what only seems to be (metaphysics)? What is the right thing to do (ethics)? Is there any meaning to existence? To study the history of philosophy is to study the best, most enduring answers that have been given to these questions in the past. Because every other field of study adopts some stance toward these questions, though often implicitly, philosophical issues arise in the natural and social sciences, history, linguistics, literature, art, and so on. Special courses in philosophy deal with each of these. Characteristic of philosophy are commitments to the construction and evaluation of arguments, to expressing thoughts clearly and precisely, and to defending one's ideas and evaluating the ideas of others. The study of philosophy thus provides resources for critical participation in all realms of human endeavor.

The graduate program trains students to teach and pursue research in the main areas of department concentration: ethics (especially bioethics) and social and political philosophy; history of philosophy; continental philosophy; and core portions of contemporary analytic philosophy.

DEGREE REQUIREMENTS FOR BA IN PHILOSOPHY

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in philosophy must complete 30 semester hours (10 3-hour departmental courses); at least 18 hours (6 courses) must be at the 300 level or above. A double major must complete 27 hours (9 3-hour departmental courses) with all other requirements remaining the same.

Majors must take the following courses:

- PHIL 201 *History of Philosophy I*
- PHIL 202 *History of Philosophy II*
- Either PHIL 106 *Logic* or PHIL 305 *Mathematical Logic*

In addition, majors must take at least one course from each of the following area lists:

History

PHIL 301 *Ancient and Medieval Philosophy*

PHIL 302 *Modern Philosophy*

PHIL 308 *Continental Philosophy*

PHIL 321 *Kant and 19th Century Philosophy*

Core AnalyticPHIL 303 *Theory of Knowledge*PHIL 304 *Metaphysics*PHIL 312 *Philosophy of Mind*PHIL 313 *Philosophy of Science*PHIL 353 *Philosophy of Language***Value Theory**PHIL 306 *Ethics*PHIL 307 *Social & Political Philosophy*PHIL 326 *History of Ethics*PHIL 327 *History of Social & Political
Philosophy***DEGREE REQUIREMENTS FOR MA AND PHD
IN PHILOSOPHY**

For general university requirements, see Graduate Degrees (pages 57-58). Students have the additional option of applying for a doctoral program specializing in bioethics (see below).

For the **MA** in philosophy, candidates must:

- Complete with high standing at least 30 semester hours in advanced courses approved by the department
- Complete a written thesis on a subject approved by the department
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study)

For the **PhD** in philosophy, candidates must:

- Complete with high standing 42 hours of course work approved by the department (including logic)
- Demonstrate competence in logic
- Pass a qualifying examination
- Perform satisfactorily on an oral defense of their thesis proposal
- Complete a written thesis on a subject approved by the department (at least one year of thesis research must be spent in residence)
- Perform satisfactorily on a final oral examination (not limited to the student's special field of study)

Bioethics Program—The PhD in philosophy with a specialization in medical ethics is offered in cooperation with the Center for Medical Ethics and Health Policy at Baylor College of Medicine. Applicants to this special program must have enough background in philosophy to complete two and a half years of strong general training in philosophy at the graduate level. After completing their general training, students receive instruction in clinical bioethics at Baylor College of Medicine and then write a dissertation drawing upon their philosophical and clinical training. Further information about this program is available from the Department of Philosophy.

CONTINENTAL PHILOSOPHY PROGRAM

The PhD program in Continental philosophy allows graduate students to take advantage of resource faculty in history, French studies, philosophy, and religious studies, all of whom have done distinguished philosophical work in the Continental tradition. Students master the basic fields of analytic philosophy while doing a substantial amount of their course work with resource faculty. Further information is available from the Department of Philosophy.

See **PHIL** in the **Courses of Instruction** section.

PHYSICS AND ASTRONOMY

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DEGREES OFFERED: BA, BS, MST, MS, PHD

The Department of Physics and Astronomy offers undergraduate and graduate programs for a wide range of interests. The bachelor of arts degrees in physics and in astronomy are suitable for students who wish to obtain a broad liberal education with a concentration in physical science. The bachelor of science degrees in physics, in astrophysics, and in chemical physics provide preparation for employment or further study in physics and related fields. Students in the professional non-thesis, MST program obtain training in science teaching. Research facilities and thesis supervision are available for MS and PhD students in atomic, molecular, and optical

physics; biophysics; condensed matter and surface physics; earth systems science; nuclear and particle physics; observational astronomy; solar system physics; space plasma physics; and theoretical physics and astrophysics.

UNDERGRADUATE DEGREE REQUIREMENTS

For general university requirements, see Graduation Requirements (pages 14–15). Major requirements consist of a common core of basic physics and mathematics courses, with additional course work specific to each degree program. Students may obtain credit for some courses by advanced placement, and the department's Undergraduate Committee can modify requirements to meet the needs of students with special backgrounds.

All physics majors must complete the following courses:

PHYS 101 or 111 *Mechanics (with Lab)*
 PHYS 102 or 112 *Electricity and Magnetism (with Lab)*
 PHYS 201 *Waves and Optics*
 PHYS 202 *Modern Physics*

PHYS 231 *Elementary Physics Laboratory II*
 PHYS 301 *Intermediate Mechanics*
 MATH 101/102 *Single Variable Calculus I and II*
 MATH 211 *Ordinary Differential Equations and Linear Algebra*
 MATH 212 *Multivariable Calculus*
 (MATH 221/222 *Honors Calculus III and IV* may substitute for MATH 211/ MATH 212)

Additional courses for the BS degree in physics:

PHYS 302 *Intermediate Electrodynamics*
 PHYS 311/312 *Introduction to Quantum Physics I and II*
 PHYS 331/ 332 *Junior Physics Laboratory I and II*
 PHYS 411 *Introduction to Nuclear and Particle Physics*
 PHYS 412 *Solid-state Physics*
 PHYS 425 *Statistical and Thermal Physics*
 PHYS 491/492 *Undergraduate Research*

PHYS 493/494 *Undergraduate Research Seminar*
 (The Undergraduate Research course and seminar must be taken concurrently.)
 MATH 381 *Introduction to Partial Differential Equations* and MATH 382 *Complex Analysis* or CAAM 335 *Matrix Analysis* and CAAM 336 *Differential Equations in Science and Engineering*
 CHEM 121/122 *General Chemistry with Laboratory*
 or CHEM 151/152 *Honors Chemistry with Laboratory*

Additional courses for the BS degree in physics with option in applied physics:

PHYS 302 *Intermediate Electrodynamics* or ELEC 306 *Electromagnetic Fields and Devices*
 PHYS 311 *Introduction to Quantum Physics I*
 PHYS 312 *Introduction to Quantum Physics II* or ELEC 361 *Electronic Materials and Quantum Devices*
 2 of: PHYS 331/332 *Junior Physics Laboratory I and II*, ELEC 327 *Digital Logic Design Laboratory*, ELEC 342 *Electronic Circuits*, and ELEC 465 *Physical Electronics Practicum*
 PHYS 412 *Solid-state Physics*
 or Approved substitute in applied physics
 PHYS 425 *Statistical and Thermal Physics*

PHYS 491/492 *Undergraduate Research*
 PHYS 493/494 *Undergraduate Research Seminar*
 (The Undergraduate Research course and seminar must be taken concurrently.)
 ELEC 242 *Fundamentals of Electrical Engineering II* or ELEC 243 *Introduction to Electronics*
 ELEC 305 *Introduction to Physical Electronics*
 MATH 381 *Introduction to Partial Differential Equations* or CAAM 336 *Differential Equations in Science and Engineering*
 CHEM 121/122 *General Chemistry with Laboratory*
 or CHEM 151/152 *Honors Chemistry with Laboratory*

Additional courses for the BS degree in physics with option in biophysics:

PHYS 302 *Intermediate Electrodynamics*
 PHYS 311/312 *Introduction to Quantum Physics I and II*
 PHYS 425 *Statistical and Thermal Physics*
 BIOS 201/202 *Introductory Biology*

Additional courses for BS degree in physics with option in computational physics:

PHYS 302 *Intermediate Electrodynamics*
 PHYS 311/312 *Introduction to Quantum Physics I and II*
 PHYS 416 *Computational Physics*
 PHYS 425 *Statistical and Thermal Physics*
 PHYS 491/492 *Undergraduate Research*
 PHYS 493/494 *Undergraduate Research Seminar*

(The Undergraduate Research course and seminar must be taken concurrently.)

MATH 381 *Introduction to Partial Differential Equations* and MATH 382 *Complex Analysis*

Additional courses for the BS degree in astrophysics:

PHYS 302 *Intermediate Electrodynamics*
 PHYS 311 *Introduction to Quantum Physics I*
 PHYS 425 *Statistical and Thermal Physics*
 ASTR 230 *Astronomy Laboratory*
 ASTR 350/360 *Introduction to Astrophysics—Stars, Galaxies, and Cosmology*
 3 courses from: ASTR 450 *Experimental Space Science*, ASTR 451 *Solar and Stellar Astrophysics*, ASTR 452 *Galaxies and Cosmology*, ASTR 470 *Solar System Physics*, PHYS 312 *Introduction to Quantum Physics II*, PHYS 480 *Introduction to Plasma Physics*

Additional courses for the BA degree in physics:

PHYS 302 *Intermediate Electrodynamics*
 PHYS 311 *Introduction to Quantum Physics I*
 PHYS 331 *Junior Physics Laboratory I*
 PHYS 425 *Statistical and Thermal Physics*

BIOS 301 *Biochemistry*
 CHEM 121/122 *General Chemistry with Laboratory*
 or CHEM 151/152 *Honors Chemistry with Laboratory*
 CHEM 211/212 *Organic Chemistry*
 CHEM 215 *Organic Chemistry Laboratory*

or CAAM 335 *Matrix Analysis* and CAAM 336 *Differential Equations in Science and Engineering*

CAAM 210 *Introduction to Engineering Computation*

CAAM 353 *Computational Numerical Analysis*

CAAM 420 *Computational Science I*

1 of: CAAM 452 *Numerical Methods for Partial Differential Equations*, CAAM 453 *Numerical Analysis*, CAAM 520 *Computational Science II*

CHEM 121 *General Chemistry with Laboratory*
 or CHEM 151 *Honors Chemistry with Laboratory*

PHYS 491/492 *Undergraduate Research*
 PHYS 493/494 *Undergraduate Research Seminar*

(The Undergraduate Research course and seminar must be taken concurrently.)

NSCI 230 *Computation in Natural Science* or CAAM 210 *Introduction to Engineering Computation*

CAAM 336 *Differential Equations in Science and Engineering*

CHEM 121 *General Chemistry with Laboratory*

1 additional PHYS or ASTR course (3 credit hours) at 400 level

NSCI 230 *Computation in Natural Science* or CAAM 210 *Introduction to Engineering Computation* or 1 MATH or CAAM course (3 credit hours) at or above 300 level

Additional courses for the BA degree in astronomy:

PHYS 331 *Junior Physics Laboratory I*
or NSCI 230 *Computation in Natural Science*
PHYS 425 *Statistical and Thermal Physics*
or CHEM 311 *Physical Chemistry*
ASTR 100 *Exploring the Cosmos*

ASTR 230 *Astronomy Laboratory*
ASTR 350/360 *Introduction to Astrophysics—
Stars, Galaxies, and Cosmology*
ASTR 470 *Solar System Physics*
1 of: ASTR 430 *Teaching Astronomy
Laboratory*, ASTR 450 *Experimental Space
Science*, or PHYS 443 *Atmospheric Science*

Additional courses for the BS degree in chemical physics:

CHEM 121/122 *General Chemistry* or
CHEM 151/152 *Honors Chemistry
with Laboratory*
CHEM 211 *Organic Chemistry*
CHEM 212 *Organic Chemistry*
or CHEM 360 *Inorganic Chemistry*
CHEM 311/312 *Physical Chemistry*
PHYS 302 *Intermediate Electrodynamics*
2 of: PHYS 311 or 312 *Introduction to
Quantum Physics I or II*, CHEM 415 *Chemical
Kinetics and Dynamics*, and CHEM 430
Quantum Chemistry

CHEM 373–391, CHEM 435 *Methods of
Computational Quantum Chemistry*, and
PHYS 331 or 332 *Junior Physics Laboratory I
or II*; up to 2 hours of CHEM 491 *Research for
Undergraduates* or PHYS 491/492 *Under-
graduate Research* may be counted toward this
requirement.

6 credit hours from: NSCI 230 *Computation
in Natural Science*, CAAM 210, *Introduction
to Engineering Computation*, and MATH, or
CAAM courses at or above 300 level

6 credit hours from: CHEM 215 *Organic
Chemistry Laboratory*, CHEM 351 or 352
Introductory Module in Experimental Chemistry,

REQUIREMENTS FOR ADVANCED DEGREES

For general university requirements, see Graduate Degrees (pages 57–58). More detailed information on courses and requirements is available from the Department of Physics and Astronomy.

The master of science teaching requires 30 credit hours of approved course work.

The master of science is a research degree, normally undertaken as the first stage of doctoral study. The MS requires at least 30 credit hours of approved graduate-level studies, including a thesis performed under the direction of a departmental faculty member.

To be eligible for the PhD degree, graduate students must demonstrate to the department their ability to engage in advanced research. This is normally accomplished by successfully completing the work for the MS. Students must also complete 60 credit hours of approved graduate-level study at Rice and produce a research thesis under the direction of a departmental faculty member. At least two years of graduate study are required for the PhD.

See ASTR and PHYS in the Courses of Instruction section.

POLICY STUDIES

THE SCHOOL OF SOCIAL SCIENCES

DIRECTOR

Donald Ostdiek

DEGREE OFFERED: BA

This interdisciplinary major focuses on policy issues that are of public interest. Students in policy studies evaluate and analyze both the determinants and the effects of policy decisions, gaining an understanding of the policy-making process and acquiring an intellectual base for policy-making skills. The course of study addresses theoretical issues as well as applied and prescriptive policy questions.

Students may take policy studies *only as a second major*. It complements majors in any university department. For instance, engineering or science majors who are contemplating careers in business or government can investigate how technical innovations or regulations are adopted and implemented as matters of public policy, and humanities majors can explore career options where language skills are particularly valuable.

Students are encouraged to investigate research opportunities with Rice faculty. Students may also elect to participate in the Washington Semester Program at American University, which includes both course work and an internship within the federal government. See the policy studies director for more information.

DEGREE REQUIREMENTS FOR BA IN POLICY STUDIES

For general university requirements, see Graduation Requirements (pages 14–15). Students may take the policy studies major only as a second major (their first major cannot also be in an interdepartmental program). The major contains 11 courses divided into the following elements: a basic curriculum, an area curriculum, and a research requirement.

The policy studies **basic curriculum** introduces students to the basic concepts and tools needed to understand and study policy, regardless of the policy area they choose to focus on. The four courses ensure that all policy studies majors have a common professional vocabulary and conceptual frame of reference. The policy studies **area curriculum** provides specialized training that builds on students' work in the basic curriculum.

Students are required to take 6 courses from one of the following areas of specialization:

- Environmental policy
- Government policy and management
- Healthcare management
- International affairs
- Law and justice
- Business policy and management
- Urban and social change

Policy studies students must also engage in a research project in their area of interest. In consultation with the policy studies director, each student must select a

research seminar or complete an approved research project through independent study or other credit. The Policy Studies Research Seminar (SOSC 400) also counts for this requirement.

4 Basic Curriculum Courses

POLI 338/SOSC 301 *Policy Analysis*
 ECON 211 or 212 *Principles of Economics I or II*
 POLI 337 *Public Policy and Bureaucracy*
 1 advanced analysis or methods course approved by the policy studies director

6 Area Curriculum Courses

6 courses from one of the following seven groups:

1. Environmental Policy (Choose 6)

ECON 480 *Environmental and Energy Economics I*
 POLI 331 *Environmental Politics and Policy*
 SOCI 367 *Environmental Sociology*
 ENVI 306 *Global Environmental Law and Sustainable Development*
 ENVI 406 *Introduction to Environmental Law*
 HIST 330 *U.S. Environmental History*
 ARCH 313 *Sustainable Architecture*
 ANTH 468 *Palaeoclimate and Human Response*
 BIOS 322 *Global Ecosystem Dynamics*
 BIOS 324 *Wetland Ecosystems*
 BIOS 325 *Ecology*
 ENGL 478 *Literature and the Environment*
 ENVI/HPHS 201 *Introduction to Environmental Systems*
 ENVI 445 *Natural Environmental Factors*
 GEOL 326 *Environmental Geology*
 GEOL 341 *The Oceans*
 GEOL 345 *Geology of National Parks*
 POLI 336 *Politics of Regulation*
 RELI 362 *Environmental Ethics*
 SPAC 203 *Atmosphere, Weather, and Climate*
 SPAC 443/ENVI 443 *Atmospheric Science*
 UNIV 303 *Environmental Problem Solving*

2. Government Policy and Management (Choose 6)

ECON 436 *Government Regulation of Business*
 ECON 461 *Urban Economics*

ECON 483 *Public Finance*
 POLI 300 *Federalism and Intergovernmental Politics*
 POLI 301 *State Politics*
 POLI 332/432 *Urban Politics*
 POLI 436 *Politics of Regulation*
 ANTH 344 *City/Culture*
 ECON 438 *Economics of the Law*
 ECON 480 *Environmental and Energy Economics I*
 POLI 330 *Minority Politics*
 POLI 331 *Environmental Politics and Policy*
 POLI 335 *Political Environment of Business*
 POLI 458 *Property Rights and Privatization*
 ENVI 406 *Introduction to Environmental Law*
 HIST 468 *Women and the Welfare State*
 SOSC 330 *Healthcare Reform in the 50 States*
 SOSC 430 *The Shaping of Health Policy in the United States*
 SOCI 308 *Houston: The Sociology of a City*
 SOCI 331 *Politics and Society in Texas*
 SOCI 370 *Sociology of Education*
 SOCI 350 *Sociological Approaches to Poverty*
 SOCI 399 *Immigration and Public Health*
 SOCI 411 *Social Change*
 SOCI 441 *Minorities in the Schooling Process*

3. Healthcare Policy and Management (Choose 6)

ANTH 381 *Medical Anthropology*
 ANTH 386 *Human Nutrition*
 ANTH 388 *Life Cycle: A Biocultural View*
 HEAL 212 *Consumer Health*
 HEAL 350 *Understanding Cancer*
 HEAL 407 *Epidemiology*
 HEAL 410 *Program Development in Health Education*
 PHIL 315 *Ethics, Medicine, and Public Policy*
 RELI 462/463 *Medical Ethics and American Values I and II*
 SOSC 330 *Healthcare Reform in the 50 States*
 SOSC 420 *Healthcare: Competition and Managed Care*

SOSC 430 *The Shaping of Health Policy in the United States*

SOCI 334 *Sociology of the Family*

SOCI 345 *Sociology of Medicine*

SOCI 399 *Immigration and Public Health*

SPAN 307/308 *The Language of Healthcare*

4. International Affairs

(Choose 6)

ECON 420 *International Economics*

POLI 372 *American Foreign Policy*

POLI 376 *International Political Economy*

POLI 378 *The Politics of American National Security Policy*

POLI 462 *Comparative Public Policy*

ANTH 360 *Modernity and Social Space*

ECON 421 *International Finance*

ECON 430 *Comparative Economic Systems*

ECON 451 *Political Economy of Latin America*

HIST 232 *The Making of Modern Africa*

HIST 353 *The Cold War*

HIST 394 *War in the Modern World*

HIST 464 *Foreign Policy of Nixon and Kissinger*

HIST 469 *US–Latin America Relation*

POLI 354 *Latin American Politics*

POLI 355 *Government and Politics of the Middle East*

POLI 356 *Politics of Latin American Economic Development*

POLI 360 *West European Democracies*

POLI 361 *Comparative Post-Communist Systems*

POLI 373 *International Conflict*

POLI 376 *International Political Economy*

POLI 464 *Political Economy of Development*

5. Law and Justice (Choose 6)

ANTH 326 *Anthropology of Law*

ANTH 419 *Law and Society*

ECON 438/439 *Economics of the Law I and II*

ENVI 406 *Introduction to Environmental Law*

HIST 297/298 *American Legal History I and II*

PHIL 307 *Social and Political Philosophy*

PHIL 316 *Philosophy of Law*

POLI 321 *American Constitutional Law*

POLI 458 *Property Rights and Privatization*

SOCI 321 *Criminology*

6. Business Policy and Management (Choose 6)

ECON 436 *Government Regulation of Business*

ECON 445 *Managerial Economics*

ECON 435 *Industrial Organization*

POLI 335 *Political Environment of Business*

POLI 336 *Politics of Regulation*

PSYC 231 *Industrial and Organizational Psychology*

ACCO 305 *Introduction to Accounting*

ECON 355 *Money and Banking*

ECON 370 *Microeconomic Theory*

ECON 375 *Macroeconomic Theory*

ECON 415 *Human Resources, Wages, and Welfare*

ECON 420 *International Economics*

ECON 421 *International Finance*

ECON 448 *Corporation Finance*

HIST 331 *Labor in America*

POLI 376 *International Political Economy*

POLI 458 *Property Rights and Privatization*

POLI 464 *Political Economy of Development*

7. Urban and Social Change

ANTH 344 *City/Culture*

ANTH 360 *Modernity and Social Space*

ARCH 311 *Houston Architecture*

ARCH 313 *Sustainable Architecture*

ARCH 321 *Economics of the Built Environment*

ARCH 346 *19th- and 20th-Century Architectural History*

ARCH 351 *Social Issues and Architecture*

ARCH 455 *Housing and Urban Programs*

ECON 461 *Urban Economics*

ECON 480 *Environmental Economics*

HIST 377 *The Ancient City*

HIST 429 *Technologies of Nationalism*

HART 325 *Art and Architecture in the Middle East*

PHIL 307 *Social and Political Philosophy*

- SOCI 301 *Social Inequality*
- SOCI 308 *Houston: The Sociology of a City*
- SOCI 309 *Race and Ethnic Relations*
- SOCI 310 *Urban Sociology*
- SOCI 313 *Demography*
- SOCI 411 *Social Change*
- POLI 332 *Urban Politics*
- POLI 438 *Race and Public Policy*
- POLI 441 *Common Property Resources*

POLITICAL SCIENCE

THE SCHOOL OF SOCIAL SCIENCES

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DEGREES OFFERED: BA, MA, PHD

Students majoring in political science are encouraged to achieve both a broad understanding of the field and a specialized knowledge of one or more aspects of political science, including American politics and comparative politics and politics and international relations (see also majors in managerial studies and public policy). Graduate study is grounded in the areas of American government (public policy, Congress, and intergovernmental relations), comparative government (Western Europe, Latin America, and political development), and international relations (international conflict).

DEGREE REQUIREMENTS FOR BA IN POLITICAL SCIENCE

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in political science must complete 30 semester hours (10 courses) in the field of political science, plus 6 hours (2 courses) of upper-level work in any of the following fields: anthropology, economics, history, philosophy, psychology, or sociology. Students select these upper-level courses in consultation with the department adviser.

For students who entered Rice in fall 1999 and thereafter, political science degree requirements are as follows:

- At least 1 course in each of the following fields: American government, comparative politics, international relations, theory and methods.
- At least 2 of the 4 introductory courses
- A concentration of at least 4 courses in one of the following fields: American government, comparative politics, international relations. These 4 courses must include the introductory course and a seminar.
- A statistics course offered by the Department of Political Science

- 2 seminars, at the 400 or 500 level, with different instructors

Students who entered Rice before fall 1999 may choose to satisfy the above requirements, or they may satisfy requirements in force at the time of their enrollment at Rice, which usually will be as follows:

- At least 1 course in any four of the following areas: American political institutions and behavior, comparative politics, international relations, political philosophy and legal theory, empirical theory and method, and American public policy
- 2 seminars, at the 400 or 500 level, with different instructors

Double majors in one of the related disciplines named above may automatically substitute 6 hours (2 courses) in upper-level studies (at the 300 level or above) from their second field for 6 of the required 30 hours of political science courses. Double majors whose second major is managerial studies or policy studies may automatically substitute 3 hours (1 course). Double majors whose second major is in a field other than those listed above normally must take the full 30 hours (10 courses) in political science. They may petition to substitute a course from another field for a political science course, but this is permitted only when the course to be substituted has a significant relationship to political science. Note: The reduction of political science course requirements for double majors is eliminated for students who entered in and after fall 1999.

Introductory Courses—POLI 209 *Introduction to Constitutionalism and Modern Political Thought*, POLI 210 *American Government and Politics*, POLI 211 *International Relations*, and POLI 212 *Introduction to Comparative Politics* constitute the introductory courses in political science. **Students entering in the fall 1999 and after must take at least 2 of these, including one in the field of specialization.** Students should note, however, that POLI 210 is the course that meets the Texas state licensing requirements in political science for teachers. Students who entered Rice before fall 1999 and choose to stay with the old plan may count no more than 2 of the introductory courses toward their major requirements.

Directed Readings Courses—Directed readings courses are intended for students who have completed a substantial number of political science courses and who seek to explore a subject not covered in regular courses. They are available only if an appropriate faculty member agrees to supervise. The faculty member supervising a directed readings course must have a full-time appointment, and a student may not take more than 1 readings course from him or her. Students should submit a brief, one-page description of the work to be conducted in the readings course (including the name of the faculty supervisor) to the department director of undergraduate studies no later than two weeks into the semester in which they intend to take the course. Readings courses do not count toward the department's distribution requirement.

Honors Program—Admission to the honors program requires the approval of the department director of undergraduate studies. During the first semester of the two-semester program, students take a readings course that provides them with a basis for drawing up a thesis prospectus. At the end of the first semester, a thesis committee composed of two full-time members of the political science department reviews and approves the prospectus. During the second semester, students write their honors thesis, which also must meet with committee approval. Students may not combine the 2 honors courses into one semester. Those who successfully complete the honors program may substitute it for one of the seminars required

for the major. See also Honors Programs (page 26). Failure to complete the second semester of the honors program will result in loss of credit for the first semester of the honors program.

DEGREE REQUIREMENTS FOR MA AND PHD IN POLITICAL SCIENCE

For general university requirements, see Graduate Degrees (pages 57-58). Students in the PhD program must complete 48 semester hours in advanced courses or seminars before candidacy and conclude the degree program with the oral presentation of a dissertation displaying original research. Normally, students take the specified core courses in the three general fields of American government, comparative government, and international relations, completing additional course work and comprehensive examinations in two of those three fields. Before taking the comprehensive examinations, students must:

- Complete courses in statistical analysis
- Demonstrate some familiarity with traditional political theory
- Satisfy the language or skill requirement in their major field
- Complete all course requirements

Students select specific courses for graduate study in consultation with the faculty adviser.

The master of arts degree can be obtained with 36 semester hours of course work, all of which must be taken at the graduate level (400 level or above), and the completion of 2 research papers in seminars taken over the course of study. A minimum G.P.A. of 3.0 is required for awarding the MA.

The political science department requires that not more than three years elapse between the time the student is admitted to graduate study and the completion of the MA degree, unless an extension is approved by the department graduate committee.

See POLI in the Courses of Instruction section.

PSYCHOLOGY

THE SCHOOL OF SOCIAL SCIENCES

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RESEARCH SCIENTIST

Chaiyapoj Nestsiri

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Philip T. Kortum

DEGREES OFFERED: BA, MA, PHD

The undergraduate program offers the core preparation recommended by the nation's leading graduate schools of psychology, with advanced courses and research opportunities to fit individual needs. Programs of study may be structured around prospective careers in medicine, law, business, and education as well as in psychology. Program emphasis in graduate study is on doctoral training, which includes course work in memory, cognition, engineering and industrial/organizational psychology, social psychology, and methodology. Faculty research interests include cognitive psychology (human memory, psycholinguistics, perception, and information processing), cognitive neuropsychology (memory, perception, and language disorders), human-computer interaction, and industrial/organizational psychology (personnel selection, training, work motivation, discrimination, and group processes).

DEGREE REQUIREMENTS FOR BA IN PSYCHOLOGY

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in psychology must complete 29 semester hours in departmental courses, including the following required courses.

Core Courses

PSYC 101 *Introduction to Psychology*
 PSYC 202 *Introduction to Social Psychology*
 PSYC 203 *Introduction to Cognitive Psychology*
 PSYC 339 *Statistical Methods—Psychology*
 PSYC 340 *Research Methods* (no substitutions or transfer credits allowed for PSYC 339 or 340)

At least 1 course from each block***Block 1**

PSYC 308 *Memory*
 PSYC 309 *Psychology of Language*

PSYC 350 *Psychology of Learning*
 PSYC 351 *Psychology of Perception*
 PSYC 360 *Thinking*
 PSYC 362 *Biopsychology*

Block 2

PSYC 321 *Developmental Psychology*
 PSYC 329 *Psychological Testing*
 PSYC 330 *Personality Theory*
 PSYC 331 *The Psychology of Gender*
 PSYC 332 *Abnormal Behavior*
 PSYC 460 *The Psychology of Emotion and Motivation*

*No substitutions or transfer credits allowed to fulfill Block 1 and 2 requirements.

Honors Program—Qualified students may apply to the honors program during preregistration in the spring semester of their junior year. A written proposal for the project must be submitted by the end of the second week of classes in fall of the senior year, and the faculty will decide on final admission to the honors program by the end of the fourth week of classes. Admission to the honors program requires a psychology GPA of 3.7 and an overall GPA of 3.5, completion of PSYC 339, and completion or concurrent enrollment in PSYC 340. To graduate with departmental honors, students must complete the requirements for the psychology major, a written honors thesis approved by a faculty committee, and other requirements as determined by their honors committee (see Honors Program, page 26). Detailed information about the honors program is available from the instructor of the course or the departmental office.

DEGREE REQUIREMENTS FOR MA AND PHD IN PSYCHOLOGY

Students must complete an admission-to-candidacy procedure that should establish their expertise in their chosen specialty. For general university requirements, see Graduate Degrees (pages 57-58). For both MA and PhD degrees, students must complete a research thesis, including a public oral defense, and accumulate

30 semester hours for the MA and 60 hours for the PhD. Course work includes required courses in certain areas, plus whatever offerings are available in the student's specialty area, either cognitive/experimental, industrial/organizational/social, or engineering psychology. Competence in a foreign language is not required.

See PSYC in the Courses of Instruction section.

RELIGIOUS STUDIES

THE SCHOOL OF HUMANITIES

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Anne C. Klein

Anthony B. Pinn

John M. Stroup

PROFESSORS EMERITI

Werner H. Kelber

Edith Wyschogrod

ASSOCIATE PROFESSORS

Elias K. Bongmba

Matthias Henze

William B. Parsons

ASSISTANT PROFESSORS

David Cook

Gregory Kaplan

ADJUNCT PROFESSOR

Stanley J. Reiser

ADJUNCT ASSOCIATE PROFESSOR

Elizabeth Heitman

LECTURER

Beverlee Jill Carroll

DEGREES OFFERED: BA, PHD

The undergraduate major includes courses in methodology (textual, historical, normative, and sociocultural approaches to the study of religion) and religious traditions (African religions, Buddhism, Christianity, comparative religions, Hinduism, Islam, and Judaism). For research degrees in the graduate program, see below. Within these clearly defined fields, students acquire a broad knowledge of religious studies with enough flexibility for interdisciplinary pursuits.

DEGREE REQUIREMENTS FOR BA IN RELIGIOUS STUDIES

For general university requirements, see Graduation Requirements (pages 14-15). In addition, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a program totaling at least 120 semester hours. See Distribution Requirements (pages 15-16) and Majors (pages 17-18).

Students majoring or double-majoring in religious studies must complete:

- 30 hours for majors
- 24 hours for double majors
- 24 hours for majors at 200, 300, or 400 level
- 18 hours for double-majors at 200, 300, or 400 level
- No more than 2 courses outside the Department of Religious Studies

To ensure breadth and depth to the major, students are encouraged to work out a program of study with the undergraduate advisor. The 30 hours (24 for double-majors) must include the following requirements:

- RELI 101 *Introduction to Religion*
- 2 introductory courses in religious traditions (one Western; one non-Western)
- At least 3 courses concentrated in one of the following fields: Judaism, Christianity, African religion, Buddhism, comparative studies, cross-cultural studies, Islam, Hinduism, methodological studies, or ethics/philosophy of religion

Honors Program. Qualified undergraduates may choose the option of writing a senior thesis. To complete a thesis, the student must enroll for 6 hours in addition to

the 30 hours (24 for double majors) required for the major. Students are expected to have at least a 3.50 average in their religious studies courses before undertaking thesis work and must obtain the permission of a faculty advisor who will supervise the project, usually during the second semester of the junior year and first semester of the senior year. Any additional supervisors and readers of the completed thesis (if any) will be arranged in advance by the primary faculty advisor in consultation with relevant faculty.

DEGREE REQUIREMENTS FOR PHD IN RELIGIOUS STUDIES

The graduate program accepts a limited number of qualified students. A distinguished undergraduate record and high scores on the Graduate Record Examination (GRE) are essential and an advanced degree in the humanities is desirable. For general university requirements, see Graduate Degrees (pages 57-58). Students admitted into the program will normally receive financial assistance in the form of a tuition waiver and a stipend. As part of their training and in return for their stipends, students in their second year and beyond are expected to perform a minimum amount of services in return for their stipend by assisting the department as needed.

The PhD in religious studies is normally a five-year program. Requirements are as follows:

- 18 courses (54 hours required)
 - 6 courses in the major field
 - 3 courses in each of two minor fields (see list of fields below)
 - 2 department seminars (one or more of which may count as a major or minor course) to be taken in each of the first two years
 - 4 to 6 elective courses chosen in consultation with the student's adviser
- Passing grades on reading examinations in French and German
- Passing grades in 4 qualifying examinations: 3 in the student's major field, 1 in each of the students 2 minor fields. The nature and content of the examinations or papers will be determined one year prior to the date the student expects to write them, which is ordinarily the end of the third or beginning of the fourth year in the program.
- Oral discussion of dissertation proposal
- Satisfactory completion of dissertation and oral defense

Reading Lists—Students should become broadly familiar with the literature of their majors and minors; reading lists will be provided. Students are expected to familiarize themselves with this material enough that they draw on it on their exams and the dissertation itself. The graduate seminar is, in part, an introduction to areas of the reading list and to the techniques for engaging in deep, independent reading.

Fields of Study—Religion and contemporary cultures, scriptural interpretation, ethics and philosophy of religion, mysticism, psychology, and religious practices are fields of study in this program. These fields will include courses covering one or more of the following traditions: African and African-based religions, Buddhism, Christianity, Hinduism, Judaism, and new and alternative religions. Students may concentrate in one or more of these traditions in the context of their major and minor fields.

PROFESSIONAL DEVELOPMENT

Opportunities may be available to teach undergraduate courses in the department or in local colleges and universities. Limited funds are also available for students to attend conferences to present their research. The department encourages these and other efforts to prepare students for academic careers.

See RELI in the Courses of Instruction section.

SOCIOLOGY

THE SCHOOL OF SOCIAL SCIENCES

CHAIR

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PROFESSORS

Michael O. Emerson

Stephen L. Klineberg

PROFESSORS EMERITI

Chandler Davidson

Chad Gordon

William Martin

ASSOCIATE PROFESSORS

Katharine Donato

ASSISTANT PROFESSORS

Bridget K. Gorman

Holly Heard

POSTDOCTORAL FELLOWS

Elaine Howard Ecklund

Anne E. Lincoln

DEGREE OFFERED: BA

This undergraduate major fosters an analytic approach to the study of human societies, whether as a preparation for graduate work in sociology and related fields, or as the foundation for a variety of occupations. It is also an important component of a liberal arts education and as such, can serve as effective preparation for professions such as law or medicine. The program provides students with considerable latitude in pursuing personal interests while ensuring familiarity with basic theoretical approaches and research methods.

DEGREE REQUIREMENTS FOR THE BA IN SOCIOLOGY

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in sociology must complete at least 33 semester hours (11 courses) in sociology. Requirements for the major normally include the following.

SOCI 203 *Introduction to Sociology*

SOCI 398 *Social Statistics*

1 of the following:

SOCI 390 *Research Methods*

SOCI 421 *Craft of Sociology*

At least 1 theory course, such as:

SOCI 317 *Contemporary Sociological Theory*

SOCI 359 *Individual and Society*

SOCI 395 *Feminist Social Thought*

Any other sociology courses to reach a total of 11

Sociology majors must earn a C or better to receive credit for the following courses: statistics (SOCI 398), theory (SOCI 317, SOCI 395, or SOCI 359), and research methods (SOCI 390 or SOCI 421). This rule applies to Rice courses and transfer courses.

Sociology majors are *strongly* encouraged to complete the required statistics course in the Rice sociology department. To receive credit for a statistics course completed outside the department (another Rice department or another university), the student must: (1) receive prior approval from the undergraduate advisor to enroll in the course (waived for transfer students), and (2) pass the departmental statistics exam.

Sociology majors are not required to take a foreign language, but those planning graduate study should be competent in at least one such language. Some sociology courses listed in the Courses of Instruction section may not be offered every year, and courses among the regular offerings are occasionally added or dropped.

Students are responsible for making sure they satisfy all the requirements for their degree. One of the sociology faculty, preferably department advisor Professor Gorman, should sign each major's registration.

Honors Program—For general information, see Honors Programs (page 26). Students who have maintained an A- average in all sociology courses beyond the introductory level may apply to enter the honors program. They should submit their research proposals:

- a) by November 15 of the first semester of their junior year, in which case they will research and write their thesis during the second semester of their junior year and the first semester of their senior year
- b) by March 15 of the second semester of their junior year, in which case they will complete their thesis during the two semesters of their senior year.

Since departmental awards for seniors are usually determined around March 1, and the honors thesis is often taken into consideration in this determination, students who wish to be considered for these awards are advised to begin their thesis in the spring of their junior year. Research proposals must be carefully thought out and discussed with at least one professor before being submitted. Once submitted, they will be considered by the department faculty as a whole and, if acceptable, the student will be assigned a faculty adviser.

Students in the honors program register for two successive semesters in Directed Honors Research (SOC 492 and 493). The first of the 2 courses is typically devoted to a thorough review of the relevant literature, the formulation of hypotheses growing out of the literature review, and a proposal consisting of a research design that clearly describes how the data are to be collected and analyzed. To receive a grade for the first semester, the student must submit a paper to the primary thesis adviser by the last day of classes. This paper must contain the literature review, hypotheses, and research design, along with a bibliography. The research itself is usually carried out in the second semester (and sometimes in the summer following the junior year) and is analyzed, written up, and defended as a completed Honors Thesis during that semester.

All honors students should complete SOC 390 *Research Methods* or SOC 421 *The Craft of Sociology* before beginning the second semester of the program. If their project requires statistical analysis, students should also complete SOC 398 *Social Statistics* before beginning the second semester of their research.

See SOC in the Courses of Instruction section.

STATISTICS

THE GEORGE R. BROWN SCHOOL OF ENGINEERING

CHAIR

Rudy Guerra

PROFESSORS

Bryan W. Brown (*joint appointment: Economics*)

Dennis Cox

Mahmoud El-Gamal (*joint appointment: Economics*)

Katherine B. Ensor

Don H. Johnson (*joint appointment: Electrical and Computer Engineering*)

Marek Kimmel

Javier Rojo

Rudy Guerra

David W. Scott

Robin Sickles (*joint appointment: Economics*)

James R. Thompson

Edward E. Williams (*joint appointment: Jones Graduate School of Management*)

Rick K. Wilson (*joint appointment: Political Science*)

ASSOCIATE PROFESSORS

Steven Currall (*joint appointment: Jones Graduate School of Management*)

David M. Lane (*joint appointment: Psychology*)

Barbara Ostdiek (*joint appointment: Jones Graduate School of Management*)

ASSISTANT PROFESSOR

Rudolph H. Riedi

ADJUNCT PROFESSORS

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Christopher I. Amos

Donald A. Berry

Barry W. Brown

Richard Heydorn

J. Jack Lee

Peter Müller

Gary Rosner

Howard D. Thames, Jr.

Stuart Zimmerman

ADJUNCT ASSOCIATE PROFESSORS

Keith A. Baggerly

Joaquin Diaz-Saiz

Kim-Anh Do

Kenneth Hess

Yu Shen

Ya-Chen Shih

ADJUNCT ASSISTANT PROFESSORS

Olga Y. Gorlova

Ilya Shmulevick

LECTURERS

L. Scott Baggett

FACULTY FELLOW

Janet Siefert

DEGREES OFFERED: BA, MSTAT, MA, PHD

Course work in statistics acquaints students with the role played in the modern world by probabilistic and statistical ideas and methods. Students grow familiar with both the theory and the applications of techniques in common use as they are trained in statistical research. The flexibility of the undergraduate program allows students to concentrate on theoretical or applied training, or they may link their studies in statistics to work in other related departments (see majors in economics, education, electrical and computer engineering, computational and applied mathematics, managerial studies, mathematics, political science, and psychology). Graduate study has concentrations in applied probability, bioinformatics, biomathematics, biostatistics, computational finance, data analysis, density estimation, epidemiology, image processing, model building, quality control, statistical computing, spatical processes, stochastic processes, and time series analysis. A joint MBA/master of engineering degree is also available in conjunction with the Jesse H. Jones Graduate School of Management.

DEGREE REQUIREMENTS FOR BA IN STATISTICS

For general university requirements, see Graduation Requirements (pages 14-15). Students majoring in statistics normally complete the following:

- MATH 101/102 *Single Variable Calculus I and II*
- MATH 211 *Ordinary Differential Equations and Linear Algebra*
- CAAM 210 or 211 *Introduction to Engineering Computation*
- STAT 310 *Probability and Statistics*
- STAT 410 *Introduction to Statistical Computing and Regression*
- 6 elective courses from the statistics department (or other departments with approval from their adviser) at the 300 level or higher

Mathematically oriented students should also take MATH 212 *Multivariable Calculus* and MATH 355 *Linear Algebra* (or CAAM 335 *Matrix Analysis*).

The department offers a specialization in computational finance and through the Center for Computational Finance and Economic Systems.

DEGREE REQUIREMENTS FOR MSTAT, MA, AND PHD IN STATISTICS

For general university requirements, see Graduate Degrees (pages 57-58). Admissions applications should include scores on the Graduate Record Examination (GRE) in the quantitative, verbal, and analytical tests. Financial support is available for well-qualified doctoral students. Course work for all degree programs should be at the 400 level or above, although 2 approved 300-level courses may be accepted.

Master's Programs—Candidates for the nonthesis MStat degree must complete 30 semester hours of approved course work. Candidates for the MA degree in statistics must complete 30 semester hours of approved course work as well as one of the following: (1) complete an original thesis and defend it in a public oral examination; or (2) perform satisfactorily on the second-year PhD comprehensive examinations.

PhD Program—Candidates for the PhD degree in statistics must complete at least 90 semester hours of approved course work beyond the bachelor's degree and a minimum of 60 hours beyond a master's degree, perform satisfactorily on preliminary and qualifying examinations, and complete an original thesis with a public oral defense.

See STAT in the Courses of Instruction section.

THE PROGRAM FOR THE STUDY OF WOMEN AND GENDER

DIRECTOR AND ADVISER

Helena Michie

PROFESSORS

Peter C. Caldwell

Jane Chance

Marcia J. Citron

Margret Eifler

James D. Faubion

Beatriz González-Stephan

Anne C. Klein

Elizabeth Long

Susan Keech McIntosh

Helena Michie

Deborah Nelson-Campbell

Robert L. Patten

Meredith Skura

Ewa M. Thompson

ASSOCIATE PROFESSORS

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Elias K. Bongmba

Scott S. Derrick

Katharine M. Donato

Lucille P. Fultz

Eugenia Georges

Deborah A. Harter

Betty Joseph

Maria-Regina Kecht

Jeffrey J. Kripal

Colleen R. Lamos

Caroline F. Levander

Susan Lurie

William B. Parsons

Nanxiu Qian

Carol E. Quillen

Paula Sanders

Julie M. Taylor

Sarah Westphal

Lora Wildenthal

ASSISTANT PROFESSORS

Regina Branton

Marcia Brennan

Krista Comer

Elizabeth Dietz

Sarah Ellenzweig

Bridget K. Gorman

Holly Heard

Michelle R. Hebl

Nancy A. Niedzielski

Kirsten Ostherr

Sherrilyn Roush

Elora Shehabuddin

Allison Sneider

Rachel Zuckert

PROFESSOR OF THE PRACTICE

Diana L. Strassmann

LECTURER

Thad Logan

DEGREES OFFERED: BA AND GRADUATE CERTIFICATE

Both the undergraduate major and the graduate certificate program take an interdisciplinary approach in their exploration of women's experiences and the role that ideas about sexual differences have played in human societies. Areas of inquiry include women's participation in social and cultural production; the construction of gender roles and sexuality; the relationship between ideas about gender and concepts inherent in other social, political, and legal structures; and the implications of feminist theory for philosophical and epistemological traditions. Students acquire an understanding of how adopting gender as a significant category of analysis challenges existing disciplines. They also gain proficiency in the methods used to study and compare cultural constructions of gender and sexuality, and they become familiar with the ongoing fundamental debates in women's and gender studies.

DEGREE REQUIREMENTS FOR BA IN THE STUDY OF WOMEN AND GENDER

For general university requirements, see Graduation Requirements in this publication. Students majoring in the study of women and gender must complete:

- 36 semester hours of departmental course work (30 hours if this is a second major)
- WGST 101 Introduction to the Study of Women and Gender or WGST 201 Introduction to Lesbian, Gay, Bisexual, and Transgender Studies
- WGST 498 and WGST 499 (capstone courses in fall and spring respectively)
- At least one approved non-Western studies course
- At least one approved critical race studies course
- At least one approved theory course

Of the remaining required courses, no more than four (4) courses may be from a single department. All students must work out their individual courses of study with their faculty advisers. Each student's course of study must be approved by the director of the major. Course requirement tracking forms are available in the SWG office for declared SWG majors.

The following courses are among those that can be used to fulfill requirements for the major. As course offerings may vary from year to year, students are urged to consult with their faculty advisers or with the director at the beginning of each semester.

Please note that not all courses listed below will be offered during the academic year. For a current list of courses that will be offered in fall 2005 and spring 2006, please visit the SWG web site at <http://swg.rice.edu>.

I. Courses that Satisfy the Core Requirements

WGST 101 *Introduction to the Study of Women and Gender*

WGST 201 *Introduction to Lesbian, Gay, Bisexual, and Transgender Studies*

WGST 498 *Research in the Study of Women and Gender (F)*

WGST 499 *Research in the Study of Women and Gender (S)*

II. Courses that Satisfy the Non-Western Studies Requirement

WGST 240 *Gender and Politicized Religion*

WGST 250 *International Political Economy of Gender*

WGST 283 *Women in the Modern Islamic World*

WGST 315 *Gender and Islam*

WGST 323 *The Knowing Body: Buddhism, Gender, and the Social World*

WGST 340 *Gender and Politicized Religion (enriched version)*

WGST 399 *Women in Chinese Literature*

WGST 432 *Islam in South Asia*

WGST 455 *Women and Gender in Medieval Islam*

III. Courses that Satisfy the Critical Race Studies Requirement

WGST 234 *U.S. Women's History I: Colonial Beginnings to the Civil War*

WGST 235 *U.S. Women's History II: Civil War to the Present*

WGST 370 *Survey of African American Literature*

WGST 387 *Cultural Studies: Race, Gender, and the Politics of Representation*

WGST 387 *Cultural Studies*

WGST 415 *Sociolinguistics*

WGST 453 *Topics in African American Literature: Black Women Writers*

WGST 468 *Women and the U.S. Welfare State: Sexual Politics and American Poverty*

IV. Courses that Satisfy the Theory Requirement

WGST 303 *Women's Stories and Legal Change*

WGST 339 *Feminist Philosophy*

WGST 391 *Producing Feminist Knowledge: Methodology and Visual Culture*

WGST 395 *Feminist Knowledges*

WGST 430 *Queer Theory*

WGST 434 *French Feminist Theory*

WGST 460 *Feminist Social Thought*

WGST 480 *Feminist Literary Theory*

WGST 482 *Problems in Contemporary Feminist Theory*

V. Other CoursesWGST 105 *Language, Gender, and Sexuality*WGST 130 *Mapping German Culture: Women and National Socialism*WGST 205 *Language and Society*WGST 220 *Gendered Perspectives on the Law*WGST 225 *Women in Greece and Rome*WGST 300 *Medieval Women Writers*WGST 301 *Arthurian Literature*WGST 305 *Chaucer*WGST 324 *Sociology of Gender*WGST 325 *Sociology of the Family*WGST 327 *20th Century Women Writers*WGST 328 *Latin American Genders*WGST 329 *Literature and Culture of the American West*WGST 330 *Mapping German Culture: Courtship, Love, and Marriage in the Age of Chivalry*WGST 331 *The Psychology of Gender*WGST 332 *Self, Sex, and Society in Ancient Greece*WGST 333 *Masculinities*WGST 335 *The Lifecycle: A Biocultural View*WGST 336 *History as a Cultural Myth*WGST 341 *Gender and Politics*WGST 348 *Subjectivity in Modern and Postmodern Art and Thought*WGST 349 *Women Writers: 1400-1900*WGST 350 *Gender and Symbolism*WGST 358 *Mapping German Culture: European Women Filmmakers*WGST 361 *New German Cinema*WGST 365 *Gender, Subjectivity, and the History of Photography*WGST 366 *Topics in American Literature*WGST 367 *American Ecofeminism*WGST 368 *Mythologies*WGST 369 *Seminar on Beauty and Fragmentation in Modern Art*WGST 372 *Survey of Victorian Fiction*WGST 380 *Culture, Security, and Human Rights*WGST 389 *Generation X in Literature and Culture*WGST 390 *Hispanic Cinema*WGST 392 *History of Sexuality in America*WGST 400 *Constructing Identities in Modern Fiction*WGST 405 *Austen Only*WGST 410 *The Literary and Historical Image of the Medieval Woman*WGST 412 *Women and Women's Voices in French Literature*WGST 420 *Women and Gender in 19th-Century Europe*WGST 422 *Feminist Economics*WGST 440 *Women in Music*WGST 442 *Women in Russian Literature*WGST 444 *Family Inequality*WGST 448 *Disease and Difference: The Body in Visual Culture*WGST 462 *20th-21st-Century American Literary Studies*WGST 465 *Gender and Health*WGST 470 *Sex, Sanctity, and Psychoanalysis*WGST 485 *Gender and Hollywood Cinema in the 1950s*WGST 495 *Independent Study*WGST 496 *Applied Women's and Gender Studies*WGST 497 *Directed Reading*WGST 498 *Research in the Study of Women and Gender (F)*WGST 499 *Research in the Study of Women and Gender (S)***REQUIREMENTS FOR GRADUATE CERTIFICATE IN THE STUDY OF WOMEN AND GENDER**

The graduate certificate program in the Study of Women and Gender (SWG) is designed to provide interdisciplinary training in the field of women and gender studies to students pursuing a PhD degree at Rice University. Students who have been admitted into a PhD program are eligible to apply to the SWG graduate certificate program. The SWG graduate certificate is not a free-standing degree program; in addition to fulfilling the SWG requirements outlined below, candidates will be required to successfully complete the PhD program into which they have been admitted in order to receive the graduate certificate in SWG. Further information is available on request from the SWG program. For PhD requirements, see the relevant department. For general university requirements, see Graduate Degrees in this publication.

The program awards graduate fellowship stipends, within the limits of available funds, to certificate students during the prospectus-writing semester. Although timelines vary depending on the student's home department, this semester normally occurs during the semester following the completion of coursework and before passing the qualifying examinations in the PhD program. During the prospectus-writing semester graduate certificate students will be enrolled in WGST 502 "Gender, the Disciplines, and Interdisciplinarity." Graduate certificate students will be eligible to work as teaching assistants for an SWG undergraduate core or cross-listed course, or in some cases, to teach a course of their own upon approval of the Steering Committee.

For the graduate certificate in SWG, candidates must complete:

- 9 credit hours of courses in SWG, including two core courses (WGST 501 and WGST 502) and one cross-listed elective course (see list of approved courses below)
- 3 non-credit hours for participation in annual colloquium

SWG certificate students are strongly encouraged to include a member of the SWG faculty on their dissertation committee, and to consult regularly with the faculty member as they pursue their dissertation work.

The following courses are those that can be used to fulfill requirements for the graduate certificate. In most cases, students will be able to complete these requirements within the normal time limits for coursework in their PhD program. All students must work out their individual courses of study with the SWG Director and the graduate adviser in their home department. Each student's course of study must be approved by the SWG Director. Please note that not all courses listed below will be offered during the academic year. For a current list of courses that will be offered in fall 2005 and spring 2006, please visit the SWG web site at <http://swg.rice.edu>.

I. Courses that Satisfy the Core Graduate Certificate Requirements

WGST 501 *Feminist Debates*

WGST 502 *Gender, the Disciplines, and Interdisciplinarity*

II. Courses that Satisfy the Cross-listed Elective Course Requirement

WGST 517 *Medieval Women Writers*

WGST 520 *Shakespeare and Difference*

WGST 522 *Feminist Economics*

WGST 523 *Directed Reading in Women's and Gender History*

WGST 525 *Self, Sex, and Society in Ancient Greece*

WGST 542 *Victorian Fiction*

WGST 545 *Women and Gender: Europe and Beyond*

WGST 546 *20th Century British Literature*

WGST 551 *U.S. Women's History*

WGST 556 *Seminar in Language Variation*

WGST 576 *Topics in U.S. Women's History*

WGST 577 *Buddhism, Gender, Society*

WGST 580 *Sex, Sanctity, and Psychoanalysis*

WGST 581 *Cultural Studies*

WGST 585 *Postcolonialism and After*

III. Annual Colloquium Requirement

Graduate certificate students will participate in a colloquium involving a series of four speakers over the course of a year, to be offered annually at Rice and organized by SWG. Colloquium attendance by graduate certificate students constitutes an official requirement for the certificate. Colloquium topics will be determined by the SWG Steering Committee with a view to highlighting emerging knowledge in the field of women's studies. The colloquium will provide graduate students with the opportunity to engage in sustained intellectual exchange with leading women's studies scholars and to participate in cutting edge work in the field.

SUBSURFACE GEOSCIENCE

THE WIESS SCHOOL OF NATURAL SCIENCES

DIRECTOR

Alan Levander

Professors

John B. Anderson

Andrew R. Barron

Katherine B. Ensor

Hans G. Ave Lallemand

Neal F. Lane

Dale S. Sawyer

Manik Talwani

ASSOCIATE PROFESSORS

Gerald R. Dickens

André W. Droxler

Colin A. Zelt

ASSISTANT PROFESSOR

Julia Morgan

ADJUNCT PROFESSOR

Stephan H. Danbom

LECTURER

W. C. Rusty Riese

FACULTY FELLOW

Kristen M. Kulinowski

DEGREES OFFERED: MS

Rice University introduced a professional master's degree in subsurface geoscience in fall 2003. This degree is designed for students who wish to become proficient in applying geological knowledge and geophysical methods to finding and developing reserves of oil and natural gas. Students can specialize in one of three focus areas: information technology, geology, and geophysics. The information technology focus area prepares students to apply IT principles to the rapidly growing industry need to store, access, and interpret very large and diverse geological, geophysical, cultural, and infrastructural datasets. The geology focus area prepares students to be explorationists, with strong skills in using seismic and other geophysical methods along with geological principles to find oil and natural gas. The geophysics focus area prepares students to become technical experts in aspects of exploration seismology.

The subsurface geoscience degree is one of three tracks in the new Professional Master's Program at Rice housed in the Wiess School of Natural Sciences. These master's degrees are designed for students seeking to gain further scientific core expertise coupled with enhanced management and communication skills. These degrees instill a level of scholastic proficiency that exceeds that of the bachelor's level, and they create the cross-functional aptitudes needed in modern industry. This program will allow students to move more easily into management careers in consulting or research and development, design, and/or marketing of new science-based products.

DEGREE REQUIREMENTS FOR MS IN SUBSURFACE GEOSCIENCE

In addition to core science courses, students are required to complete a three- to six-month internship and take a set of cohort courses focusing on business and communication. Students select a group of elective courses from one of three focus areas: geology, geophysics, or information geology. Students must present their internship project in both oral and written form in the Professional Master's Seminar.

Part-time students who already work in their area of study may fulfill the internship requirement by working on an approved project with their current employer. For

general university requirements for graduate study, see pages 56–58, and see also Professional Degrees, page 58.

ADMISSION

Admission to graduate study in subsurface geoscience is open to qualified students holding a bachelor's degree in science that includes coursework in general chemistry, physics, calculus, differential equations, and linear algebra. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Science core courses:

ESCI 417 Petroleum Industry Economics and Management (S)

ESCI 420 Modern Industrial Exploration Techniques (S)

ESCI 441 Geophysical Data Analysis (F)

ESCI 442 Exploration Geophysics I (F)

ESCI 444 Exploration Geophysics II (S)

Cohort courses:

MGMT 750 Management in Science and Engineering (F)

NSCI 501 Professional Master's Seminar (E, S)
[required for **two** semesters]

NSCI 512 *Professional Master's Project* (E,S)

Plus a single course from the following:

ENST 312 *Environmental Battles in the 21st Century: Houston as Microcosm* (S)

PHIL 307 *Social and Political Philosophy* (F)

PHIL 316 *Philosophy of Law* (F)

POLI 337 *Public Policy and Bureaucracy* (F)

POLI 338 *Policy Analysis* (S)

INTERNSHIP

An internship under the guidance of a host company, government agency, or national laboratory. A summary of the internship project is required in both oral and written form as part of the Professional Master's Project.

ELECTIVE COURSES

NOTE: Each of these electives is not offered every year, and some courses may have prerequisites or require instructor permission.

Students will choose five electives, three of which should be chosen from one of the focus areas listed below. Recommended courses for each focus area include, but are not limited to, the following:

Information Technology

COMP 429 *Introduction to Computer Networks* (S)

ESCI 454 *Geographic Information Science* (F)

STAT 310 *Probability and Statistics* (F, S)

STAT 410 *Introduction to Statistical Computing and Computer Models* (F, S)

Geology Focus Area

ESCI 415 *Petroleum Geology* (S)

ESCI 427 *Seismic Sequence Stratigraphy* (S)

ESCI 428 *Interpretation of Reflection Seismograms* (F)

ESCI 450 *Remote Sensing* (S)

ESCI 463 *Advanced Structural Geology* (F)

ESCI 504 *Siliciclastic Depositional Systems* (F)

ESCI 505 *Applied Sedimentology* (F)

ESCI 506 *Carbonate Depositional Systems* (S)

Geophysics Focus Area

CENG 571 *Flow and Transport through Porous Media I* (S)

ESCI 427 *Seismic Sequence Stratigraphy* (S)

ESCI 428 *Interpretation of Reflection Seismograms* (F)

ESCI 454 *Geographic Information Science* (F)

ESCI 461 *Seismology I* (F)

ESCI 542 *Seismology II* (F)

STAT 310 *Probability and Statistics* (F, S)

Additional Electives

CAAM 378 *Introduction to Operations Research* (F)

ECON 486 *Energy Economics* (S)

CEVE 322 *Engineering Economics for Engineers* (F)

MGMT 617 *Managerial Decision Making* (S)
MGMT 636 *Systems Analysis and
Database Design*
MGMT 661 *International Business Law* (S)
MGMT 674 *Production and Operations
Management* (F)

MGMT 676 *Project Management/Project
Finance* (S)
MGMT 721 *General Business Law* (S)
MGMT 751 *New Venture Creation for Science
and Engineering* (S)

PROFESSIONAL SCIENCE MASTER'S 5TH YEAR DEGREE OPTION FOR RICE UNDERGRADUATES

Rice students have an option to achieve the MS in subsurface geoscience by adding an additional 5th year to the four undergraduate years of science studies. Advanced Rice students in good standing apply during their junior year, then start taking required core courses of the subsurface geoscience program during their senior year. A plan of study based on their particular focus area will need to be approved by the track director and the PSM coordinator.

UNIVERSITY COURSES

University courses provide opportunities for dialogue across disciplinary and departmental boundaries. They are an experiment in curriculum development, directed toward students interested in interdisciplinary subjects beyond their elected major.

See UNIV in the Courses of Instruction section.

VISUAL ARTS

THE SCHOOL OF HUMANITIES

CHAIR

Karin Broker

PROFESSORS

Karin Broker

Basilios N. Poulos

George Smith

Geoff Winningham

ASSOCIATE PROFESSORS

Brian M. Huberman

Darra Keeton

John Sparagana

ARTIST TEACHER

Paul Hester

VISITING LECTURER

Gary Feuge

DEGREES OFFERED: BA, BFA

Department of Visual Arts majors are students who declare a major in the studio arts (drawing, digital video and film production, painting, photography, printmaking, or sculpture). Each student will discuss with the faculty advisor the selection of courses and any other matters of concern in the student's academic life, such as study and travel abroad, scholarships and internships, career goals or options, etc.

DEGREE REQUIREMENTS FOR BA IN VISUAL ARTS

For general university requirements, see Graduation Requirements (pages 14-15).

Single Major in Visual Arts (12 courses are required)

ARTV 225 *Basic Drawing I*

ARTV 205 *Photography I*, ARTV 311 *Intaglio I*, or
ARTV 327 *Documentary Production*

ARTV 301 *Painting*, or ARTV 325 *Life Drawing*
or ARTV 337 *Color Drawing* or ARTV 425
Advanced Drawing

ARTV 365 *Sculpture I*

Six (6) courses in studio arts (ARTV) and theater design (THEA 300 *Introduction to Theater Design*, THEA 304 *Costume Design*, THEA 305 *Lighting Design*, or THEA 306 *Scenic Design*)—open selections qualified by course prerequisites and in consultation with a studio art faculty advisor.

Two (2) courses in art or film criticism/theory (ARTV 390 *Investigating Drawing: Theory and Practice* or ARTV 432 *Film Genre: The Western*) or art history (HART)—open selections qualified by course prerequisites and in consultation with a studio art faculty advisor.

TRANSFER CREDIT

No more than two (2) courses may be transferred out of the ten (10) for a single studio major, or eight (8) for a double major. The two (2) transfer credit courses must be studio practice courses required for all majors. Advanced placement credit may not be used by art majors to fulfill department requirements.

Double Major in Visual Arts (10 courses required)

ARTV 225 *Basic Drawing*

ARTV 205 *Photography I* or ARTV 311 *Intaglio I* or
ARTV 327 *Documentary Production* or ARTV
365 *Sculpture I*

ARTV 301 *Painting*, or ARTV 325 *Life Drawing*
or ARTV 337 *Color Drawing* or ARTV 425
Advanced Drawing

Five (5) courses in studio arts (ARTV) and theatre design (THEA 300 *Introduction to Theatre Design* or THEA 304 *Costume Design* or THEA 305 *Lighting Design* or THEA 306 *Scenic Design*)—open selections qualified by course prerequisites and in consultation with a studio art faculty advisor.

Two (2) courses in art or film criticism/theory (ARTV 390 *Investigating Drawing: Theory and Practice* or ARTV 432 *Film Genre: The Western*) or art history (HART)—open selections qualified by course prerequisites and in consultation with a studio art faculty advisor.

DEGREE REQUIREMENTS FOR A BACHELOR OF FINE ARTS DEGREE (BFA)

Students with a BA degree in art from Rice University or an equivalent degree from another university may enter the Bachelor of Fine Arts (BFA) program, which consists of a fifth year of intensive study in the creative arts. Students with an undergraduate major other than art may, in exceptional cases, be admitted.

For the BFA degree, a student must complete a total of 30 semester hours in approved courses, at the 300 level or above. In addition to the usual departmental upper-level courses there are special fifth-year courses for BFA candidates only. The purpose of the fifth-year BFA is to provide an opportunity for concentrated independent work. The first semester is provisional. After the final critique of the first semester, the student will be informed if they will be allowed to continue in the BFA program.

Information about application forms, deadlines, and admission standards is available from the Office of Admission.

EXHIBITIONS, LECTURES, AND ARTS PROGRAMS AT RICE

The Department of Visual Arts mounts several art and photography exhibitions each year. Exhibitions and related activities organized by the Rice University Art Gallery enrich the teaching program of the Department of Visual Arts as well as the larger university and Houston community.

The department enjoys an ongoing close relationship with local museums and galleries. The department offers opportunities for students to work and study with local museums, galleries, and alternative art spaces by way of collaborative events and programs. The collections and special exhibitions of local museums are often the subject of course lectures.

Lectures, symposia, and talks are sponsored by the department and are designed to bring local, national, and international scholars, critics, and artists to campus to speak on a broad range of topics and current interests.

RICE CINEMA

Rice Cinema, a public alternative film program, is intimately connected with the curriculum both in film and media studies (HART) and in film and photography production (ARTV), and includes frequent guest lecturers, panel discussions, and media events.

Operating for 35 years, Rice Cinema has screened cult films and revivals as well as festivals and retrospectives. Founded as an integral part of the visual arts, Rice Cinema's mission has long crossed boundaries to bring people together to promote scholarly dialogue and cross-cultural interaction. The legendary vision of the de Menil family, Roberto Rossellini, Colin Young, and James Blue is fulfilled by the presence of this unique program on campus.

Each year we screen films from around the world including foreign features, shorts, documentaries, and animation. Rice Cinema reaches beyond the university's hedges to the diverse communities of Houston. We offer a living alternative to the monolithic commercial cinema of Hollywood and have screened films from every continent. Among the internationally known filmmakers who have appeared on our campus over the years are include Werner Herzog, Rakhshan Banietamad, Atom Egoyan, Shirin Neshat, Martin Scorsese, Andy Warhol, George Lucas, and Dennis Hopper.

Rice Cinema works in concert with our academic programs to enrich our students' undergraduate experience. Our film and media studies students are provided state-

of-the-art screening facilities to examine and study the historical and methodological aspects of movies from around the world in 16, 35, or 70 millimeter with Dolby Digital Sound. Film production students can showcase their work during the academic year on our new silver screen in recently renovated projection facilities.

See ARTV, HART, and THEA in the Courses of Instruction section for course descriptions.

THE UNIVERSITY OF MICHIGAN LIBRARY

COURSES OF INSTRUCTION



COURSES OF INSTRUCTION

The course list printed in this catalog is current as of May 6, 2005. For the up-to-date list, please visit:

<http://esther.rice.edu/catalog.html>

COURSE TYPE DEFINITIONS

Cross-listed courses share the same title, credit, description, meeting time and days, instructor, and attributes including repeatability and distribution, etc.

Equivalent courses may share the same attributes like title, description credit and meeting time, but they do not necessarily share all course information.

Graduate/Undergraduate equivalency courses are the graduate/undergraduate versions of courses

Students may not receive credit for cross-listed, equivalent or graduate/undergraduate equivalency courses taken at the same time. If the course is not repeatable, students may not receive credit for cross-listed, equivalent, or graduate/undergraduate equivalency courses taken in different semesters.

ACCO (ACCOUNTING)

Jones School of Management/Management**ACCO 305 INTRODUCTION TO ACCOUNTING (3)**

Survey of basic accounting theory and practice with emphasis on the primary problems of asset valuation and income determination. May not be in any of the following Classification(s): Freshman. Limited enrollment. Offered Fall and Spring

ACCO 406 COST ACCOUNTING (3)

Uses of accounting data to plan and evaluate long-run investment and financing decisions and short-run price, costing, output, and financing decisions of the business firm or public entity. Pre-requisite(s): ACCO 305 and ECON 211. Offered fall.

ACCO 497 INDEPENDENT STUDY (3)

Independent study on an approved project under faculty supervision.

ACCO 498 INDEPENDENT STUDY (3)

See ACCO 497.

AFSC (AIR FORCE SCIENCE)

No College Designated/Air Force Science**AFSC 101 FOUNDATION OF THE USAF I (2)**

Overall roles and missions of the USAF; career fields available. Emphasis on military customs and courtesies, appearance standards, core values, written and personal communications. Introduction to American military history. Offered fall.

AFSC 102 FOUNDATION OF THE USAF II (2)

Continuation of AFSC 101. Offered spring.

AFSC 201 EVOLUTION OF AIR POWER (2)

Key historical events and milestones in the development of air power as a primary instrument of United States national security. Core values and competencies of leaders in the United States air power. Tenets of leadership and ethics. Offered Fall.

AFSC 202 EVOLUTION OF AIR POWER II (2)

Continuation of AFSC 201. Offered spring.

AFSC 301 AIR FORCE LEADERSHIP STUDIES I (3)

Leadership, management fundamentals, professional knowledge, Air Force personnel and evaluation systems, and leadership ethics. Case studies of Air Force leadership and management situations. Offered fall.

AFSC 302 AIR FORCE LEADERSHIP STUDIES II (3)

Continuation of AFSC 301. Offered Spring.

AFSC 401 NATIONAL SECURITY AFFAIRS I (3)

Evolution of the role of national security in a democratic society with emphasis on policy formation, competing values, and organization. Civilian control of the military, roles of the services; functions of the Air Force Commands. Offered fall.

AFSC 402 NATIONAL SECURITY AFFAIRS II (3)

Continuation of AFSC 401. Offered Spring.

ANTH (ANTHROPOLOGY)

School of Social Sciences/Anthropology**ANTH 200 INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE (3)**

Overview of the scientific study of the structure and function of language. Introduces the main fields of linguistics: phonetics, phonology, morphology, syntax, semantics, discourse, historical linguistics, sociolinguistics, and psycholinguistics. Highlights the interdisciplinary relationship of linguistics with anthropology, sociology, psychology, and cognitive sciences. Cross-listed with LING 200. Offered Fall. Instructor(s): Crosswhite.

ANTH 201 INTRODUCTION TO SOCIAL/CULTURAL ANTHROPOLOGY (3)

Introduction to the history, methods, and concepts of social/cultural anthropology, which is devoted to the systematic description and understanding of cultural diversity in human societies. Offered Fall. Instructor(s): Georges.

ANTH 203 HUMAN ANTIQUITY: AN INTRODUCTION TO PHYSICAL ANTHROPOLOGY AND PREHISTORY (3)

This course offers a broad introduction to the human past as revealed by evolutionary studies of both biochemical and fossil evidence, and by archaeological studies of human cultural behavior. Offered Fall. Instructor(s): S. McIntosh.

ANTH 205 INTRODUCTION TO ARCHAEOLOGY (3)

An introduction to the elementary concepts of the discipline through a series of case studies. Offered Fall. Instructor(s): R. McIntosh.

ANTH 235 NANOTECHNOLOGY: CONTENT AND CONTEXT (3)

Nanotechnology is science and engineering resulting from the manipulation of matter's most basic building blocks: atoms and molecules. This course is designed for humanities and science students who want to explore the content of nanotechnology, (e.g., the methods of visualization, experimentation, and manufacture, and technical feasibility) with the social context of nanotechnology (issues of ethics, regulation, risk assessment, history, funding, intellectual property, controversy and conflict). Preference will be given to freshmen and sophomore students. Register for CHEM 235 to receive Group 3 distribution credit; register for ANTH 235 to receive Group 2 distribution credit. You may receive credit only for one group, not both. Cross-listed with CHEM 235. Limited enrollment. Offered Fall. URL: www.kelty.rice.edu/235/. Instructor(s): Kulinowski; Kelty.

ANTH 280 ANTHROPOLOGY OF THE MIDDLE EAST (3)

This course provides an introduction to and critical examination of the extensive ethnographic literature written by sociocultural anthropologist on the peoples and cultures of the Middle East (including North Africa). Major themes of this literature are reviewed and analyzed, and current trends are studied by reading recent works. Not offered Fall and Spring

ANTH 290 THE HISTORY AND ETHNOGRAPHY OF THE (TO BE NAMED) (3)

This course focuses intensively on the history and ethnography of a single people, the selection of which changes from year to year. Using all available materials, this course provides an introduction to the approaches of the discipline and how they have changed, registered by the different ways anthropologists and others have represented the same subjects over time. Not offered Fall and Spring. Instructor(s): Marcus.

ANTH 298 BIOTECHNOLOGY, 1900 TO NOW (3)

The technical manipulation of living matter from humans, animals and plants is both a scientific and a social undertaking. This course is designed for humanities and science students who want to know more about how biotechnology came into existence, and the questions, controversies and changes which come with the ability to engineer living things. A series of case studies of contemporary events in cloning, patenting, genetically modified organisms, and stem cell research will be set in the context of the 20th century history of biotechnology. Limited enrollment. Not offered Fall and Spring. URL: www.owlnet.rice.edu/~anth298/. Instructor(s): Landecker.

ANTH 300 LINGUISTIC ANALYSIS (3)

A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, grammatics causatives. Cross-listed with LING 300. Pre-requisite(s): LING 200 or ANTH 200. Offered Spring.

ANTH 301 PHONETICS (3)

Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Cross-listed with LING 301. Pre-requisite(s): LING 200 or ANTH 200 or permission of instructor. Offered Fall. Instructor(s): Niedzielsky.

ANTH 305 HISTORICAL LINGUISTICS (3)

Exploration of the nature of language change. Topics covered include sound change syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Cross-listed with LING 305. Pre-requisite(s): LING 300 or ANTH 300 or ANTH 311 or WGST 333 or permission of instructor. Not offered Fall and Spring. Instructor(s): Bovern.

ANTH 306 HISTORY OF ANTHROPOLOGICAL IDEAS (3)

An introduction to the history of anthropology, its theories, and methods. The emphasis is upon social and cultural anthropology. Graduate/Undergraduate version: ANTH 506. Offered Fall. Instructor(s): Faubion.

ANTH 307 ANTHROPOLOGICAL DIRECTIONS FROM THE SECOND WORLD WAR TO THE PRESENT (3)

A sequel to ANTH 306/506, the course explores turns and trends in sociocultural research and critique during the past half-century. Special attention is paid to the rise and fall of structuralism, the problematization of "the primitive," and the proliferation of theories of "practice". Graduate/Undergraduate version: ANTH 507. Offered Spring. Instructor(s): Faubion.

ANTH 308 HISTORY AS A CULTURAL MYTH (3)

Explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Cross-listed with WGST 336. Graduate/Undergraduate version: ANTH 508. Offered Fall. Instructor(s): Taylor.

ANTH 309 GLOBAL CULTURES (3)

This course will examine specific cultural debates and issues that have "overflowed" national boundaries. Topics will include student movements, democracy and citizenship, and the internationalization of professional and popular culture. Graduate/Undergraduate version: ANTH 509. Not offered Fall and Spring.

ANTH 310 CONTEMPORARY CHINESE CULTURE (3)

This introductory course is designed to encourage ways of thinking about: Cultura China—a broad-ranging concept that includes the People's Republic of China, the newly established Special Administrative Region (SAR) of Hong Kong, the Republic of China on Taiwan, and overseas Chinese communities throughout the world. Not offered Fall and Spring.

ANTH 311 MASCULINITIES (3)

This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home, and war. Cross-listed with WGST 333. Graduate/Undergraduate version: ANTH 511. Not offered Fall and Spring. Instructor(s): Taylor.

ANTH 312 AFRICAN PREHISTORY (3)

Thematic coverage of developments throughout the continent from the Lower Paleolithic to medieval times, with emphasis on food production, metallurgy and the rise of cities and complex societies. Graduate/Undergraduate version: ANTH 512. Repeatable for Credit. Offered Fall. Instructor(s): R. McIntosh.

ANTH 313 LANGUAGE AND CULTURE (3)

Investigates the relation between language and thought, language and world view, language and logic. Cross-listed with LING 313. Graduate/Undergraduate version: ANTH 513. Repeatable for Credit. Offered Fall. URL: www.owl.net.rice.edu/~ANTH313. Instructor(s): Tyler.

ANTH 314 GENETICS: SCIENCE AND SOCIETY (3)

The course uses an interdisciplinary perspective to examine the claims and counter-claims made regarding genetics and new technologies for identifying and manipulating genetic material. The course will cover biological basics of genes, DNA, and epigenesis; cultural and historical aspects of approaches to genetics, including eugenics past and present; and ethical issues arising from new genetic technologies. Cross-listed with BIOS 307, UNIV 314. Offered Spring. Instructor(s): S. McIntosh; Georges; Novotny.

ANTH 315 INTRODUCTION TO THE ANTHROPOLOGY OF INFORMATION AND NETWORKS (3)

History and social study of information and network technologies. Thematic focus on communication, exchange, information/knowledge production and institutions of property and contract law. Empirical topics include networking technologies, money and financial institutions, free software and open source, cryptography, standards bodies, history of the internet, patents, copyright, trademark, and contract law. Includes North America, Europe, and South Asia. Graduate/Undergraduate version: ANTH 515. Offered Fall. Instructor(s): Keltly.

ANTH 316 CULTURAL ANALYSIS (3)

This course is specifically intended for lower level undergraduates as a means of gaining familiarity with the analytical tradition of cultural anthropology from the beginning of the Twentieth Century. The course is intended to provide students with background for upper level courses in the department. Not offered Fall and Spring.

ANTH 318 GRAPHING, COUNTING, FILMING: REPRESENTATION IN SCIENCE AND ANTHROPOLOGY (3)

Cinema originated in the inscription of physiology on film; this was quickly followed by biology, ethology and ethnology done by cinematography. This course examines the historical, critical and methodological relations between film as medium or method of visual investigation and cinema as site of cultural analysis. Cross-listed with HART 381. Graduate/Undergraduate version: ANTH 518. Not offered Fall and Spring. Instructor(s): Landecker.

ANTH 319 SYMBOLISM AND POWER (3)

This course will use both traditional and contemporary readings to emphasize the trend in cultural analysis from a view of culture as monolithic and static to perceptions that any culture is internally varied and contradictory as well as changing and complex. Graduate/Undergraduate version: ANTH 519. Not offered Fall and Spring. Instructor(s): Taylor.

ANTH 320 PUBLIC SPHERES AND PUBLIC CULTURES (3)

This course will discuss some of the basic issues surrounding civil society and the public sphere. It will look at specific contemporary debates in public culture, such as multiculturalism, identity politics, and the crisis of contemporary liberalism. Graduate/Undergraduate version: ANTH 520. Not offered Fall and Spring.

ANTH 321 TEXT AS PROPERTY, PROPERTY AS TEXT: ACROSS THE AGES (3)

Examines forms and norms of authorship and ownership from antiquity to the present. What is an author? Is a text public or private property? What are the licit/illicit forms of rewriting and appropriating a text, and how are those forms defined? This class investigates historically these and other issues. Cross-listed with CLAS 311. Not offered Fall and Spring. www.smatter.rice.edu/321/. Instructor(s): Kely; McGill.

ANTH 322 CULTURES AND IDENTITIES: RACE, ETHNICITY, AND NATIONALISM (3)

How do cultural conceptions of race, ethnicity, and nationalism shape who we think we are? How are these ideas related to Western views of the relations between nature and society, and how do these differ from those in other cultures? Graduate/Undergraduate version: ANTH 522. Not offered Fall and Spring.

ANTH 323 INTRODUCTION TO PHONOLOGY (3)

Introduction to analysis techniques and theory concerning patternings of sounds in the world's languages. The course will involve extensive work with non-English data sets and development of analytical techniques such as identification of sound alternations or restrictions, and formalization of abstract representations and rules to account for them. Cross-listed with LING 311. Pre-requisite(s): ANTH 200 and ANTH 301. Offered Spring. Instructor(s): Crosswhite; Niedzielsky.

ANTH 325 SEX, SELF, AND SOCIETY IN ANCIENT GREECE (3)

An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problemization of desire and self-control. Cross-listed with WGST 332. Graduate/Undergraduate version: ANTH 525. Not offered Fall and Spring. Instructor(s): Faubion.

ANTH 326 THE ANTHROPOLOGY OF LAW (3)

Social conflict and methods of dispute management in Western and non-Western societies. Comparison of legal institutions in band, tribal, early state, and complex industrial societies. Not offered Fall and Spring.

ANTH 327 GENDER AND SYMBOLISM (3)

Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Cross-listed with WGST 350. Graduate/Undergraduate version: ANTH 527. Not offered Fall and Spring. Instructor(s): Taylor.

ANTH 328 VIOLENCE, TERROR, AND SOCIAL TRAUMA (3)

This course addresses the central place of violence in our society and its relations with social and political terror in other cultures. Readings, film, and theater probe everyday violence as well as spectacular events of our times. Aftermath, including cross generational trauma, will be explored. Graduate/Undergraduate version: ANTH 528. Offered Spring. Instructor(s): Taylor.

ANTH 329 BODIES, SENSUALITIES, AND ART (3)

Cross-cultural approaches to art and the senses. Students may engage any medium. Emphasis to be placed on issues generated from performance in the arts rather than from academia. Contrasts art and academic knowledge to explore alternative epistemologies and aesthetics. Graduate/Undergraduate version: ANTH 529. Offered Fall. Instructor(s): Taylor.

ANTH 335 ANTHROPOLOGY AS CULTURAL CRITIQUE (3)

The critical assessment and interpretation of Euroamerican social institutions and cultural forms have always been an integral part of anthropology's intellectual project. This course will explain the techniques, history, and achievements of such critique. It will also view the purpose in the context of a more generational tradition of critical social thought in the West, especially the U.S. Graduate/Undergraduate version: ANTH 535. Not offered Fall and Spring. Instructor(s): Marcus.

ANTH 338 READING POPULAR CULTURE (3)

The course examines a number of cases from popular genres—romance, novels, television sit-coms, tourist sites, movies, rock music and submits them to a variety of theoretical approaches from disciplines such as anthropology, sociology, literary studies, and philosophy. Graduate/Undergraduate version: ANTH 538. Offered Spring.

ANTH 343 NEW RELIGIOUS MOVEMENTS IN AFRICA (3)

Discusses new religious movements and the religious, sociological, and political factors leading to their rise, also missionary and colonial reactions to them. Examines their relationship to indigenous religions, political praxis, their focus on this-worldly salvation in the wake of political and economic marginality. Cross-listed with RELI 342. Offered Spring. Instructor(s): Bongmba.

ANTH 344 CITY/CULTURE (3)

The course treats both the theorization and the ethnographic exploration of the urban imaginary; urban spaces and practices; urban, suburban, and post-urban planning; city-states, colonial cities, and capital cities; and the late 20th century metropolis. Graduate/Undergraduate version: ANTH 544. Not offered Fall and Spring.

ANTH 345 THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT (3)

An examination of the way that archaeological evidence of the past has been used and viewed by particular groups at different times. Using case studies, the course considers issues of gender, race, Eurocentrism, political domination and legitimacy that emerge from critical analysis of representations of the past by archaeologists, museums, and collectors. Graduate/Undergraduate version: ANTH 545. Offered Fall. Instructor(s): S. McIntosh.

ANTH 347 THE U.S. AS A FOREIGN COUNTRY (3)

The course looks at selected aspects of American culture and society from an anthropological point of view. Readings derive from the works of both foreign and native observers, past and present. Graduate/Undergraduate version: ANTH 547. Not offered Fall and Spring. Instructor(s): Faubion.

ANTH 351 CULTURES OF NATIONALISM (3)

This course will examine the cultural dimensions of nationalism, particularly around the creation of forms of "peoplehood" that seem to be presupposed by almost all nation-building projects. Texts to be analyzed will include the Declaration of Independence, the United States Constitution, and the Declaration of the Rights to Man. Graduate/Undergraduate version: ANTH 551. Not offered Fall and Spring.

ANTH 353 CULTURES OF INDIA (3)

Summary of the prehistory, ethnography, and ethnology of the Indian subcontinent. Special emphasis on Hinduism, Buddhism, and Indian philosophy. Graduate/Undergraduate version: ANTH 553. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Tyler.

ANTH 358 THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLE (3)

In contrast with people self-identified within political structures of the First, Second and Third Worlds, Fourth World peoples are, generally speaking, "stateless peoples". In this course we will examine both how this "unofficial" status affects their struggle for self-determination and how native peoples engage traditional beliefs and practices for self-empowerment. Through readings, films and speakers we will examine current conflicts facing indigenous people in North and South America, the Soviet Union, Europe, Asia, and Australia. Graduate/Undergraduate version: ANTH 558. Not offered Fall and Spring.

ANTH 361 LATIN AMERICAN TOPICS (3)

This is an introductory course designed for students interested in all or some of the following topics: Latin America, popular culture and cultural production, the study of cultural aspects of processes of globalization and Cultural Anthropology. Not offered Fall and Spring.

ANTH 362 ARCHEOLOGICAL FIELD TECHNIQUES (3)

Methods used in field work, laboratory analysis, and interpretation of archaeological data from a local site excavated by the class. Graduate/Undergraduate version: ANTH 562. Pre-requisite(s): ANTH 205. Repeatable for Credit. Offered Spring. Instructor(s): R. McIntosh.

ANTH 363 EARLY CIVILIZATIONS (3)

A comparative study of the civilizations of Mesopotamia, Egypt, the Indus, China, and the Maya, emphasizing the causes and conditions of their origins. Graduate/Undergraduate version: ANTH 563. Not offered Fall and Spring. Instructor(s): R. McIntosh.

ANTH 364 HISTORICAL ARCHAEOLOGY FIELD TECHNIQUES (3)

In this course, basic field archaeology techniques are taught on-site in an historical archaeology context; with emphasis on excavation methods, artifact recovery, and recording techniques. Students will excavate stone structures and a variety of historical deposits. Fieldwork takes place in Senegal, June-July. Offered Spring. Instructor(s): McIntosh.

ANTH 367 HUMAN EVOLUTION (3)

Covers the fossil evidence for the evolution of primates and hominids, insights into early hominid behavior from comparative studies in primate ecology and behavior, and how evolution has shaped contemporary human diversity and behavior. Pre-requisite(s): ANTH 203 or BIOS 202 or BIOS 344. Not offered Fall and Spring Instructor(s): S. McIntosh.

ANTH 368 PRIMATOLOGY (3)

An introduction to primate diversity, ecology, and sociality based on what is now known from field studies of wild primate populations. Not offered Fall and Spring.

ANTH 370 ARCHAEOLOGICAL LABORATORY TECHNIQUES AND ANALYSIS (3 TO 6)

Techniques of processing, conserving and recording archaeological materials are emphasized. Students will become familiar with procedures for pottery, glass, metals, and building materials in addition to plant and animal remains. Course work includes lectures, hands-on lab work, and informal discussion. Lab takes place in Senegal, June-July. Offered Spring. Instructor(s): McIntosh.

ANTH 371 MONEY AND EVERYDAY LIFE (3)

Money is such a part of everyday modern life that it is hard for us to imagine living without it. Yet in many pre-modern societies, gift-exchange was as important as money is in our own. This course will look at the cultural dimensions of systems of exchange, ranging from gift-giving among Northwest Coast Indians to foreign currency exchanges between financial institutions. Along with the classic work of Marx and Simmel on money and capital, we will also cover some of the anthropological work on gifts and exchange, such as that of Mauss, Levi-Strauss, and Bourdieu, as well as some of the contemporary debates initiated by Bataille and Derrida. Graduate/Undergraduate version: ANTH 571. Not offered Fall and Spring.

ANTH 372 CULTURES OF CAPITALISM (3)

Most of us think of capitalism as primarily an economic phenomenon. Yet, it also has a profoundly cultural dimension that includes culturally specific forms of risk taking, speculation, and even money and capital. This course will explore contemporary phenomenon such as speculation, booms and busts, and the stock market, and use them to discuss some of the classic work on the "cultures of capitalism", including Marx, Simmel, Kracauer, and contemporary writers such as Jameson, DeBord and Virillio. This is not an introductory course in economics but will look at how people talk and write about culture and capitalism. Graduate/Undergraduate version: ANTH 572. Not offered Fall and Spring.

ANTH 373 THE LINGUISTIC TURN: LANGUAGE, NARRATION, AND MODERNITY (3)

This course will look at the role of narration and the construction of some of the basic forms of modernity and post-modernity, ranging from nationalism to performative approaches to identity. The first half of the course will introduce the basic linguistic tools necessary to analyze a variety of cultural materials, and the second half will be devoted to analyzing specific texts and student presentations. The course does not presuppose any technical training in linguistic or literary analysis. Cross-listed with LING 373. Graduate/Undergraduate version: ANTH 573. Not offered Fall and Spring.

ANTH 375 ABRACADABRA: LANGUAGE AND MEMORY IN SCIENCE AND TECHNOLOGY (3)

The history of language, writing, and formal notational systems in science and technology. Includes ancient and renaissance arts of memory, universal languages and the development of the calculus, secret writing and cryptography, the graphical method, the rise of the 'scriptural' mode of DNA, the development and use of programming languages, psychoanalysis. No technical knowledge is assumed. Graduate/Undergraduate version: ANTH 575. Not offered Fall and Spring. URL: www.kelty.rice.edu/375/index.html. Instructor(s): Kelty.

ANTH 379 GIFTS AND CONTRACTS (3)

This course uses philosophical, literary, and economic approaches to examine the role that gifts and contracts play in everyday life and in constructing society and culture. Authors discussed include: Derrida, Marx, Mauss, David Lewis, Schelling, Von Neumann and Morgenstern. Graduate/Undergraduate version: ANTH 579. Not offered Fall and Spring

ANTH 380 CULTURE, SECURITY, AND HUMAN RIGHTS (3)

Course addresses theories of risk society and their relationship to concepts of culture, gender, security and human rights-based social movements. It addresses contemporary reorganizations of domestic, cultural and geopolitical space and also examines the increasingly intense discussions surrounding 'cultures' of fear, risk, safety, civility, governance, biopolitics and rights. Cross-listed with HIST 380, WGST 380. Offered Spring. Instructor(s): Chivens.

ANTH 381 MEDICAL ANTHROPOLOGY (3)

Cultural, ecological, and biological perspectives on human health and disease throughout the world. Graduate/Undergraduate version: ANTH 581. Limited enrollment. Offered Spring. Instructor(s): Georges.

ANTH 383 HUMAN ADAPTATION (3)

Explanations for the range and patterns of human biological differences in the context of theories of adaptation. Integrates themes from human genetics, physiology, and cultural studies. Graduate/Undergraduate version: ANTH 583. Not offered Fall and Spring.

ANTH 388 THE LIFE CYCLE: A BIOCULTURAL VIEW (3)

The human life cycle from conception to death. Focus is on the interaction between biological processes and culture. Cross-listed with WGST 335. Graduate/Undergraduate version: ANTH 588. Not offered Fall and Spring. Instructor(s): Georges.

ANTH 390 CULTURE, NARRATION, AND SUBJECTIVITY (3)

This course examines how linguistic and narrative structures interact to produce specific cultures of interpretation. The focus will be on linguistic and literary representations of subjectivity. This course will use novels by Western authors, such as Virginia Woolf and Dostoevsky, and some Chinese materials as comparison. Graduate/Undergraduate version: ANTH 590. Not offered Fall and Spring.

ANTH 395 CULTURES AND COMMUNICATION (3)

Investigates the relations between different forms of communication - speech, print, film and cultural constructions such as audiences, publics, and communities. Graduate/Undergraduate version: ANTH 595. Not offered Fall and Spring

ANTH 402 SYNTAX AND SEMANTICS (3)

Study of semantic categories and their formal expression in morphological, syntactic, and lexical units and patterns. Cross-listed with LING 402. Not offered Fall and Spring.

ANTH 403 ANALYZING PRACTICE (3)

A critical review of work informed by what has sometimes been deemed the "key concept" of anthropological theory and research since the 1960s. Special attention will be devoted to the analytics of practice developed by Foucault, by Bourdieu, and by de Certeau. Graduate/Undergraduate version: ANTH 603. Not offered Fall & Spring. Instructor(s): Faubion.

ANTH 404 INDEPENDENT STUDY (1 TO 9)

Directed reading and preparation of written papers on anthropological subjects not offered in the curriculum and advanced study of subjects on which courses are offered. Repeatable for Credit. Offered Fall and Spring.

ANTH 406 COGNITIVE STUDIES (3)

Relations between thought, language, and culture. Special emphasis given to natural systems of classification and the logical principles underlying them. Cross-listed with LING 406. Graduate/Undergraduate version: ANTH 606. Repeatable for Credit. Offered Spring. Instructor(s): Tyler.

ANTH 407 FIELD TECHNIQUES AND ANALYSIS (3)

Techniques and practice in the observation, analysis, and recording of a human language. Includes discussion of ethical issues in working with indigenous peoples. Cross-listed with LING 407. Graduate/Undergraduate version: ANTH 607. Recommended prerequisite(s): ANTH 300, 301, 402 and permission of instructor. Limited enrollment. Offered Fall.

ANTH 408 FIELD TECHNIQUES AND ANALYSIS (3)

Continuation of ANTH 407/LING 407. Cross-listed with LING 408. Graduate/Undergraduate version: ANTH 608. Offered Spring.

ANTH 409 AUTHORSHIP AND OWNERSHIP (3)

A course on the relations that bind persons to particular things or ideas as property. Looks at forms of ownership as embodied by patents, copyright, brand names and trademarks, and explores how such laws, marks and names functions as useful anthropological objects. Graduate/Undergraduate version: ANTH 609. Not offered Fall & Spring. Instructor(s): Landecker.

ANTH 410 THE ETHNOGRAPHY OF DEVELOPMENT (3)

This course suggests the necessity of a solid ethnographic grounding for both practical development work and for further intellectual growth of the discipline. Offered occasionally. Graduate/Undergraduate version: ANTH 610. Not offered Fall and Spring.

ANTH 411 NEUROLINGUISTICS (3)

Study of languages and the brain. Includes localization of speech, language, and memory functions, hemispheric dominance, pathologies of speech and language associated with brain damage, and hypotheses of the representation and operation of linguistic information in the cortex. Cross-listed with LING 411. Graduate/Undergraduate version: ANTH 611. Offered Fall. Instructor(s): Lamb.

ANTH 412 RHETORIC (3)

Overview of classical theories. Intensive discussion of contemporary theories and applications in a wide variety of disciplines. Cross-listed with LING 410. Graduate/Undergraduate version: ANTH 612. Repeatable for Credit. Offered Fall. Instructor(s): Tyler.

ANTH 413 POST SOCIALISM AND EUROPEANIZATION (3)

Interdisciplinary seminar examines processes and meanings of EU expansion and postsocialism. Addresses the politics of knowledge surrounding cultural and historical formations of policy and integration in contemporary Europe, and narratives such as modernity, sovereignty, security and nationalism, in light of ongoing reconfiguration of European political and cultural spaces. Cross-listed with HIST 413. Graduate/Undergraduate version: ANTH 613. Limited enrollment. Offered Fall. Instructor(s): Chivens.

ANTH 414 HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY (3)
Application of linguistic theory and method in the analysis of cultural materials. Includes discourse analysis and the structure and interpretation of texts and conversation. Cross-listed with LING 414. Graduate/Undergraduate version: ANTH 614. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Tyler.

ANTH 415 THEORIES OF MODERNITY/POSTMODERNITY (3)
An advanced course for graduate students and undergraduate majors with interests in the interdisciplinary field of cultural studies. Readings in the work of Marx, Weber, and Durkheim, Saussure, Gadamer, Derrida, Bahktin, Foucault, and others. Graduate/Undergraduate version: ANTH 615. Not offered Fall and Spring. Instructor(s): Faubion.

ANTH 418 CAN HUMANS THINK? ANTHROPOS, HUMANISM AND TECHNOLOGY (3)
An upper level reading and research seminar that combines readings in the history of humanism with empirical and theoretical issues from the present. Texts and topics from Kant to JCR Licklider on anthropos and humanism, and examples from current debates: genetic engineering, environmentalism, interfaces and networking technologies, testing technologies, and intellectual property regimes. Emphasis on the three R's. Graduate/Undergraduate version: ANTH 618. Not offered Fall and Spring. Instructor(s): Keltz.

ANTH 419 LAW AND SOCIETY (3)
In addition to focusing on works associated with critical legal studies and its antecedent legal realism, the course will examine a number of cases in the international domain that challenge concepts of civil society arising with the modern nation-state. Graduate/Undergraduate version: ANTH 619. Not offered Fall and Spring.

ANTH 421 AUSTRALIAN LANGUAGES (3)
A course on the structure of Australian languages examining the phonological, morphological, and syncretic systems. Emphasis placed on interaction with original data and making appropriate typological generalizations. Discussion of sociolinguistics, language use, language death and revitalization. Cross-listed with LING 425. Graduate/Undergraduate version: ANTH 621. Pre-requisite(s): LING 200 or ANTH 200 or permission of instructor. Offered Spring. Instructor(s): Bovern.

ANTH 423 AFRICAN MYTHS AND RITUAL (3)
Explore and analyze specific myths and rituals which provide legitimation for community ceremonies and that serve as a basis for the negotiation of power and ideology for members within that community. Readings from classic theorists: Durkheim, Levi-Struass, Edmond Leach, Gennap and Turner, and contemporary theorists: Werbner, Heusch, Comaroff, and Ray. Cross-listed with RELI 423. Offered Fall. Instructor(s): Bongmba.

ANTH 425 ADVANCED TOPICS IN ARCHAEOLOGY (3)
Seminar on selected topics in archaeological analysis and theory. The course will variously focus on ceramic analysis and classification, archaeological sampling in regional survey and excavation, and statistical approaches to data analysis and presentation. Graduate/Undergraduate version: ANTH 625. Pre-requisite(s): ANTH 205 and ANTH 362. Not offered Fall and Spring. Instructor(s): S.McIntosh.

ANTH 430 EXPERIMENTAL WRITING AND ANTHROPOLOGY (3)
Explores relationships between ethnography and other genres. Emphasizes experimental styles, including combinations of ethnographic and personal material, and problems of writing to communicate experiences such as violence and art. Graduate/Undergraduate version: ANTH 630. Offered Spring. Instructor(s): Taylor.

ANTH 440 BIOTECHNOLOGY AND CULTURE (3)
This course focuses on anthropology of the life sciences. We will examine how this work takes contemporary bioscience as a site for cultural analysis, and also the allied proposals that this represents an opportunity to renovate classic anthropological analyses and categories of kinship, reproduction, the body, life, death and identity. Graduate/Undergraduate version: ANTH 640. Not offered Fall and Spring. Instructor(s): Landecker.

ANTH 446 ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY (3)
Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. Graduate/Undergraduate version: ANTH 646. Pre-requisite(s): ANTH 381, or permission of instructor. Limited enrollment. Offered Spring. Instructor(s): Georges.

ANTH 447 MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY (3)
The course explores the strategies of representation, the methodologies, and the diagnostic categories to which anthropologists have resorted in coming to terms with such phenomena as rationalization, economic and informational globalization, and the commodification of culture. Graduate/Undergraduate version: ANTH 647. Not offered Fall and Spring. Instructor(s): Faubion.

**ANTH 450 ANTHROPOLOGY IN THE CONTEMPORARY WORLD:
A SEMINAR FOR MAJORS (3)**

This seminar is designed specifically for juniors and seniors who have declared anthropology as a major, and is intended as an opportunity for them to survey the various applications and points of relevance of anthropology in the rapid transformations of contemporary societies and cultures. It is meant to both assess and challenge the forms of knowledge that anthropology has produced since its inception as a discipline. Not offered Fall and Spring. Instructor(s): Marcus.

**ANTH 455 INTRODUCTION TO SCIENCE AND
TECHNOLOGY STUDIES (3)**

Introduction to the historical and social aspects of science and technology. Directed towards providing social scientists ways to understand the role of science and technology in their field sites and research projects; with additional emphasis on the use of media and internet technologies for qualitative social science research. Graduate/Undergraduate version: ANTH 655. Limited enrollment. Offered Spring. kelty.rice.edu/455/index.html. Instructor(s): Kelty.

ANTH 458 HUMAN OSTEOLOGY (3)

Introduction to the analysis of human skeletal material from archaeological sites. Graduate/Undergraduate version: ANTH 658. Not offered Fall and Spring. Instructor(s): S. McIntosh.

ANTH 460 ADVANCED ARCHAEOLOGICAL THEORY (3)

History and analysis of the major currents of archaeological theory from the Encyclopaedist origins of positivism, through cultural evolutionism and historical particularism, to the New Archaeology and current trends. Graduate/Undergraduate version: ANTH 660. Pre-requisite(s): ANTH 205. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): R. McIntosh.

ANTH 463 WEST AFRICAN PREHISTORY (3)

Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent. Graduate/Undergraduate version: ANTH 663. Not offered Fall and Spring. Instructor(s): S. McIntosh.

ANTH 468 PALAEOCLIMATE AND HUMAN RESPONSE (3)

Palaeoscientists have records extending through the Holocene of forcing processes, such as climate, that influence humans. We examine these records and their impact on past and present society. We explore the concept of social memory, used to understand how past communities use information about climate change and past responses in long term adaptive strategies. Cross-listed with ESCI 468. Graduate/Undergraduate version: ANTH 668. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): R. McIntosh; Droxler.

**ANTH 474 ADVANCED SEMINAR ON THE PREHISTORIC
LANDSCAPE (3)**

The interaction of human geography (cultural ecology) and the physical landscape (geomorphology and physical geography) as applied to past and present settlement on major floodplains. Graduate/Undergraduate version: ANTH 674. Not offered Fall and Spring. Instructor(s): R. McIntosh.

**ANTH 475 PLIO-PLEISTOCENE CLIMATE CHANGE AND HOMINID
ADAPTATION (3)**

Junctures in the evolution of the hominids appear to coincide with shifts in the earth's climate record. We will explore the current status of our knowledge of global climate in the Plio-Pleistocene and of the hominid record from the end of the Miocene to the appearance of *H. sapiens*. Cross-listed with ESCI 475. Graduate/Undergraduate version: ANTH 675. Not offered Fall and Spring. Instructor(s): R. McIntosh; Droxler.

ANTH 482 NON-WESTERN CINEMA: THIRD WORLD CINEMAS (4)

Study of significant national cinemas, film movements, and filmmakers of the Third World from Africa to Latin America and from the Middle East to China. Includes colonial and postcolonial discourses. Cross-listed with HART 482. Graduate/Undergraduate version: ANTH 682. Limited enrollment. Not offered Fall and Spring. Instructor(s): Naficy.

ANTH 483 DOCUMENTARY AND ETHNOGRAPHIC FILM (4)

Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements, with emphasis on the shifting and overlapping of boundaries of fiction and nonfiction genres. Cross-listed with HART 483. Graduate/Undergraduate version: ANTH 683. Not offered Fall and Spring. Instructor(s): Naficy.

**ANTH 484 CULTURE, MEDIA, SOCIETY: EXILE AND DIASPORA
CINEMAS (4)**

Examination of cultural productions as vehicles for communication across national, cultural, and other boundaries, using contemporary theories of culture and media. Includes the creation of meaning and cultural capital, the representation of minority and alternative views, and the construction of individual and group identities. Cross-listed with HART 484. Graduate/Undergraduate version: ANTH 684. Not offered Fall and Spring. Instructor(s): Naficy.

ANTH 490 DIRECTED HONORS RESEARCH (3)

A two-semester sequence of independent research culminating in the preparation and defense of an honors thesis. Open only to candidates formally accepted into the honors program. Instructor permission required. Offered Fall.

ANTH 491 DIRECTED HONORS RESEARCH (3)

A two-semester sequence of independent research culminating in the preparation and defense of an honors thesis. Open only to candidates formally accepted in the honors program. Instructor permission required. Offered Spring.

ANTH 506 HISTORY OF ANTHROPOLOGICAL IDEAS (3)

Graduate/Undergraduate version: ANTH 306. Offered Fall. Instructor(s): Faubion.

ANTH 507 ANTHROPOLOGICAL DIRECTIONS FROM SECOND WORLD WAR TO PRESENT (3)

Graduate/Undergraduate version: ANTH 307. Not offered Fall and Spring. Instructor(s): Faubion.

ANTH 508 HISTORY AS CULTURAL MYTH (3)

Graduate/Undergraduate version: ANTH 308. Offered Fall. Instructor(s): Taylor.

ANTH 509 GLOBAL CULTURES (3)

Graduate/Undergraduate version: ANTH 309. Not offered Fall and Spring.

ANTH 511 MASCULINITIES (3)

Graduate/Undergraduate version: ANTH 311. Not offered Fall and Spring. Instructor(s): Taylor.

ANTH 512 AFRICAN PREHISTORY (3)

Graduate/Undergraduate version: ANTH 312. Repeatable for Credit. Offered Fall. Instructor(s): R. McIntosh

ANTH 513 LANGUAGE AND CULTURE (3)

Cross-listed with LING 513. Graduate/Undergraduate version: ANTH 313. Repeatable for Credit. Offered Fall. www.owl.net.rice.edu/~anth313. Instructor(s): Tyler.

ANTH 515 INTRODUCTION TO THE ANTHROPOLOGY OF INFORMATION AND NETWORKS (3)

Graduate/Undergraduate version: ANTH 315. Offered Fall. Instructor(s): Kely.

ANTH 518 GRAPHING, COUNTING, FILMING: REPRESENTATION IN SCIENCE AND ANTHROPOLOGY (3)

Graduate/Undergraduate version: ANTH 318. Not offered Fall and Spring. Instructor(s): Landecker.

ANTH 519 SYMBOLISM AND POWER (3)

Graduate/Undergraduate version: ANTH 319. Not offered Fall and Spring. Instructor(s): Taylor.

ANTH 520 PUBLIC SPHERES AND PUBLIC CULTURES (3)

Graduate/Undergraduate version: ANTH 320. Not offered Fall and Spring.

ANTH 522 CULTURES AND IDENTITIES: RACE, ETHNICITY, AND NATIONALISM (3)

Graduate/Undergraduate version: ANTH 322. Not offered Fall and Spring.

ANTH 525 SEX, SELF, AND SOCIETY IN ANCIENT GREECE (3)

Cross-listed with WGST 525. Graduate/Undergraduate version: ANTH 325. Instructor(s): Faubion.

ANTH 527 GENDER AND SYMBOLISM (3)

Graduate/Undergraduate version: ANTH 327. Not offered Fall and Spring. Instructor(s): Taylor.

ANTH 528 VIOLENCE, TERROR AND SOCIAL TRAUMA (3)

Graduate/Undergraduate version: ANTH 328. Offered Spring. Instructor(s): Taylor.

ANTH 529 BODIES, SENSUALITIES, AND ART (3)

Graduate/Undergraduate version: ANTH 329. Offered Fall. Instructor(s): Taylor.

ANTH 535 ANTHROPOLOGY AS CULTURAL CRITIQUE (3)

Graduate/Undergraduate version: ANTH 335. Not offered Fall and Spring. Instructor(s): Marcus.

ANTH 538 READING POPULAR CULTURE (3)

Graduate/Undergraduate version: ANTH 338. Offered Spring.

ANTH 544 CITY/CULTURE (3)

Graduate/Undergraduate version: ANTH 344. Not offered Fall and Spring.

ANTH 545 THE POLITICS OF THE PAST: ARCHAEOLOGY IN SOCIAL CONTEXT (3)

Graduate/Undergraduate version: ANTH 345. Offered Fall. Instructor(s): S. McIntosh.

- ANTH 547 THE U.S. AS A FOREIGN COUNTRY (3)**
Graduate/Undergraduate version: ANTH 347. Not offered Fall and Spring. Instructor(s): Faubion.
- ANTH 551 CULTURES OF NATIONALISM (3)**
Graduate/Undergraduate version: ANTH 351. Not offered Fall and Spring.
- ANTH 553 CULTURES OF INDIA (3)**
Graduate/Undergraduate version: ANTH 353. Repeatable for Credit. Offered Spring. Instructor(s): Tyler.
- ANTH 558 THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLES (3)**
Graduate/Undergraduate version: ANTH 358. Not offered Fall and Spring.
- ANTH 562 ARCHEOLOGICAL FIELD TECHNIQUES (3)**
Graduate/Undergraduate version: ANTH 362. Repeatable for Credit. Offered Spring. Instructor(s): R. McIntosh.
- ANTH 563 EARLY CIVILIZATIONS (3)**
Graduate/Undergraduate version: ANTH 363. Not offered Fall and Spring. Instructor(s): R. McIntosh.
- ANTH 571 MONEY AND EVERYDAY LIFE (3)**
Graduate/Undergraduate version: ANTH 371. Not offered Fall and Spring.
- ANTH 572 CULTURES OF CAPITALISM (3)**
Graduate/Undergraduate version: ANTH 372. Not offered Fall and Spring.
- ANTH 573 THE LINGUISTIC TURN: LANGUAGE, NARRATION, AND MODERNITY (3)**
Graduate/Undergraduate version: ANTH 373. Not offered Fall and Spring.
- ANTH 575 ABRACADABRA: LANGUAGE AND MEMORY IN SCIENCE AND TECHNOLOGY (3)**
Graduate/Undergraduate version: ANTH 375. Not offered Fall and Spring. www.kelty.rice.edu/375/index.html. Instructor(s): Kelty.
- ANTH 579 GIFTS AND CONTRACTS (3)**
Graduate/Undergraduate version: ANTH 379. Not offered Fall and Spring.
- ANTH 581 MEDICAL ANTHROPOLOGY (3)**
Graduate/Undergraduate version: ANTH 381. Offered Spring. Instructor(s): Georges.
- ANTH 583 HUMAN ADAPTATION (3)**
Graduate/Undergraduate version: ANTH 383. Not offered Fall and Spring.
- ANTH 588 LIFE CYCLE: A BIOCULTURAL VIEW (3)**
Graduate/Undergraduate version: ANTH 388. Not offered Fall and Spring. Instructor(s): Georges.
- ANTH 590 CULTURE, NARRATION, AND SUBJECTIVITY (3)**
Graduate/Undergraduate version: ANTH 390. Not offered Fall and Spring.
- ANTH 595 CULTURES AND COMMUNICATION (3)**
Graduate/Undergraduate version: ANTH 395. Not offered Fall and Spring.
- ANTH 600 INDEPENDENT STUDY (1 TO 9)**
Offered Fall.
- ANTH 601 GRADUATE PROSEMINAR IN ANTHROPOLOGY (3)**
Mapping the current fields of anthropological discourses, examining the debates in and between each of these fields, and discussing how these debates are conducted in the domains of fieldwork, ethnographic writing, and in the construction of careers in anthropology. Not offered Fall and Spring. Instructor(s): Marcus.
- ANTH 602 ANTHROPOLOGY PROPOSAL WRITING SEMINAR (3)**
This seminar prepares anthropology graduate students to write a successful grant proposal. Basic elements of proposal writing, including problem conceptualization, literature reviews and methods will be covered. Offered Fall. Instructor(s): Georges.
- ANTH 603 ANALYZING PRACTICE (3)**
Graduate/Undergraduate version: ANTH 403. Not offered Fall and Spring. Instructor(s): Faubion.
- ANTH 605 FIELDWORK (4)**
Fieldwork-- In which students pursue ethnographic research, learn to manage information and create presentations using a variety of tools and technologies. Topics and themes change. Offered Fall. www.kelty.rice.edu/605/. Instructor(s): Kelty.
- ANTH 606 COGNITIVE STUDIES (3)**
Graduate/Undergraduate version: ANTH 406. Offered Spring. Instructor(s): Tyler.

ANTH 607 FIELD TECHNIQUES AND ANALYSIS (3)

Cross-listed with LING 507. Graduate/Undergraduate version: ANTH 407. Offered Fall.

ANTH 608 FIELD TECHNIQUES AND ANALYSIS (3)

Graduate/Undergraduate version: ANTH 408. Offered Spring.

ANTH 609 AUTHORSHIP AND OWNERSHIP (3)

Graduate/Undergraduate version: ANTH 409. Not offered Fall and Spring. Instructor(s): Landecker.

ANTH 610 THE ETHNOGRAPHY OF DEVELOPMENT (3)

Graduate/Undergraduate version: ANTH 410. Not offered Fall and Spring.

ANTH 611 NEUROLINGUISTICS (3)

Graduate/Undergraduate version: ANTH 411. Not offered Fall and Spring. Instructor(s): Lamb.

ANTH 612 RHETORIC (3)

Graduate/Undergraduate version: ANTH 412. Repeatable for Credit. Offered Fall. Instructor(s): Tyler.

ANTH 613 POST SOCIALISM AND EUROPEANIZATION (3)

Graduate/Undergraduate version: ANTH 413. Limited enrollment. Offered Fall. Instructor(s): Chivens.

ANTH 614 HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY (3)

Graduate/Undergraduate version: ANTH 414. Repeatable for Credit. Not offered Fall and Spring.

ANTH 615 THEORIES OF MODERNITY/POSTMODERNITY (3)

Graduate/Undergraduate version: ANTH 415. Offered Spring. Instructor(s): Faubion.

ANTH 618 CAN HUMANS THINK? ANTHROPOS, HUMANISM AND TECHNOLOGY (3)

Graduate/Undergraduate version: ANTH 418. Not offered Fall and Spring. Instructor(s): Kelty.

ANTH 619 LAW AND SOCIETY (3)

Graduate/Undergraduate version: ANTH 419. Not offered Fall and Spring.

ANTH 621 AUSTRALIAN LANGUAGES (3)

Cross-listed with LING 525. Graduate/Undergraduate version: ANTH 421. Offered Spring. Instructor(s): Bower.

ANTH 625 ADVANCED TOPICS IN ARCHAEOLOGY (3)

Graduate/Undergraduate version: ANTH 425. Not offered Fall and Spring. Instructor(s): S. McIntosh.

ANTH 630 EXPERIMENTAL WRITING AND ANTHROPOLOGY (3)

Graduate/Undergraduate version: ANTH 430. Offered Spring. Instructor(s): Taylor.

ANTH 640 BIOTECHNOLOGY AND CULTURE (3)

Graduate/Undergraduate version: ANTH 440. Not offered Fall and Spring. Instructor(s): Landecker.

ANTH 646 ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY (3)

Graduate/Undergraduate version: ANTH 446. Offered Spring. Instructor(s): Georges.

ANTH 647 MODERN ETHNOGRAPHY AND THE ETHNOGRAPHY OF MODERNITY (3)

Graduate/Undergraduate version: ANTH 447. Not offered Fall and Spring. Instructor(s): Faubion.

ANTH 650 PEDAGOGY (3)

Training in the basic elements of teaching in anthropology to be taken in conjunction with applied graduate student teaching in ANTH 316. Recommended prerequisite(s): Third year and above graduate students. Repeatable for Credit. Offered Spring.

ANTH 655 INTRODUCTION TO SCIENCE AND TECHNOLOGY STUDIES (3)

Graduate/Undergraduate version: ANTH 455. Not offered Fall and Spring. www.kelty.rice.edu/455/index.html. Instructor(s): Kelty.

ANTH 658 HUMAN OSTEOLOGY (3)

Graduate/Undergraduate version: ANTH 458. Not offered Fall and Spring. Instructor(s): S. McIntosh.

ANTH 660 ADVANCED ARCHAEOLOGICAL THEORY (3)

Graduate/Undergraduate version: ANTH 460. Pre-requisite(s): ANTH 205. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): R. McIntosh.

ANTH 663 WEST AFRICAN PREHISTORY (3)

Graduate/Undergraduate version: ANTH 463. Not offered Fall and Spring. Instructor(s): R. McIntosh.

ANTH 668 PALAEOCLIMATE AND HUMAN RESPONSE (3)

Graduate/Undergraduate version: ANTH 468. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): R. McIntosh; Droxler.

ANTH 674 ADVANCED SEMINAR ON THE PREHISTORIC LANDSCAPE (3)

Graduate/Undergraduate version: ANTH 474. Not offered Fall and Spring. Instructor(s): R. McIntosh.

ANTH 675 PLIO-PLEISTOCENE CLIMATE CHANGE AND HOMINID ADAPTATION (3)

Graduate/Undergraduate version: ANTH 475. Not offered Fall and Spring. Instructor(s): R. McIntosh; Droxler.

ANTH 682 NON-WESTERN CINEMA: THIRD WORLD CINEMAS (1 TO 15)

Cross-listed with HART 682. Graduate/Undergraduate version: ANTH 482. Not offered Fall and Spring. Instructor(s): Naficy.

ANTH 683 DOCUMENTARY AND ETHNOGRAPHIC (3)

Cross-listed with HART 683. Graduate/Undergraduate version: ANTH 483. Not offered Fall and Spring. Instructor(s): Naficy.

ANTH 684 CULTURE, MEDIA, SOCIETY: EXILE AND DIASPORA CINEMAS (4)

Cross-listed with HART 684. Graduate/Undergraduate version: ANTH 484. Not offered Fall and Spring. Instructor(s): Naficy.

ANTH 800 RESEARCH AND THESIS (3 TO 9)

Repeatable for Credit. Offered Fall and Spring.

ARAB (ARABIC)**School of Humanities/Center for Study of Languages****ARAB 101 INTRODUCTION TO MODERN ARABIC LANGUAGE AND CULTURE I (5)**

This course introduces students to Modern Standard Arabic within the cultural context of the Arab world. Students will learn speaking, listening, reading and writing skills through communicative drills and conversation practice. Multimedia material is an integral part of the course. Students will attend a weekly practice hour with the instructor. Recommended prerequisite(s): No prior knowledge of Arabic. Limited enrollment.

ARAB 102 INTRODUCTION TO MODERN ARABIC LANGUAGE AND CULTURE II (5)

Using an interactive approach, students will expand on the four language skills, acquiring additional basic structures and vocabulary. The content will focus on their immediate environment and multiple aspects of the Arab world. Multimedia material is an integral part of the course. Students will attend a weekly practice hour with the instructor. Pre-requisite(s): ARAB 101, or placement test, or permission of instructor. Repeatable for Credit. Limited enrollment.

ARAB 201 INTERMEDIATE MODERN ARABIC LANGUAGE AND CULTURE I (4)

In this course, students will further their proficiency in reading, writing, speaking and listening, utilizing complex semantic and syntactic structures. Students will be encouraged to participate in discussions, discourse and analysis, featuring historical, geographic, and cultural topics specific to the Arab world. Multi-media are an integral part of the course. Pre-requisite(s): ARAB 102, or placement test, or permission of instructor. Limited enrollment.

ARAB 202 INTERMEDIATE MODERN ARABIC LANGUAGE AND CULTURE II (4)

In this fourth course of the Arabic sequence, assignments and activities center on historical, geographic, social, and literary text as well as current issues in the Arab world. Students will acquire additional forms, structures and expressions that help them communicate their thoughts through discourse at the Intermediate High level. Pre-requisite(s): ARAB 201, or placement test, or permission of instructor. Limited enrollment.

ARAB 301 SEMINAR IN ARABIC (3)

Advanced readings and discussions focus on literary and cultural topics, ranging from classical to contemporary. Integrates advanced grammatical constructions with comprehension and communication skills. Pre-requisite(s): ARAB 202, or placement test, or permission of instructor. Limited enrollment.

ARAB 302 SEMINAR IN ARABIC (3)

Advanced readings and discussions focus on various literary and cultural topics ranging from the classical to contemporary. The course integrates advanced grammatical constructions with comprehension and communication skills. Pre-requisite(s): ARAB 301, or placement test, or permission of instructor. Limited enrollment.

ARAB 398 INDEPENDENT STUDY (1 TO 6)

Repeatable for Credit.

ARAB 399 INDEPENDENT STUDY (1 TO 6)

Instructor permission required. Limited enrollment.

ARCH (ARCHITECTURE)

School of Architecture/Architecture**ARCH 101 PRINCIPLES OF ARCHITECTURE I (4)**

Visual studies using simple tools and materials to develop an awareness of the environment and a vocabulary to describe it. Requisite for architecture majors. Offered Fall. Instructor(s): Greander; Samuels.

ARCH 102 PRINCIPLES OF ARCHITECTURE I (4)

A development of communication of formal information from further investigation of visual structures and their order. Requisite for architecture majors. Cross-listed with ARTV 102. Pre-requisite(s): ARCH 101. Offered Spring. Instructor(s): Grenader; Samuels.

ARCH 104 CASE STUDIES IN ANCIENT AND MEDIEVAL ARCHITECTURE (3)

This course offers an introduction to the history of western art and architecture through weekly case studies of some of the most important public and private buildings in antiquity and the Middle Ages: from the Parthenon to a Roman house, Carnavan Castle to Chartres Cathedral. Topics explored throughout the course include the construction of imperial authority, ritual and the formation of space, and the relationship between structure and design. Cross-listed with HART 104, MDST 104. Offered Fall. Instructor(s): Neagley; Quemenoen.

ARCH 132 FRESHMAN SEMINAR ON ARCHITECTURAL ISSUES (2)

Introductory tutorial. Readings, field trips, and seminar discussions. Exploration of the role of the architect and architecture in the metropolis. Offered Spring. Instructor(s): Casbarian.

ARCH 201 PRINCIPLES OF ARCHITECTURE II (6)

Introduction to concepts of beginning architectural design. Design process as problem solving with emphasis on conscious method. Requisite for architecture majors. Pre-requisite(s): ARCH 102. Offered Fall. Instructor(s): Oliver; Ray.

ARCH 202 PRINCIPLES OF ARCHITECTURE II (6)

Introduction to concepts of beginning architectural design. Design process as problem solving with emphasis on conscious method. Requisite for architecture majors. Pre-requisite(s): ARCH 201. Offered Spring. Instructor(s): Wittenberg; Morrow.

ARCH 207 INTRODUCTION TO DESIGN OF STRUCTURES (3)

The course will introduce students to historical and contemporary structures through multi-media presentations, computer-based visualizations, field trips and hands-on experiments with materials of construction and physical models of structures. This is an introductory interactive course on the art and science of designing engineered structures and is intended for freshmen and sophomores interested in both civil engineering and architecture. Cross-listed with CEVE 207. Graduate/Undergraduate version: ARCH 507. Offered Fall. Instructor(s): Wittenberg.

ARCH 214 DESIGN OF STRUCTURES II (3)

Application of materials & construction (wood, masonry, concrete & steel). Case studies & field trips. Graduate/Undergraduate version: ARCH 514. Offered Spring. Instructor(s): Oberholzer.

ARCH 301 PRINCIPLES OF ARCHITECTURE III (6)

Intermediate level design problems with emphasis on building technology, programming and formal design. Requisite for paraprofessional major in architecture. Pre-requisite(s): ARCH 202. Offered Fall. Instructor(s): Hight; Lally.

ARCH 302 PRINCIPLES OF ARCHITECTURE III (6)

Variety of intermediate level problems for developing comprehensive experience in design methods and processes. Requisite for paraprofessional major in architecture. Pre-requisite(s): ARCH 301. Offered Spring. Instructor(s): Cannady; Finley; Guthrie; Parsons.

ARCH 303 SEMINAR IN SUSTAINABLE ENVIRONMENT ANALYSIS (1)

Engineering students will work with architecture students in analyzing basic design principles of sustainable design. Students analyses will be incorporated in the final design projects and culminate in a semester final report. Limited enrollment. Offered Fall. Instructor(s): Cannady.

ARCH 311 HOUSTON ARCHITECTURE (3)

This course consists of a series of illustrated lectures and walking tours that describe and analyze the architecture of Houston from the city's founding in 1836 to the present. Characteristic building types and exceptional works of architecture are identified; tours stimulate an awareness of the historical dimension of urban sites. Graduate/Undergraduate version: ARCH 611. Offered Fall. Instructor(s): Fox.

ARCH 313 SUSTAINABLE ARCHITECTURE (3)

This course will explore sustainable design from initial sustainable facility concepts and team organizations, to enlisting community support and process assessment. The course will develop into details about sustainable design, lessons learned, processes and outcomes. Graduate/Undergraduate version: ARCH 613. Offered Fall & Spring. Instructor(s): Taylor.

ARCH 315 DESIGN OF STRUCTURES III (3)

Application of principles of analysis to construction of steel & concrete framed structures. Continuation of ARCH 213, 214. Graduate/Undergraduate version: ARCH 515. Offered Spring. Instructor(s): Oberholzer.

ARCH 316 ENVIRONMENTAL CONTROL SYSTEMS (3)

An introduction to the thermal performance of buildings. Course is divided into 2 parts: Building Climatology and Air Conditioning Systems. Graduate/Undergraduate version: ARCH 516. Offered Fall. Instructor(s): Oberholzer.

ARCH 317 LANDSCAPE AND SITE STRATEGIES FOR HOUSTON (3)

This course is a workshop in site planning, with Houston as its focus. It will allow students to gain practice assessing, cataloging, and communicating the many complex issues that go into plugging a building into a site. We will navigate the networks created by natural environments, the build and legal environments, and access. The final product of this course is a site plan. Graduate/Undergraduate version: ARCH 617. Limited enrollment. Offered Spring. Instructor(s): Albert; Whitehead.

ARCH 322 METHODS OF MAKING (3)

The intent of this class is to saturate the design process with direct experience, to make fabrication synonymous with design. The focus is on identifying and developing an awareness of the underlying principles manifest in joining materials. Graduate/Undergraduate version: ARCH 622. Offered Spring. Instructor(s): Guthrie.

ARCH 325 WHAT IS ISLAMIC ART? (3)

This seminar is a critical examination of key themes and issues in Islamic art. Based on readings that focus on specific examples of artistic and architectural production of major landmarks from the 7th to the 18th centuries our discussions will evolve around such questions as: What is Islamic about Islamic art? How and where did art, religion, and politics intersect? To what extent were art and architecture informed by religious principles, practices, and rituals? Can we speak of a distinctive visual language across the Muslim world? We will also explore the role of myth in the construction of cultural heritage, the development of writing into a major form of art called calligraphy, and questions of patronage and imperial ideology. We will revisit long-held assumptions about the nature of Islamic art as iconoclastic and aniconic, and about the nature and scope of artistic exchange between the Muslim world and the Latin Christian West, Byzantium, and China. Cross-listed with HART 325. Limited enrollment. Not offered Fall and Spring. Instructor(s): Hamadeh.

ARCH 327 BUILDING WORKSHOP I (3)

The Rice Building Workshop involves students in the design and construction of real projects at various scales. Elective courses and course sequences will be formatted to address the specific requirements of each project as required. Please consult postings for further information. Graduate/Undergraduate version: ARCH 627. Repeatable for Credit. Offered Fall. Instructor(s): Samuels.

ARCH 328 TEN MONUMENTS OF THE ISLAMIC WORLD (3)

This seminar examines ten key religious and secular buildings of the Islamic world, including some of the most celebrated monuments such as the Taj Mahal, in India, and the Alhambra Palace, in Spain. It covers a wide geographical area that stretches from modern Turkey, Egypt, and Syria, to Iran and India. Each session will alternate lecture and discussion and will focus on one building, exploring it in depth in relation to its aesthetic, cultural, religious, and political contexts. We will examine the formation of a visual vocabulary, its continuities, and variations, the complex layers of meanings embedded in these monuments, and will question patronage, imperial ideology, and cross-cultural encounters and influences. Cross-listed with HART 323. Graduate/Undergraduate version: ARCH 628. Offered Spring. Instructor(s): Hamadeh.

ARCH 331 VISUAL CULTURE OF THE ISLAMIC WORLD I (3)

An introduction to the arts and architecture of the Islamic world from the rise of Islam to the Mongol invasions. Explores the development of a visual tradition through its continuities, regional variations, exchanges, and intertextualities. Examines key religious and secular institutions and art forms through their aesthetic and historical contexts. Cross-listed with HART 321. Offered Fall. Instructor(s): Hamadeh.

ARCH 332 VISUAL CULTURE OF THE ISLAMIC WORLD II (3)

An introduction to the architecture, ceramics, textiles, and arts of the Islamic world, from Egypt to India and Central Asia, beginning in the wake of the Mongol conquests and ending with the demise of the Ottoman empire. Focusing on court patronage and production, the course examines key buildings and objects through their aesthetic, cultural, religious, and political contexts. Methodological concerns of the field are addressed through an exploration of such themes as iconoclasm, word and image, and cross-cultural influences. Cross-listed with HART 322. Offered Spring. Instructor(s): Hamadeh.

ARCH 334 BUILDING WORKSHOP II (3)

Real-life problems dealing with design and construction. Graduate/Undergraduate version: ARCH 634. Repeatable for Credit. Offered Spring. Instructor(s): Samuels.

ARCH 340 ANIMATING ARCHITECTURE (3)

The goal of this class will be the production of a short animated film whose central theme will be an unbuilt work of caconic architecture. Modeling and rendering skills in any 3d software package are required for this course. Although we will primarily be using 3DS MAX, general knowledge of a wide range of supporting software will be very helpful. Graduate/Undergraduate version: ARCH 640. Limited enrollment. Offered Spring. Instructor(s): Heiss.

ARCH 344 CONSTRUCTION AND DESIGN (3)

A seminar in which the relationship between the construction of an object and its usefulness is explored. The premise in the course is that the way things are made can be one credible point of departure for the architectural design process. Graduate/Undergraduate version: ARCH 644. Offered Spring. Instructor(s): Parsons.

ARCH 345 ARCHITECTURE AND THE CITY I (3)

This course will trace the development of Renaissance and Baroque architecture in Italy and France with reference to the dialectic of license and rule. The first part, which covers the period from 1400-1600, will focus on the civil, domestic and ecclesiastical architecture of the chief protagonists of the Italian Renaissance: Brunelleschi, Alberti, Bramante, Giulio Romano, Michelangelo and Palladio. Their buildings and urban initiatives will be interpreted in terms of continuities & discontinuities between an emerging theoretical tradition and the demands of actual practice. Cross-listed with HART 345. Graduate/Undergraduate version: ARCH 645. Offered Fall.

ARCH 346 ARCHITECTURE AND THE CITY II (3)

This course is an overview of modern architecture with reference to related issues in cultural modernity. The course will consider important work of the 19th and 20th century, although reference will be made to earlier material where it bears on the issues under discussion. The course begins with the claim that the architecture of modernity has historically been conceived and developed in relation to utopian ideals, and that architectural modernism cannot be adequately understood unless attention is paid to its various utopian and dystopian 'moments'. Cross-listed with HART 346. Graduate/Undergraduate version: ARCH 646. Pre-requisite(s): ARCH 345 or ARCH 645. Offered Spring. Instructor(s): el-Dahdah.

ARCH 347 ARCHITECTURE IN POPULAR CULTURE (3)

An overview of the ways that popular culture and mass media look at architecture. Topics vary from year to year, focusing on how the discipline and objects of architecture are portrayed in one or more of the following: television, film, advertising, popular novels, animation, comic books, music video, and arcade games. Graduate/Undergraduate version: ARCH 647. Not offered Fall and Spring. Instructor(s): Biln.

ARCH 349 IN REPRESENTATION: SIGNS OF LIFE (3)

This course considers the problem of capturing, producing, and rendering both real and imagined images of architecture, landscape and the urban environment. The course does not follow the usual practice of beginning with a particular technique and then applying it to assigned problems of representation. Rather this course will work toward issues in technique from the starting points of subject matter and creative intention. Graduate/Undergraduate version: ARCH 549. Limited enrollment. Not offered Fall and Spring. Instructor(s): Biln.

ARCH 350 URBAN IDENTITY, UTILITY AND REFUSAL (3)

This course is intended to function as a small research seminar. Interested students will participate in exploring a related set of concerns involving the development of historical urban utopia conditioned by desires both to express social resistance and to produce new social identities. Graduate/Undergraduate version: ARCH 650. Not offered Fall and Spring.

ARCH 353 PHOTOGRAPHY FOR ARCHITECTS (3)

Exploration of a variety of photographic techniques for architectural research, design, and presentation. Graduate/Undergraduate version: ARCH 653. Offered Fall. Instructor(s): White.

ARCH 357 ART AND EMPIRE: THE OTTOMAN WORLD (3)

This course looks at the art and architecture of the Ottoman empire, the longest surviving Muslim empire, from its inception in 1453 until its demise in the 1920s. Based on in-depth studies of religious and secular monuments, objects, and paintings, it examines the roots of Ottoman visual culture, the formation of a canonic style, relations with eastern and western artistic traditions, issues of power and identity in art, systems of patronage, concepts of westernization and Ottoman modernism. Cross-listed with HART 327. Limited enrollment. Not offered Fall & Spring. Instructor(s): Hamadeh.

ARCH 358 CAST MODERNITY (3)

This seminar will look at concrete's role as a facilitator of the conceptual and theoretical agendas of the architecture of the 20th century. Just as the Domino system enabled a new architecture at the beginning of the century, the current interests in topological and non-treated form are again arguing for concrete's unique properties. Graduate/Undergraduate version: ARCH 658. Offered Spring. Instructor(s): Oliver.

ARCH 360 CRISIS AND COMMUNICATIONS (3)

As the demands for design today shift toward social, economic and technological concerns, the group/crisis model is re-emerging in both corporate and popular and radical milieus. We will study the history of these developments, form our own collective operation and produce a publication that reflects this emerging new approach to design culture. This is both a history and research course and a hands-on course in communications design. Graduate/Undergraduate version: ARCH 660. Not offered Fall and Spring.

ARCH 362 THE PHILOSOPHY OF MATTER, FORCE, AND EVENT (3)

A lecture course on the philosophy of Gilles Deleuze will deal with the metaphysical foundations of contemporary space and time. Readings will include Deleuze's analyses of Spinoza, Leibniz, Nietzsche, and Bergson. Strong emphasis will be placed on reading, writing, as well as on design applications of principles from the work. Graduate/Undergraduate version: ARCH 662. Not offered Fall and Spring.

ARCH 363 ARCHITECTURAL REPRESENTATION (3)

A semester long workshop designed to impart skills in free-hand drawing, with an emphasis on architectural subjects. The course will consist of in-class sketching exercises and out-of-class drawing assignments. Repeatable for Credit. Offered Fall. Instructor(s): Cannady.

ARCH 368 SEMINAR: TECHNOLOGY AND SOCIETY (3)

This research-based seminar is a quod libet course open to graduate and undergraduates alike. The course will place heavy emphasis on weekly writing and reading and formal research techniques. Students will select their own research topics and will develop written and graphic materials for seminar presentations and publication. Finished materials will be prepared for, and presented at, every class meeting. It is encouraged that this course be used in conjunction with a design studio, as a research, theory, and development arm. Graduate/Undergraduate version: ARCH 668. Offered Spring. Instructor(s): Kwinter.

ARCH 372 SILENCE/SOUND/NOISE (3)

This course will examine the sonorous dimensions and implications of architecture. While the course will provide an overview of basic principles of acoustics and architecture's materiality in relation to sound, the primary focus will be the architectural implications of sound-dominant rather than vision-dominant modes of thought. Limited enrollment. Not offered Fall and Spring.

ARCH 374 THE JOY OF MATERIALS (3)

An investigation of how materials influence and inspire the making of works of architecture. Graduate/Undergraduate version: ARCH 674. Limited enrollment. Offered Spring. Instructor(s): Jimenez.

ARCH 382 REPOSITIONING THE SEAM (TECHNOLOGY SEMINAR) (3)

The class will explore the use of surface modeling software and CAD modeling tools how various techniques of articulating form, in relation to programmatic performance, affects the visual, formal, and spatial organization of the places we inhabit. With the use of surface modeling programs and CAD drafting tools, a heavy emphasis will be placed on articulating the work through graphic techniques before being applied to physical models. The class will be run in small groups of 2-3 people. The initial weeks of the class will be spent looking to precedents which explore various techniques of articulating form and space. Each team will then focus these various techniques from the precedents on a single space or series of spaces. With each group focusing on the same space, each with a separate emphasis, a juxtaposition of results will occur allowing for a comparison that looks to implications on the visual, performative, and organizational systems. Offered Spring. Instructor(s): Lally.

ARCH 384 CONCEPTUAL ART AND ARCHITECTURE (3)

The first part of the course will examine the conceptual art practices that began in the 1960s, including Bochner, Kosuth, art and language, LeWitt, Haacke, Kelly, and Smithson. The second part of the course will focus on the question of what constitutes a conceptual architecture by interrogating a series of potential practices including: Super Studio, Anchigram, Eisenman, Libeskind, Shinohara, Hejduf, Tschumi, and others. Cross-listed with HART 392. Graduate/Undergraduate version: ARCH 684. Offered Spring. Instructor(s): Last.

ARCH 386 ARCHITECTURE AND SOCIETY II (ENLIGHTENMENT-POSTMODERNITY) (3)

Through a series of case studies, this course will examine the socio-cultural consequences of exemplary buildings from the Enlightenment through Postmodernity. Graduate/Undergraduate version: ARCH 686. Offered Spring. Instructor(s): Biln.

ARCH 401 PRINCIPLES OF ARCHITECTURE IV (6)

Upper level architectural design problems with an emphasis on urban issues and site planning, and complex building organization. Required for preprofessional major in architecture. Pre-requisite(s): ARCH 302. Offered Fall. Instructor(s): Jimenez; Morrow.

ARCH 402 PRINCIPLES OF ARCHITECTURE IV (6)

Pre-requisite(s): ARCH 401. Offered Spring. Instructor(s): Cannady; Finley; Guthrie; Parsons.

ARCH 412 PRODUCT (3)

By reducing the scale of our efforts from architecture down to product design, and through a series of field trips to material suppliers, manufacturing facilities, and retail environments, this class will explore a means of producing designs that will directly enter the market. We will develop a complete design and production process in which students will be asked to not only create a prototype household object, but also to make that object in quantity and introduce it into the retail world for consumption. As a means of testing the success of these designs, all of the products will be for sale at Sunset Settings following the completion of the course. Graduate/Undergraduate version: ARCH 612. Offered Spring. Instructor(s): Heiss.

ARCH 416 DESIGN AND CONSTRUCTION PROJECT DELIVERY INNOVATION (3)

Process innovation in the design and construction industries is far too rare. Even with access to powerful tools such as CADD and the Internet, many opportunities for process improvement are overlooked and problems are repeatedly ignored. Within this course, cross-discipline project teams will use contemporary business tools to evaluate longstanding industry practices and develop ideas for process innovation. At the end of the semester, students will present innovation concepts to members of the Project Delivery Innovation Forum, a group of industry leaders that may select student ideas for further research on real projects. Graduate/Undergraduate version: ARCH 616. Offered Spring. Instructor(s): White-Bryson.

ARCH 422 THE MAKING OF THE ORIENT (3)

The Making of the Orient in the 18-20th Century Europe focuses on the construction of the image of the Orient in the age of European colonial expansion. Through critical analysis of texts, images, and cultural practices (painting, photography, architecture, city planning, music, fiction, and travel literature) and key theoretical works, this course examines issues of production and codification of knowledge, politics of representation, and identity construction in and beyond the colonial period. Cross-listed with HART 422. Limited enrollment. Offered Spring. Instructor(s): Hamadeh.

ARCH 423 PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE (3)

An introductory survey of the characteristics of the delivery of architectural services by professional design organizations. Through readings and lectures, students become familiar with the social, technical, legal, ethical, and financial milieu of modern architecture practice. Graduate/Undergraduate version: ARCH 623. Offered Spring. Instructor(s): Fleishacker; Furr.

ARCH 424 THEORY AND MODERNISM (3)

This course will consider certain key relationships between film, architecture and the city in the 20th century. Our point of departure will be the claim that since well before the birth of enlightenment thought, Western spatial practices have had an insistently narrative, sequential, and scopic character that has only become more pronounced with the arrival of new media and related technologies in the 19th century. The course will operate as a seminar in which both student and instructor will offer presentations, coordinate discussions, and actively participate in class dialogues. Graduate/Undergraduate version: ARCH 624. Repeatable for Credit. Not offered Fall and Spring

ARCH 425 THEORY AND MODERNISM (3)

This course operates as a forum for thinking broadly about the cultural modernity and architectural modernism. This semester, the course will consider a deeply persistent, greatly underestimated, and increasingly important cultural figure: the building that lives. We will study some of the most important formulations of this trope from antiquity to postmodernity, from figures such as the flying temples and walking statues of antiquity to contemporary problems of posthuman existence and 'animate' materials in architecture. We will see that the living building inhabits a 'monstrous' terrain where the limits of three central fabrications of culture--humanity, technology, and nature--are mutually transgressed. Graduate/Undergraduate version: ARCH 625. Limited enrollment. Offered Fall. Instructor(s): Biln.

ARCH 426 DESIGNING THE LOW-COST HOUSE (3)

The spring course begins the sequence to produce a small house under the auspices of the Rice Building Workshop. The history and development of the small house will be examined, followed by an analysis of the proposed mid-town site and it's context. Construction technologies, materials, costs, climate conditions, and code issues will be considered. Each student will develop a design approach in some detail, and a single proposal (or merging of proposals) will be selected and documented for permitting and construction. All phases of the project will incorporate collaboration with the larger community, from neighborhood organizations to local contractors. Graduate/Undergraduate version: ARCH 626. Not offered Fall and Spring.

ARCH 429 BUILDING LOW COST HOUSE II (3)

This elective course will continue student involvement in the hands-on process of constructing a new structure for Project Row Houses, a noted grass-roots art project promoting neighborhood revitalization and community service in the Third Ward. Graduate/Undergraduate version: ARCH 629. Not offered Fall and Spring.

ARCH 432 INTRODUCTION TO COMPUTER APPLICATIONS IN ARCHITECTURE (3)

This course is designed as a general introduction to computing in the context of architectural design. Emphasis is on the use of digital media as design tools and the appropriate use of these tools in the varying processes of design. This course includes exposure to a broad spectrum of design, drafting, modeling and presentation software. Not offered Fall and Spring.

ARCH 433 INTRODUCTION TO COMPUTER APPLICATIONS IN ARCHITECTURE (3)

This course is designed as a general introduction to computing in the context of architectural design. Emphasis is on the use of digital media as design tools and the appropriate use of these tools in the varying processes of design. This course includes exposure to a broad spectrum of design, drafting, modeling and presentation software. Graduate/Undergraduate version: ARCH 633. Not offered Fall and Spring.

ARCH 435 ARCHITECTURAL COMPUTER GRAPHICS OVERVIEW (3)

Introduction to basic computer graphics, computer aided design, and the programming algorithms that underlie them. Develops familiarity with packages such as Autocad and Arris. Graduate/Undergraduate version: ARCH 635. Must be enrolled in one of the following Major(s): Architecture. Offered Fall and Spring. Instructor(s): L. Koehler; P. Koehler.

ARCH 436 COMPUTER AIDED DESIGN IN ARCHITECTURE (3)

Advanced computer graphic techniques using CAD in architecture as a design and presentation medium. Graduate/Undergraduate version: ARCH 636. Not offered Fall and Spring.

ARCH 437 VIDEO 1, 2, 3 (3)

Production of Architectural space through the use of video, scale physical models, installations, and the urban environment. Graduate/Undergraduate version: ARCH 637. Instructor permission required. Limited enrollment. Offered Fall. Instructor(s): Heiss.

ARCH 439 THREE DIMENSIONAL COMPUTER GRAPHICS (3)

A workshop in three dimensional computer modeling and its theoretical implications for architecture and design. One class session each week will be a how to lecture covering the technical side of modeling. The other sessions will consist of group discussion through which we will explore the theoretical implications of the medium and test the limits of its use as architectural representation. Graduate/Undergraduate version: ARCH 639. Instructor permission required. Offered Fall. Instructor(s): Lally.

ARCH 441 GENETIC SCREENING: TECHNOLOGY SEMINAR (3)

It is the intent of the class to research and explore the potentials of computer-software and fabrication in a focused semester long design exercise. The class will explore 3-D computer software (specifically MEL scripting) for its variability and adaptability; working on specified performative requirements scripted through if/then scenarios. In groups of 3 the class will investigate these potentials focusing on the design of a screen privacy screen/curtain wall) before fabricating physical models of these investigations. (Basic understanding of Maya encouraged but no previous requisites required). Graduate/Undergraduate version: ARCH 641. Offered Fall. Instructor(s): Lally.

ARCH 455 HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY (3)

This course will explore current issues in the formulation and implementation of housing and urban development programs in the U.S. An oral presentation and written paper on a specific topic within a general policy area required. Graduate/Undergraduate version: ARCH 655. Offered Fall and Spring. Instructor(s): Lord.

ARCH 461 SPECIAL PROJECTS (3 TO 9)

Independent research or design arranged in consultation with a faculty member. Subject to approval of faculty advisor and director. Repeatable for Credit. Limited enrollment. Offered Fall and Spring.

ARCH 464 INDEPENDENT PROJECTS IN FURNITURE DESIGN AND FABRICATION (3)

This course will examine alternative materials and material technologies, both existing and emerging, and their impact on the design and fabrication of furniture. The class will initially focus on research into impact of innovations in materials and practices on the production of furniture over the course of the last century. Each student will specifically address the use made by various designers of these changes. The remainder of the course will see each student focus on the investigation of a specific material and its possible methods of manipulation via a simultaneous process of research/design resulting in the fabrication of a proto type. Not offered Fall and Spring

ARCH 469 CASE STUDY IN URBAN DESIGN: BRASILIA (3)

Starting with two principal documents describing the city of Brasilia, the original hand drawn competition entry in 1957 and a digital survey of 1997, this seminar will study modern urban design in relation to the 1950's project for a new Brazilian capital. The project of Brasilia, and its inevitable transformation over time, will be looked at historically, politically, culturally, formally and esthetically. Graduate/Undergraduate version: ARCH 669. Limited enrollment. Offered Fall. Instructor(s): el-Dahdah.

ARCH 481 THE IDEA OF HOUSING (3)

In the 1920's the architectural idea of housing and the philosophical idea of existentialism emerged simultaneously in presumably unrelated intellectual circles. Being and Time was published in 1927, the same year the Weissenhof Settlement opened to the public in Stuttgart. One need only emphasize the fact that Martin Heidegger is precisely the same age as both Le Corbusier and Mies to suggest an exploration of the possible connections between the two seemingly disparate intellectual trends. Whether this shared history represents only a coincidence or the overlap of significant content is an open question. The first part of the seminar will examine this question. The second part will catalogue the institutionalization of these ideas through the 1950s using a series of case studies. Graduate/Undergraduate version: ARCH 681. Not offered Fall and Spring.

ARCH 483 TWENTIETH CENTURY HISTORY OF IDEAS OF ARCHITECTURE (3)

This course will examine Twentieth Century architectural discourse in a broad intellectual context. Course material will cover the period between 1900 and the present, focusing on 1965-1995. Special attention will be paid to relationships among philosophy, critical theory, cultural criticism, and the objects and theories of architecture. The following topics are covered: Anticipation and Reflection, Formalist Aesthetics, Architecture and Form, Culture and Modernity, Culture and Depth Analysis, Psychoanalytic Interpretation, Architecture and Desire, Culture and Politics, Marxism and Neo-Historicism, Architecture and Political Critique, Phenomenology and Reception, Architecture and the Life-World, Culture after Modernism, Semiotics and Structuralism, Discourse and Discipline, Deconstruction and Textuality, Deconstruction (Re)constructed, Feminism and Gender Theory, Architecture and Difference. Graduate/Undergraduate version: ARCH 683. Offered Fall. Instructor(s): Last.

ARCH 485 ARCHITECTURE AND SOCIETY I (3)

Through a series of case studies, this course will examine the socio-cultural consequences of exemplary buildings from Antiquity through the 17th century. Cross-listed with HART 455. Graduate/Undergraduate version: ARCH 685. Offered Fall and Spring. Instructor(s): Hight.

ARCH 492 PROBLEMS IN KNOWLEDGE AND DESIGN (3)

This course will present as series of lectures on the physics and metaphysics of creation and genesis from a wide variety of perspectives and disciplines, slowly sewing them together within a general and non-classical approach to form. Graduate/Undergraduate version: ARCH 692. Offered Spring. Instructor(s): Kwinter.

ARCH 500 PRECEPTORSHIP PROGRAM (15)

Full time internship for nine to twelve months under guidance of appointed preceptor. Required for all recipients of Rice B.A. degrees in pre-professional program of area majors who seek admission to graduate studies in Architecture. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Casbarian.

ARCH 501 CORE DESIGN STUDIO I (10)

Requisite for admission to graduate professional program options in architecture or urban design for students with nonarchitectural bachelor's degree. Lectures, seminars, laboratories, and design studio projects adjusted to individual needs. Offered Fall. Instructor(s): Guthrie; Satterfield.

ARCH 502 CORE DESIGN STUDIO II (10)

This studio emphasizes the impact of building systems and protocols on the spatial and formal organization of architecture with a final project focused on the design of a public building in a metropolitan context. The studio focuses equally on the development of conceptual rigor and technical expertise. Offered Spring. Instructor(s): Oliver; Felder.

ARCH 503 CORE DESIGN STUDIO III (10)

Design studio to follow ARCH 501, 502. Preparation for entering studios in the regular graduate programs in architecture and urban design in the following semester. Offered Fall. Instructor(s): Wittenberg, Finley.

ARCH 504 CORE DESIGN STUDIO IV (10)

Exploration of abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Course content is topic oriented and varies section to section. Offered Spring. Instructor(s): Hight; Lally.

ARCH 507 INTRODUCTION TO DESIGN OF STRUCTURES (3)

Graduate/Undergraduate version: ARCH 207. Not offered Fall and Spring. Instructor(s): Wittenberg.

ARCH 514 DESIGN OF STRUCTURES II (3)

A course in structures for students in the Option I Program. Topics include: structure in architecture; forces and equilibrium; structural materials; the behavior, analysis, and design of structural elements and their connections. Graduate/Undergraduate version: ARCH 214. Offered Spring. Instructor(s): Oberholzer.

ARCH 515 DESIGN OF STRUCTURES III (3)

A second course in structures for students in the Qualifying Graduate Program. Topics include: additional topics in the behavior, analysis, and design of structural elements; synthesis of structural elements into structural systems; integration of structural systems with other building systems. Graduate/Undergraduate version: ARCH 315. Offered Spring. Instructor(s): Oberholzer.

- ARCH 516 ENVIRONMENTAL CONTROL SYSTEMS (3)**
Graduate/Undergraduate version: ARCH 316. Offered Fall. Instructor(s): Oberholzer.
- ARCH 532 INTRODUCTION TO DIGITAL, VISUALIZATION, AND COMMUNICATION (3)**
Provides an introduction to digital visualization & communication in the context of architectural design. Emphasis is placed on working methods that engage specific issues of the complex assemblies in architectural practice, coordinating various software & graphic techniques through composite methods. The last 3 weeks of the semester will focus on the design & production of a printed portfolio to organize & communicate design work from the first 2 semesters of the core studio sequence. Applications include: Illustrator, In-Design, Photoshop, AutoCAD, 3D MAX, FormZ, DreamWeaver, and Flash. Offered Spring. Instructor(s): Finley; Satterfield.
- ARCH 549 IN REPRESENTATION: SIGNS OF LIFE (3)**
Graduate/Undergraduate version: ARCH 349. Limited enrollment. Not offered Fall and Spring
Instructor(s): Biln.
- ARCH 600 M. ARCH. I INTERNSHIP (1 TO 15)**
Practical work experience for students who have completed at least four semesters in the Option I Program prior to their entrance into the regular Master of Architecture studio sequence. Instructor permission required. Repeatable for Credit. Limited enrollment.
- ARCH 601 ARCHITECTURAL PROBLEMS: STUDIO (10)**
Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Note: there are three separate sections for this course. Repeatable for Credit. Offered Fall. Instructor(s): Pope; Wamble.
- ARCH 602 ARCHITECTURAL PROBLEMS (10)**
Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Repeatable for Credit. Offered Spring. Instructor(s): Jimenez; Last; Lee.
- ARCH 603 ARCHITECTURAL PROBLEMS: STUDIO (10)**
Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities. Offered Fall and Spring.
- ARCH 605 ARCHITECTURAL PROBLEMS: STUDIO (10)**
Studio conducted in a workshop format with exercises in such topical areas as program development, energy analysis and design, building system integration, and financial analysis. Repeatable for Credit. Offered Fall & Spring. Instructor(s): Visiting critics.
- ARCH 610 BUILDING WORKSHOP: THEATER RENOVATION/PARIS PROGRAM (6)**
Special seminars, lectures, and site visits relevant to history, urban theory, and structure of Paris and other European centers. Offered Fall and Spring. Instructor(s): Fitzsimmons; Visiting critics.
- ARCH 611 HOUSTON ARCHITECTURE (3)**
Graduate/Undergraduate version: ARCH 311. Offered Fall. Instructor(s): Fox.
- ARCH 612 PRODUCT (3)**
Graduate/Undergraduate version: ARCH 412. Offered Spring. Instructor(s): Heiss.
- ARCH 613 SUSTAINABLE ARCHITECTURE (3)**
Graduate/Undergraduate version: ARCH 313. Offered Fall and Spring. Instructor(s): Taylor.
- ARCH 616 DESIGN AND CONSTRUCTION PROJECT DELIVERY INNOVATION (3)**
Cross-listed with MGMT 716. Graduate/Undergraduate version: ARCH 416. Offered Spring. Instructor(s): White-Bryson.
- ARCH 617 LANDSCAPE AND SITE STRATEGIES FOR HOUSTON (3)**
This course is a workshop in site planning, with Houston as its focus. It will allow students to gain practice assessing, cataloging, and communicating the many complex issues that go into plugging a building into a site. We will navigate the networks created by natural environments, the build and legal environments, and access. The final product of this course is a site plan. Graduate/Undergraduate version: ARCH 317. Limited enrollment. Offered Spring. Instructor(s): Albert; Whitehead.
- ARCH 619 MAKING IT: THE CULTURE OF CONSTRUCTION (3)**
Graduate/Undergraduate version: ARCH 419. Not offered Fall and Spring.
- ARCH 620 HISTORY OF BUILDING TECHNOLOGY/PARIS PROGRAM (10)**
Advanced issues in building design and urban infrastructure using Paris as context. Exploration of compound design processes resulting in the development of complex building typologies. Offered Fall and Spring. Instructor(s): Casbarian; Fitzsimons.

ARCH 621 ECONOMICS OF THE BUILT ENVIRONMENT (3)

Graduate/Undergraduate version: ARCH 321. Not offered Fall and Spring.

ARCH 622 METHODS OF MAKING (3)

Graduate/Undergraduate version: ARCH 322. Offered Spring. Instructor(s): Guthrie.

ARCH 623 PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE (3)

Graduate/Undergraduate version: ARCH 423. Offered Spring. Instructor(s): Fleishacker; Furr.

ARCH 624 THEORY AND MODERNISM (3)

Graduate/Undergraduate version: ARCH 424. Not offered Fall and Spring.

ARCH 625 THEORY AND MODERNISM: UNDER THE SKIN (3)

Graduate/Undergraduate version: ARCH 425. Limited enrollment. Offered Fall. Instructor(s): Biln.

ARCH 626 DESIGNING THE LOW-COST HOUSE (3)

Graduate/Undergraduate version: ARCH 426. Not offered Fall and Spring.

ARCH 627 BUILDING WORKSHOP I (3)

Graduate/Undergraduate version: ARCH 327. Repeatable for Credit. Offered Fall. Instructor(s): Samuels.

ARCH 628 TEN MONUMENTS OF THE ISLAMIC WORLD (3)

This seminar examines ten key religious and secular buildings of the Islamic world, including some of the most celebrated monuments such as the Taj Mahal, in India, and the Alhambra Palace, in Spain. It covers a wide geographical area that stretches from modern Turkey, Egypt, and Syria, to Iran and India. Each session will alternate lecture and discussion and will focus on one building, exploring it in depth in relation to its aesthetic, cultural, religious, and political contexts. We will examine the formation of a visual vocabulary, its continuities and variations, the complex layers of meanings embedded in these monuments, and will consider questions of patronage, imperial ideology, and cross-cultural encounters and influences. Graduate/Undergraduate version: ARCH 328. Offered Spring. Instructor(s): Hamadeh.

ARCH 629 BUILDING LOW COST HOUSE II (3)

Graduate/Undergraduate version: ARCH 429. Not offered Fall and Spring.

ARCH 632 INTRODUCTION TO COMPUTERS IN ARCHITECTURE (3)

Lectures and seminars dealing with problem-solving activities and methodological issues in architectural design and urban design. Not offered Fall and Spring.

ARCH 633 INTRODUCTION TO COMPUTER APPLICATIONS IN ARCHITECTURE (3)

Graduate/Undergraduate version: ARCH 433. Not offered Fall and Spring.

ARCH 634 BUILDING WORKSHOP II (3)

Graduate/Undergraduate version: ARCH 334. Repeatable for Credit. Offered Spring. Instructor(s): Samuels.

ARCH 635 ARCHITECTURAL COMPUTER GRAPHICS OVERVIEW (3)

Special projects for advanced students in computer applications. Graduate/Undergraduate version: ARCH 435. Must be enrolled in one of the following Major(s): Architecture. Offered Fall and Spring Instructor(s): L. Koehler; P. Koehler.

ARCH 636 COMPUTER AIDED DESIGN IN ARCHITECTURE (3)

Graduate/Undergraduate version: ARCH 436. Not offered Fall and Spring.

ARCH 637 VIDEO 1, 2, 3(3)

Graduate/Undergraduate version: ARCH 437. Instructor permission required. Limited enrollment. Offered Fall. Instructor(s): Heiss.

ARCH 639 THREE DIMENSIONAL COMPUTER GRAPHICS (3)

Graduate/Undergraduate version: ARCH 439. Instructor permission required. Offered Fall. Instructor(s): Lally.

ARCH 640 DIGITAL RENDERING, ANIMATION AND VIRTUAL REALITY (3)

Graduate/Undergraduate version: ARCH 340. Offered Spring. Instructor(s): Heiss.

ARCH 641 GENETIC SCREENING: TECHNOLOGY SEMINAR (3)

Graduate/Undergraduate version: ARCH 441. Offered Fall. Instructor(s): Lally.

ARCH 644 CONSTRUCTION AND DESIGN (3)

Graduate/Undergraduate version: ARCH 344. Offered Spring. Instructor(s): Parsons.

ARCH 645 ARCHITECTURE AND THE CITY I (3)

Graduate/Undergraduate version: ARCH 345. Offered Fall.

ARCH 646 19TH-20TH CENTURY ARCHITECTURAL HISTORY (3)

This course is an overview of modern architecture with reference to related issues in cultural modernity. The course will consider important work of the 19th and 20th century, although reference will be made to earlier material where it bears on the issues under discussion. The course begins with the claim that the architecture of modernity has historically been conceived and developed in relation to utopian ideals, and that architectural modernism cannot be adequately understood unless attention is paid to its various utopian and dystopian 'moments'. Cross-listed with HART 506. Graduate/Undergraduate version: ARCH 346. Pre-requisite(s): ARCH 345 or ARCH 645. Offered Spring. Instructor(s): el-Dahdah

ARCH 647 ARCHITECTURE IN POPULAR CULTURE (3)

Graduate/Undergraduate version: ARCH 347. Not offered Fall and Spring.

ARCH 650 URBAN IDENTITY, UTOPIA AND REFUSAL (3)

Graduate/Undergraduate version: ARCH 350. Not offered Fall and Spring.

ARCH 653 PHOTOGRAPHY FOR ARCHITECTS (3)

Graduate/Undergraduate version: ARCH 353. Offered Fall. Instructor(s): White.

ARCH 654 20TH CENTURY NORTH AMERICAN ARCHITECTURE (3)

Graduate/Undergraduate version: ARCH 454. Not offered Fall and Spring.

ARCH 655 HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY (3)

This course will explore current issues in the formulation and implementation of housing and urban development programs in the U.S. Class members will each select a specific topic within a general policy area and make oral presentation to the class as well as submit a written paper on the topic at the end of the semester. Graduate/Undergraduate version: ARCH 455. Offered Fall and Spring. Instructor(s): Lord.

ARCH 657 ART AND EMPIRE: THE OTTOMAN WORLD (3)

Limited enrollment. Offered Fall. Instructor(s): Hamadeh.

ARCH 658 CAST MODERNITY (3)

Graduate/Undergraduate version: ARCH 358. Offered Spring. Instructor(s): Oliver.

ARCH 660 CRISIS AND COMMUNICATION (1 TO 15)

Graduate/Undergraduate version: ARCH 360. Not offered Fall and Spring.

ARCH 662 THE PHILOSOPHY OF MATTER, FORCE AND EVENT (3)

Graduate/Undergraduate version: ARCH 362. Not offered Fall and Spring.

ARCH 663 ARCHITECTURAL REPRESENTATION (3)

A semester long workshop designed to impart skills in free-hand drawing, with an emphasis on architectural subjects. The course will consist of in-class sketching exercises and out-of-class drawing assignments. Repeatable for Credit. Offered Fall. Instructor(s): Cannady.

ARCH 665 CONVERSATIONS: VISITING CRITIC SEMINAR (3)

Seminars structured around topics dealing with design theory, with special emphasis on participation by visiting critics and professors. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Visiting critics

ARCH 667 GRADUATE SEMINAR: CRITICISM AND ARCHITECTURE (3)

The seminar will examine the history of critical writings on architecture from the 18th century to the present, consider the various categories used to criticize, such as aesthetics, politics, and technology, and analyze the role that architectural criticism has played in a general cultural context, keeping an eye on parallel trends in the theory of criticism in other disciplines. Not offered Fall and Spring.

ARCH 668 SEMINAR: TECHNOLOGY AND SOCIETY (3)

This research-based seminar is a quod libet course open to graduates and undergraduates alike. The course will place heavy emphasis on weekly writing and reading and formal research techniques. Students will select their own research topics and will develop written and graphic materials for seminar presentations and publication. Finished materials will be prepared for, and presented at, every class meeting. It is encouraged that this course be used in conjunction with a design studio, as a research, theory, and development arm. Graduate/Undergraduate version: ARCH 368. Offered Spring. Instructor(s): Kwinter.

ARCH 669 CASE STUDY IN URBAN DESIGN: BRASILIA (3)

Graduate/Undergraduate version: ARCH 469. Offered Fall. Instructor(s): el-Dahdah.

ARCH 671 ISSUES IN COMPUTER AIDED DESIGN (3)

The class will produce an interactive creative multimedia CD-ROM project about the City of Houston: an investigative multi-dimensional map of the city and its population. We will explore various issues such as content creation and its presentation, interface design, and ease of use. Students will conceive the structure, do the investigative research with the city, write, direct, and edit content (text, images, video, computer graphics, etc.). Not offered Fall and Spring.

ARCH 674 THE JOY OF MATERIALS (3)

Graduate/Undergraduate version: ARCH 374. Limited enrollment. Offered Spring. Instructor(s): Jimenez.

ARCH 681 THE IDEA OF HOUSING (3)

Graduate/Undergraduate version: ARCH 481. Not offered Fall and Spring.

ARCH 682 REPOSITIONING THE SEAM (TECHNOLOGY SEMINAR) (3)

The class will explore through the use of surface modeling software and CAD modeling tools how various techniques of articulating form, in relation to programmatic performance, affects, the visual, formal and spatial organization of the places we inhabit. With the use of surface modeling programs CAD drafting tools, a heavy emphasis will be placed on articulating the work through graphic techniques before being applied to physical models. The class will be run in small groups of 2-3 people. The initial weeks of the class will be spent looking to precedents which explore various techniques from the precedents on a single space or series of space. Each team will then focus these various techniques from the precedents on a single space or series of space. With each group focusing on the same space, each with a separate emphasis, a juxtaposition of results will occur allowing for a comparison that looks to implications on the visual, performative, and organizational systems. Offered Spring. Instructor(s): Lally.

ARCH 683 TWENTIETH CENTURY IDEAS OF ARCHITECTURE (3)

Graduate/Undergraduate version: ARCH 483. Offered Fall. Instructor(s): Last.

ARCH 684 CONCEPTUAL ART AND ARCHITECTURE (3)

The first part of the course will examine the conceptual art practices that begin in the 1960s including: Bochner, Kosuth, Art and Language, LeWitt, Maacke, Kelly and Smithson. The second part of the course will focus on the question of what constitutes a conceptual architecture by interrogating a series of potential practices including: Super Studio, Archigram, Eisenman, Libesking, Shinohara, Heiduf, Tschumi and others. Graduate version of ARCH 384. Graduate/Undergraduate version: ARCH 384. Offered Spring. Instructor(s): Last.

ARCH 685 ARCHITECTURE AND SOCIETY I (ANTIQUITY THROUGH 17TH CENTURY) (3)

Through a series of case studies, this course will examine the socio-cultural consequences of exemplary buildings from Antiquity through the 17th Century. Graduate/Undergraduate version: ARCH 485. Offered Fall. Instructor(s): Hight.

ARCH 686 ARCHITECTURE AND SOCIETY II (ENLIGHTENMENT-POSTMODERNITY) (3)

Through a series of case studies, this course will examine the socio-cultural consequences of exemplary buildings from the Enlightenment through Postmodernity. Graduate/Undergraduate version: ARCH 386. Offered Spring. Instructor(s): Biln.

ARCH 691 ARCHITECTURAL PROBLEMS: SEMINAR (3)

Repeatable for Credit. Offered Fall. Instructor(s): Cannady.

ARCH 692 PROBLEMS IN KNOWLEDGE AND DESIGN (3)

This course will present a series of lectures on the physics and metaphysics of creation and genesis from a wide variety of perspectives and disciplines, slowly sewing them together with a general and non-classical approach to form. Graduate/Undergraduate version: ARCH 492. Offered Spring. Instructor(s): Kwinter.

ARCH 700 PRACTICUM (3)

Full-time internship service in approved local offices under interdisciplinary supervision. Emphasis on real world design, planning, or research experiences. Special tuition. May be taken in any semester or in summer. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Advisor.

ARCH 702 PRE-THESIS PREPARATION (3)

Offered Spring. Instructor(s): Pope.

ARCH 703 DESIGN THESIS STUDIO (13)

Offered Fall.

ARCH 705 WRITTEN THESIS RESEARCH (3)

Offered Fall and Spring.

ARCH 706 WRITTEN THESIS (13)

Offered Fall and Spring.

ARCH 711 SPECIAL PROJECTS (1 TO 9)

Independent research or design arranged in consultation with a faculty member subject to approval of the student's faculty advisor and director. Repeatable for Credit. Offered Fall and Spring.

ARCH 714 INDEPENDENT DESIGN PROJECTS (1 TO 9)

Repeatable for Credit. Offered Fall and Spring.

ARCH 800 GRADUATE RESEARCH (3 TO 12)

Repeatable for Credit. Offered Fall and Spring.

ARTV (VISUAL ARTS)

School of Humanities/Visual Arts

ARTV 102 CREATIVE 3-D DESIGN (3)

Study of the elements and principles of design. Three-dimensional problems are introduced. Space in studio classes is limited. Registration does not guarantee a place in class. The class is formulated on the first day of class by the individual instructor. Cross-listed with ARCH 102. Limited enrollment. Instructor(s): Smith.

ARTV 205 PHOTOGRAPHY I (3)

Exploration of the basic materials and processes of the photographic medium. Includes viewing, analysis, and discussion of the medium's history and current trends. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Winningham.

ARTV 206 PHOTOGRAPHY II (3)

Continuation of ARTS 205. Exploration of the basic materials and processes of the photographic medium. Includes viewing, analysis, and discussion of the medium's history and current trends. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Winningham.

ARTV 216 35MM PHOTOGRAPHY (3)

Introduction to 35mm photography. Space in studio class is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Winningham.

ARTV 225 DRAWING I (3)

This course introduces the student to techniques and materials, processes of drawing, and the use of drawing to explore the visual language of line, tone, composition, and linear and atmospheric perspective. Emphasis on learning to articulate form in space through observational studies using both wet and dry media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Instructor(s): Poulos.

ARTV 291 SPECIAL PROBLEMS IN DESIGN: CREATIVE THREE-DIMENSIONAL (1 TO 3)

Study of problems at the introductory level in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Smith.

ARTV 293 SPECIAL PROBLEMS IN DRAWING (1 TO 3)

Study of problems at the introductory level in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

ARTV 294 SPECIAL PROBLEMS IN STUDIO ART (1 TO 3)

Study of problems at the introductory level in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

ARTV 295 SPECIAL PROBLEMS IN PHOTOGRAPHY (1 TO 3)

Study of problems at the introductory level in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Winningham.

ARTV 296 SPECIAL PROBLEMS IN FILM AND VIDEOTAPE MAKING (1 TO 3)

Study of problems at the introductory level in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Huberman.

ARTV 301 PAINTING I (3)

Study of problems in painting, both traditional and experimental, in various opaque media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225 or ARTS 225. Limited enrollment. Instructor(s): Sparagana.

ARTV 303 INTERMEDIATE PAINTING (3)

Continuation of studies in painting, both traditional and experimental, in various opaque media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225 and ARTV 301 or (ARTS 225 and ARTS 301), Limited enrollment.

ARTV 304 PHOTOGRAPHIC MEDIA FOR ARTISTS (3)

Guided exploration of traditional and non-traditional photographic media for students with prior experience in drawing, painting, printmaking, sculpture, or photography. Photographic media open for students' exploration will include, but not limited to, black and white silver printing, traditional photographic color printing, digital printing, and oil pigment on photographic images. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 205 or ARTV 225 or ARTV 301. Limited enrollment.

ARTV 305 PHOTOGRAPHY III (3)

Study of advanced problems in photography, with emphasis on the independent pursuit of projects submitted by the students. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Winningham.

ARTV 306 PHOTOGRAPHY IV (3)

Study of advanced problems in photography, with emphasis on the independent pursuit of projects submitted by the students. Continuation of ARTV 305. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Instructor permission required. Limited enrollment. Instructor(s): Winningham.

ARTV 310 COLLABORATIVE PRINTMAKING (3)

This course is designed to interactively educate the student about the collaborative print process beyond artistic dialog, allowing each student to work as artist-printmaker, economist, and business planner. The course will examine the process of taking artwork from the beginning concept to the finished product to the marketplace--all the while staying within a budget. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Broker.

ARTV 311 INTAGLIO I (3)

Instruction in black and white etching and photo etching. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Broker.

ARTV 312 RELIEF I (3)

Instruction in black-and-white linoleum prints. Includes advanced color methods. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Broker.

ARTV 313 LITHOGRAPHY I (3)

Instruction in stone and plate lithography in black-and-white. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Broker.

ARTV 320 MONOTYPE I (3)

Introduction to Monotype. Includes black-and-white and color Monotype printing. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Broker.

ARTV 323 STUDIO DRAWING I (3)

Studio drawing I will focus on developing drawing skills at the intermediate level, with emphasis on writing and critiques to develop a conceptual basis for personal expression. Six studio art instructors will each conduct two-week sessions of intensive drawing study and participate in multiple critiques. A visual arts faculty member will be assigned to the class to coordinate work, critiques, and problems throughout the semester. Enrollment will be determined by portfolio review; therefore, students must bring examples of their drawing to the first class meeting. Limited enrollment.

ARTV 324 STUDIO DRAWING II (3)

Studio Drawing II is designed to give students the optimum learning experience in drawing at the more advanced level. This course will provide a diverse and intense depth of instruction in the methodologies of drawing. Five MFA graduates and artists from the highly competitive CORE Program at the Museum of Fine Arts, Houston will teach for a term of two weeks with joint critiques. Students will be selected by portfolio review. Enrollment limited to 15 art majors only. Limited enrollment. Offered Spring.

ARTV 325 LIFE DRAWING (3)

Instruction in drawing from the model in various media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Keeton.

ARTV 327 DOCUMENTARY PRODUCTION (3)

Study of the expressive possibilities of documentary production using digital systems. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Huberman.

ARTV 328 FILMMAKING I (3)

Dramatic film production class that requires the making of one digital video and one 16mm film. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 327. Limited enrollment. Instructor(s): Huberman.

ARTV 329 FILM FORUM (3)

Viewing, analysis, and discussion of modern and classic films. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Huberman.

ARTV 330 INTERMEDIATE STUDIES: POP ART AND ITS ORIGINS: ENGLAND AND AMERICA C. 1955-1968 (3)

Pop Art whether American, British, or European, had -- and has as its underlying and unifying agenda -- a commentary or critique concerning the impact of "popular" culture (film, television, advertising, music, fashion, etc.) on contemporary society, especially in creating a new synthesis of "popular" and "high" culture in the visual arts. This, in part, was a reaction against the lofty, idealistic aspirations of post-war abstraction. This course will examine the philosophical and aesthetic origins and development of what came to be known as Pop Art. Must be enrolled in one of the following Major(s): Visual Arts. Offered Spring.

ARTV 337 COLOR DRAWING (3)

Introduction to color using still lifes and various media (e.g., pastel and watercolor). Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Poulos.

ARTV 345 COLOR PHOTOGRAPHY I (3)

Study in the fundamentals of color photography. Includes problems in exposing color negative and transparency film, as well as photographic and digital color printing. Pre-requisite(s): ARTV 205 and ARTV 206. Limited enrollment. Instructor(s): Winningham.

ARTV 346 COLOR PHOTOGRAPHY II (3)

Study in the fundamental techniques of color photography. Includes special problems in color camera work, colornegative and transparency processing, and color printing. Continuation of ARTV 345. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 205 and ARTV 206. Limited enrollment. Instructor(s): Winningham.

ARTV 349 PRINTMAKING I (3)

Study of the problems and techniques in printmaking at the beginning level. Both traditional and experimental forms of printmaking will be examined. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Broker.

ARTV 350 SPECIAL PROBLEMS IN PRINTMAKING (1 TO 6)

Study at the introductory level of the problems in the creative art of printmaking. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Broker.

ARTV 365 SCULPTURE I (3)

Exploration of sculpture in wood, metal, and other sculptural media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Smith.

ARTV 366 SCULPTURE STUDIO (3)

Exploration of sculpture in wood, metal, and other sculptural media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 365. Limited enrollment. Instructor(s): Smith.

ARTV 381 DIGITAL PHOTOGRAPHY I (3)

An introduction to taking pictures with digital cameras and processing them with Adobe Photoshop. Assignments encourage visual awareness, technical comprehension, and an essential understanding of picture-making in the context of photography's continuing history. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 205.

ARTV 382 DIGITAL PHOTOGRAPHY II (3)

A continuation of ARTV 381, this course will introduce electronic media as a tool for artistic production. Students will learn more advanced uses of Adobe Photoshop as it relates to production of image making and new media applications. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 381. Limited enrollment.

ARTV 390 INVESTIGATIVE DRAWING: THEORY AND PRACTICE (3)
Examination of the basic principles of drawing and representation, with emphasis on studio practice, art history, and theory. Includes categories of representation (e.g., still life, landscape, and figure) and the process of making drawings, as well as related readings, group discussions, and writing assignments. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment.

ARTV 391 SPECIAL PROBLEMS IN DRAWING (1 TO 3)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

ARTV 392 SPECIAL PROBLEMS IN LIFE DRAWING (1 TO 3)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

ARTV 393 SPECIAL PROBLEMS IN PAINTING (1 TO 3)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

ARTV 394 SPECIAL PROBLEMS IN PRINTMAKING (1 TO 6)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Broker.

ARTV 395 SPECIAL PROBLEMS IN PHOTOGRAPHY (1 TO 6)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

ARTV 396 SPECIAL PROBLEMS IN FILM AND VIDEOTAPING (1 TO 3)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Huberman.

ARTV 397 SPECIAL PROBLEMS IN SCULPTURE (1 TO 6)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Smith.

ARTV 411 INTAGLIO II (3)
Black-and-white etching and photoetching at the advanced level. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225 and ARTV 311. Limited enrollment. Instructor(s): Broker.

ARTV 412 RELIEF II (3)
Instruction in black-and-white linoleum prints at the advanced level. Includes advanced color methods. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225 and ARTV 312. Limited enrollment. Instructor(s): Broker.

ARTV 413 LITHOGRAPHY II (3)
Instruction at the advanced level in stone and plate lithography in black-and-white and color. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225 and ARTV 313. Limited enrollment. Instructor(s): Broker.

ARTV 420 MONOTYPE II (3)
Advanced Monotype processes: emphasis on color and drawing techniques. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 320 and ARTV 225. Limited enrollment. Instructor(s): Broker.

ARTV 423 SPECIAL PROBLEMS IN PAINTING (1 TO 3)
Study of problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

ARTV 425 ADVANCED DRAWING (3)
An advanced level course for experiencing the art of drawing by working in an expansive format. By using, but not limited to, traditional materials, students will be encouraged to explore the language of drawing in contemporary art making. Emphasis will be on individual project development and staying with ideas to observe, investigate, and document evolutions in the work. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Sparagana.

- ARTV 426 STUDIO SUBJECTS: STILL LIFE/SELF-PORTRAITURE (3)**
A studio class with in-depth exploration of still life and self-portraiture painting problems. The students will be expected to develop a body of work using water-based mediums, collage, and different surfaces. There will be discussions/critiques of the students' work using historical concepts of past masters of both studio subjects. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Poulos.
- ARTV 427 DOCUMENTARY PRODUCTION II (3)**
Advanced documentary production using digital camera & editing systems. Continuation of ARTV 327. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Huberman.
- ARTV 428 FILMMAKING II (3)**
Completion of one major film project by each student, using either video or 16mm film. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Huberman.
- ARTV 432 FILM GENRE: THE WESTERN (3)**
Survey of the essential American film experience spanning all the years of U.S. cinema, with emphasis on the western and its mythic function in society. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Limited enrollment. Instructor(s): Huberman.
- ARTV 443 SPECIAL PROBLEMS IN DESIGN (1 TO 3)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Smith.
- ARTV 445 SPECIAL PROBLEMS IN DRAWING (1 TO 3)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.
- ARTV 447 SPECIAL PROBLEMS IN LIFE DRAWING (1 TO 3)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Poulos.
- ARTV 449 PRINTMAKING STUDIO (3)**
Exploration of etching, lithography, photo gravure, and monoprinting. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 225. Limited enrollment. Instructor(s): Broker.
- ARTV 450 SPECIAL PROBLEMS IN PRINTMAKING (1 TO 3)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Pre-requisite(s): ARTV 225. Instructor permission required. Repeatable for Credit. Instructor(s): Broker.
- ARTV 452 SPECIAL PROBLEMS IN PAINTING (1 TO 3)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Sparagana.
- ARTV 454 SPECIAL PROBLEMS IN PHOTOGRAPHY (1 TO 6)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.
- ARTV 456 SPECIAL PROBLEMS IN FILMMAKING (1 TO 3)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Huberman.
- ARTV 457 SPECIAL PROBLEMS IN SCULPTURE (1 TO 3)**
Study of advanced problems in creative art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Smith.
- ARTV 465 SCULPTURE I (3)**
Study of advanced problems in various sculptural media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 365 and ARTV 366. Limited enrollment. Instructor(s): Smith.
- ARTV 466 SCULPTURE STUDIO (3)**
Study of advanced problems in various sculptural media. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 365 and ARTV 366. Limited enrollment. Instructor(s): Smith.

ARTV 475 ADVANCED PAINTING (3)

Study of advanced problems in painting, with emphasis on independent development and participation in class critiques. Space in studio classes is limited. Registration does not guarantee a place in class. The class roster is formulated on the first day of class by the individual instructor. Pre-requisite(s): ARTV 301 and ARTV 303. Limited enrollment. Instructor(s): Poulos.

ARTV 494 SPECIAL PROBLEMS IN PRINTMAKING (1 TO 3)

Study at the advanced level of the problems in creative art of printmaking. May be used in awarding transfer credit. Pre-requisite(s): ARTV 225. Instructor permission required. Repeatable for Credit. Instructor(s): Broker.

ARTV 501 STUDIO I: PAINTING (3)

Individual work in painting under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Keeton.

ARTV 503 STUDIO I: SCULPTURE (3)

Individual work in sculpture under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Keeton.

ARTV 505 STUDIO I: DRAWING (3)

Individual work in drawing under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Keeton.

ARTV 507 STUDIO I: LIFE DRAWING (3)

Individual work in life drawing under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Keeton.

ARTV 509 STUDIO I: DESIGN (3)

Individual work in design under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Smith.

ARTV 511 STUDIO I: PRINTMAKING (3)

Individual work in printmaking under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Broker.

ARTV 513 STUDIO I: PHOTOGRAPHY (3)

Individual work in photography under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Winningham.

ARTV 515 STUDIO I: FILMMAKING (3)

Individual work in filmmaking under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Huberman.

ARTV 520 STUDIO II: PAINTING (6)

Individual work in painting under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Sparagana.

ARTV 522 STUDIO II: SCULPTURE (6)

Individual work in sculpture under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Smith.

ARTV 524 STUDIO II: DRAWING (6)

Individual work in drawing under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Keeton.

ARTV 526 STUDIO II: LIFE DRAWING (6)

Individual work in life drawing under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Keeton.

ARTV 530 STUDIO II: PRINTMAKING (6)

Individual work in printmaking under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Broker.

ARTV 532 STUDIO II: PHOTOGRAPHY (6)

Individual work in photography under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Winningham.

ARTV 534 STUDIO II: FILMMAKING (6)

Individual work in filmmaking under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Huberman.

ARTV 546 STUDIO III: PHOTOGRAPHY (9)

Individual work in photography under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Winningham.

ARTV 548 STUDIO III: FILMMAKING (9)

Individual work in filmmaking under the direction of one or more faculty members. Must be seeking one of the following Degree(s): Bachelor of Fine Arts. Instructor permission required. Instructor(s): Huberman.

ASIA (ASIAN STUDIES)**School of Humanities/Asian Studies****ASIA 139 INTRODUCTION TO INDIAN RELIGIONS (3)**

This course will survey the four major religions which originated in India, namely Hinduism, Buddhism, Jainism, and Sikhism. Emphasis will be placed on the study of the scriptures of these religions. Cross-listed with RELI 139.

ASIA 140 INTRODUCTION TO CHINESE RELIGIONS (3)

Surveys major Chinese religious traditions of Confucianism, Daoism and Buddhism. Readings will include both philosophical texts, historical and anthropological studies, as well as popular literature. Cross-listed with RELI 140.

ASIA 170 THE ARTS OF CHINA (3)

History of the visual arts of China from Bronze Age to present. Special attention to the artworks' physical and social contexts. Included: funerary art and the imagination of the afterlife, art and imperial cosmology, rise of literary aesthetic, relationship between painting and calligraphy, and the emergences of propaganda avant-garde art in Modern China. Cross-listed with HART 170.

ASIA 211 INTRODUCTION TO ASIAN CIVILIZATIONS (3)

Introduction to the great cultural traditions of Asia, past and present, with emphasis on evolving religious and philosophical traditions, artistic and literary achievements, and patterns of political, social, and economic change. Cross-listed with HIST 206. Limited enrollment.

ASIA 221 LIFE OF THE PROPHET MUHAMMAD (3)

This course will examine the life of the Prophet Muhammad, focusing on its significance for Muslims and for non-Muslims. Readings in The Qur'an, Ibn Hisham, and Haykal. Cross-listed with RELI 221.

ASIA 231 THE ENLIGHTENMENT OF THE BODY (3)

Beginning with a historical survey of the American metaphysical tradition, this course turns to a close study of the Esalen Institute in Big Sur, California, as a unique window into some of the different ways the tradition has appropriated Asian religions, psychological models of the unconscious, and contemporary scientific paradigms. Cross-listed with RELI 231.

ASIA 232 RELIGIONS FROM INDIA (3)

This course will survey the religions of India, namely Hinduism, Buddhism, Jainism, Christianity, Islam, and Sikhism. Emphasis will be placed on the study of scriptures of these traditions and their continuing global relevance, particularly in American history and culture. Cross-listed with RELI 232.

ASIA 234 INTRODUCTION TO INDIAN PHILOSOPHY (3)

This course will survey the major schools of Indian philosophy, beginning with the ancient period of Vedic speculation, the formation of the distinct schools during the classical period, and their medieval developments. While the focus will be primarily on Hindu and Buddhist schools, Jain philosophy will also be covered. Cross-listed with RELI 234.

ASIA 235 INTRODUCTION TO TAOISM (3)

Beginning with a survey of religious trends in ancient China, we will explore the development of the Taoist philosophy. We will then focus on religious Taoism, particularly the mystical and alchemical traditions. We will conclude by examining the fate of Taoism in post-Mao China and its international legacy. Cross-listed with RELI 235.

ASIA 240 GENDER AND POLITICIZED RELIGION (3)

This course examines the emergence of religion-based politics in various Asian countries—particularly Hindu and Muslim—focusing on the women participants in these movements as well as the movements' concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-listed with WGST 240. Course equivalency: ASIA 340.

ASIA 250 MEDITATION, MYSTICISM, AND MAGIC (3)

The course moves between Buddhist religious and Western psychological literature, analyzing these as models of human development, as guides to a meditative life or critiques of it, and above all as expressions of deeply rooted cultural proclivities. Reading Freud, Khakar, Milarepa, Norbu, Obeyesekere, Sutric and Tantric literature, Taylor and Wangyal. Cross-listed with RELI 250.

ASIA 280 THE ASIAN AMERICAN EXPERIENCE (3)

The history of Asian immigration into the United States, and contemporary issues such as ethnic identity, racism, model minority stereotyping, interracial conflict, family structure, gender roles and relationships, and generational differences. We will analyze and discuss historical, social and literary texts, and documentary and feature films. Students will gain an appreciation of the cultural complexity of the Asian American community.

ASIA 323 THE KNOWING BODY: BUDDHISM, GENDER, AND THE SOCIAL WORLD (3)

Western thought tends to regard mind and body dualistically, a view with significant impact on religious cultural, gendered and social processes. This course juxtaposes received Western assumptions with Buddhist perspectives (especially Tibetan Buddhist), mapping Western and Buddhist categories onto each other to better understand the implications of each. Cross-listed with RELI 323, WGST 323.

ASIA 330 INTRODUCTION TO TRADITIONAL CHINESE POETRY (3)

This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social and culture changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. Cross-listed with CHIN 330.

ASIA 332 CHINESE FILMS AND MODERN CHINESE LITERATURE (3)

Exploration of modern Chinese literature through the visual imagery of Chinese films. Includes an analysis using literary history and narrative structure to link film adaptations to their original texts, with emphasis on narratology and movie theory. Films, subtitled in English, shown outside of class. All reading in English translation. Cross-listed with CHIN 332.

ASIA 334 TRADITIONAL CHINESE TALES AND SHORT STORIES (3)

Learning Chinese literature and culture through reading vernacular stories, fantastic tales, biographies, and philosophical parables. Discussion topics: literature and Confucianism, Taoism, and Buddhism; literature and history; self and other; fantastic world and reality; women as domestic aliens and aliens portrayed as women, etc. Readings are in English translation. Cross-listed with CHIN 334.

ASIA 335 INTRODUCTION TO CLASSICAL CHINESE LITERATURE (3)

Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-listed with CHIN 335.

ASIA 340 GENDER AND POLITICIZED RELIGION (ENRICHED VERSION) (3)

This course examines the emergence of religion-based politics in various Asian countries-particularly Hindu and Muslim-focusing on the women participants in these movements as well as the movements' concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-listed with WGST 340. Course equivalency: ASIA 240.

ASIA 344 KOREAN LITERATURE AND CULTURE (3)

Exploration of selections from modern Korean literature and Korean films. Includes background survey of Korean history, philosophy and religion. All texts and films in English translation. No previous knowledge of Korean required. Cross-listed with HUMA 344, KORE 344. Instructor permission required.

ASIA 345 LINGUISTIC STRUCTURE OF KOREAN (3)

Focuses on the origin of Korean and related languages. It explores the way the Korean language evolved and interacted with other East Asian languages, including Chinese and Japanese. The socio-linguistic aspect of these languages will be studied, including the difference in male and female language usage and the honorific systems. Cross-listed with KORE 345, LING 345.

ASIA 346 KOREAN CULTURE AND HISTORY (3)

This course will introduce students to the important elements of Korean history and culture through a reading of modern Korean literature. The class will concentrate on the period from the early 20th century to the present. Special attention will be given to topics such as Korean religion, family life, and literature. Films will be used. All readings in English translation. Cross-listed with KORE 346.

ASIA 354 APOCALYPTIC AND MILLENARIAN MOVEMENTS IN PRE-MODERN ASIA (3)

This course will focus upon the rich and neglected apocalyptic and millenarian tradition of Asia, discussing Hinduism, Buddhism, Zoroastrianism, Manichaeism and Eastern Christianity as each of these faiths interact with and react to each other. Readings will be from scriptures and translations covering approximately the period between the first and nineteenth centuries. Cross-listed with RELI 354.

ASIA 360 TRANSNATIONAL CHINA: CHINA AND THE CHINESE DIASPORA (3)

Exploration of the political, economic, and social forces changing the lives of nearly a quarter of humanity, the 1.4 billion people of Mainland China, Taiwan, Hong Kong, Singapore and the diasporic Chinese communities of East and Southeast Asia. Topics include political and economic liberalization, nationalism and urban identity, privatization and consumerism, environmentalism and public goods, and the globalization of communication technologies and Chinese cultural media.

ASIA 361 THE ORIENTAL RENAISSANCE (3)

This course will explore the European and American encounters with India from seventeenth-century France to twentieth-century America. Particular attention will be given to the translation of Sanskrit texts, the English and German Roman traditions, the depth psychology of C.G. Jung, and the American New Age. Cross-listed with RELI 361.

ASIA 363 THE MARRIAGE OF HEAVEN AND HELL (3)

The history of mysticism is marked by symbolic systems and ritual practices suffused with erotic and ethical paradoxes. This course examines such themes in a wide variety of historical contexts, from Plato's dialogues and Blake's poetry to Christian mysticism, Hindu, and Buddhist Tantric traditions, and the modern study of religion. Cross-listed with RELI 363.

ASIA 365 CHINESE MYSTICISM AND MEDITATION (3)

The course will investigate the major mystical and meditative traditions in Taoism, Buddhism and Neo-Confucianism. Focus will be placed upon the inner and outer traditions of Taoist alchemy, Buddhist meditation traditions (primarily Chan/Zen and Pure Land techniques), and the influence of these traditions upon Chinese intellectual discourse and the creative arts. Cross-listed with RELI 365.

ASIA 369 FILM, LITERATURE, AND THE JAPANESE PAST (3)

Every day, we retell our past to find meaning in our present. Authors and film directors in Japan have shaped national identities, created moral ideas, made sense of the horrors of war, and articulated new visions of the future—all through artistic reinterpretations of historical themes. In this class, we will examine both these allusions to the past and the uses to which they have been put in Japanese film and literature over the years.

ASIA 371 TRADITIONAL CHINESE PAINTING (3)

This course examines the significance of the brushwork in traditional Chinese painting as performance, as expression of artistic personality, and as a system of gestures borrowed from the art of calligraphy. We will consider how historically shifting understanding of the brushwork served to express diverse aesthetic, social, and cultural concerns. Cross-listed with HART 371.

ASIA 372 SURVEY OF ASIAN AMERICAN LITERATURE (3)

Offered from time to time. Material covered will vary depending on instructor. Cross-listed with ENGL 372. URL: www.english.rice.edu.

ASIA 380 THE ASIAN AMERICAN EXPERIENCE (3)

Will explore the history of Asian immigration into the United States, as well as contemporary issues such as ethnic identity, racism, model minority stereotyping, interracial conflict, family structure, gender roles, and relationships, and generational differences. We will analyze and discuss historical, social, and literary texts, and documentary and feature films. Students will gain an appreciation of the cultural complexity of the Asian American community.

ASIA 387 ASIAN RELIGIOUS AND MEDICAL TRADITIONS (3)

Seminar exploring the development of Asian religious traditions--mainly Indian, Chinese and Tibetan—and their medical systems. We'll examine the relationship between body and mind, illness, suffering, treatment, healing and death. We'll also discuss Western clinical interest in and research applications with Asian healing therapies.

ASIA 399 WOMEN IN CHINESE LITERATURE (3)

This course examines women's roles in Chinese literature as writers, readers, and characters, focusing particularly on the tension between women's lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women's incorporation of the Western Tradition. Cross-listed with WGST 399.

ASIA 401 INDEPENDENT STUDY (1 TO 15)

Reading or research project to be determined by discussions between student(s) and faculty member(s).

ASIA 402 INDEPENDENT STUDY (1 TO 15)

Reading or research project to be determined by discussions between student(s) and faculty member(s). Repeatable for Credit.

ASIA 403 INDEPENDENT STUDY (1 TO 6)

ASIA 422 THE ORIGINAL BEAUTY OF CHINESE LITERATURE (3)

The course will expose students to the best literary works created in the Chinese tradition, both classical and modern, and give them a general introduction to different genres, including poetry, fiction, drama, and philosophical essays. It will improve their language proficiency through reading original texts of Chinese literature. Cross-listed with CHIN 422.

ASIA 432 ISLAM IN SOUTH ASIA (3)

Topics will include emergence of Indian Muslim society; Muslim responses to colonialism and the movement for Pakistan; and the role of Islam in politics in contemporary India, Pakistan, and Bangladesh. Requires no prior knowledge of Islam of South Asia. Cross-listed with HIST 432, WGST 432.

ASIA 441 POPULAR RELIGION IN THE MIDDLE EAST (3)

This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism and Christianity. Cross-listed with RELI 441.

ASIA 470 VISUAL CULTURE IN REVOLUTIONARY AND POST REVOLUTIONARY CHINA (CA. 1949-PRESENT) (3)

Exploration of propaganda and avant-garde art in modern Chinese visual culture. Issues include: art as social movement, notions of political and artistic avant-garde, structure of authoritarian art, and paradox of counter-discourse. The course will draw on scholarship on Soviet and Third Reich German visual cultures, Euro-American mass culture and avant-garde art. Cross-listed with HART 470.

ASIA 472 JAPANESE ANIMATION: NARRATIVE, HISTORY, AND SOCIETY (3)

Since the 1980s, animation has become a major force in Japanese popular culture, serving as a medium to address the diverse concerns of a high-tech media-focused society. This seminar explores the social, historical, and aesthetic significance of Japanese animation. Topics include gender and sexuality, ecological consciousness and religious imagination, folklore and history, viewership and fandom, the centrality of the fantastic and the grotesque, visions of a media-and technology-saturated society, and the prevalence of apocalyptic motifs and conspiracy theory. Cross-listed with HART 472.

ASIA 489 MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN (3)

'Migrations and Diasporas in The Indian Ocean World.' presents an enormously varied arena of cultural exchange and interaction spanning coastal regions of Africa, the Middle East, South and Southeast Asia and Australia. This seminar introduces students to this fascinating region by examining societies and empires shaped by voyages of exploration, religious pilgrimages, trading diasporas and forced migration. Cross-listed with HIST 489.

ASTR (ASTRONOMY)**School of Natural Sciences/Physics and Astronomy****ASTR 100 EXPLORING THE COSMOS (1)**

Introduction to concepts and methods used in astronomy and astrophysics, with a theme of "Astrobiology—Life in the Universe." Will include student presentations and web page development. For first-year students intending to major in science or engineering.

ASTR 201 STARS, GALAXIES, AND THE UNIVERSE (3)

An introductory course for students in academic programs. The formation, evolution, and death of stars; the composition and evolution of galaxies; the structure and evolution of the universe.

ASTR 202 EXPLORATION OF THE SOLAR SYSTEM (3)

An introductory course for students in academic programs, surveying the sun, planetary motions, interplanetary fields and plasmas, the planets, their satellites and rings, and comets. The purposes and methods of manned and unmanned solar system exploration are also discussed.

ASTR 221 OBSERVING THE NIGHT SKY (1)

Use of small telescopes and binoculars to study constellations, bright stars, planets and the sun at the campus observatory and at dark-sky sites. Modern analog and digital techniques will be used along with direct visual observation. Intended for students in academic programs. Pre-requisite(s): ASTR 100 or ASTR 201 or ASTR 202.

ASTR 230 ASTRONOMY LAB (3)

A hands-on introduction to modern techniques of observational astronomy. Students use telescopes, CCDs, and computers to obtain and analyze their own images of solar system, galactic, and extragalactic objects. This course involves field trips to dark sky observing sites such as George Observatory and makes extensive use of state-of-the-art data analysis software. Must be enrolled in one of the following Major(s): Astrophysics. Must be in one of the following Classification(s): Sophomore. Must be seeking one of the following Degree(s): Bachelor of Arts, Bachelor of Science. Pre-requisite(s): ASTR 100 or ASTR 201 or ASTR 350 or ASTR 360 or permission of instructor.

ASTR 243 EXPLORING THE SUN-EARTH CONNECTION (3)

The class will focus on the impact of solar activity on the Earth. Topics include solar variability, sunspots, flares, coronal mass ejections and the Earth's responses including mini ice-ages, magnetospheric storms and atmospheric expansion. The physical and observational basis of our current understanding will be presented at an introductory level. Pre-requisite(s): MATH 102 and PHYS 102 or PHYS 126.

ASTR 350 INTRODUCTION TO ASTROPHYSICS-STARS (3)

An introduction to celestial mechanics, radiative transfer, stellar structure, and stellar remnants (including black holes and neutron stars). Aspects of planetary science and solar system formation may also be explored. Together, ASTR 350 and ASTR 360 provide a comprehensive survey of modern astrophysics needed for senior research and graduate study in astronomy. Either ASTR 350 or 360 may be taken first. Pre-requisite(s): MATH 211.

ASTR 360 INTRODUCTION TO ASTROPHYSICS-GALAXY AND COSMO (3)

Morphology, kinematics, and dynamics of the Milky Way and external galaxies, including interstellar matter and evidence for dark matter. Peculiar and active galaxies, including interacting systems and evidence for supermassive black holes in active galactic nuclei such as quasars. Large scale structure and expansion of the universe, including various cosmologies ranging from the inflationary big bang theory to steady-state and anthropic concepts. Either ASTR 350 or 360 may be taken first. Pre-requisite(s): MATH 211.

ASTR 400 UNDERGRADUATE RESEARCH SEMINAR (1)

Seminar on current research topics in astronomy, astrophysics, and space physics for juniors and seniors. Students will be expected to give one oral presentation each semester. Repeatable for Credit.

ASTR 402 TEACHING EARTH AND SPACE SCIENCE (3)

Overview of the Earth and the solar system, their structure, evolution, and dynamics. Fundamentals of Earth and Space Science topics as taught in 6th grade. Includes mathematics of solar motion at level of algebra and simple trigonometry. Includes teaching in use of Earth and solar system software and weather station software. This course is designed for science and math teachers (grades 6-12). One hour of lab per week. Graduate/Undergraduate version: EDUC 588, PFDV 588.

ASTR 403 ASTRONOMY FOR TEACHERS (3)

Learn how to teach astronomy concepts as specified by the state of Texas. Methods to help students master content, including lab activities suitable for K-9 classrooms and as field trips. Topics vary with each offering. Graduate/Undergraduate version: EDUC 589, PFDV 589.

ASTR 430 TEACHING ASTRONOMY LABORATORY (3)

Methods and facilities of observational astronomy for public education. Students will help train beginners in the use of telescopes and carry out a modest observational program. The course requires one public talk and internship work. Topics vary with each offering. Pre-requisite(s): ASTR 230 or ASTR 350 or ASTR 360, or permission of instructor.

ASTR 450 EXPERIMENTAL SPACE SCIENCE (3)

Study of instruments and methods used in space physics and astronomy. May include the electromagnetic spectrum, cosmic rays, neutrinos, magnetic fields, and particles in the solar system, as well as discussion of special techniques for remote sensing or for the analysis of massive astronomical data sets. Pre-requisite(s): ASTR 230 and (ASTR 350 or ASTR 360), or permission of instructor.

ASTR 451 ASTROPHYSICS I: SUN AND STARS (3)

Graduate/Undergraduate version: ASTR 551. Pre-requisite(s): ASTR 350 or ASTR 360 and PHYS 301 and PHYS 302.

ASTR 452 ASTROPHYSICS II: GALAXIES AND COSMOLOGY (3)

Graduate/Undergraduate version: ASTR 552. Pre-requisite(s): (ASTR 350 or ASTR 360) and PHYS 301 and PHYS 302.

ASTR 470 SOLAR SYSTEM PHYSICS (3)

The Sun, solar-terrestrial relationships, solar wind; planetary atmospheres, ionospheres and magnetospheres. Pre-requisite(s): PHYS 301 and PHYS 302.

ASTR 500 GRADUATE SEMINAR (1)

A presentation of current research programs in the department. Repeatable for Credit.

ASTR 505 PROCESSES IN COSMIC PLASMAS (3)

Study of plasma phenomena that occur widely in nature. May include quasi-static equilibrium, magnetic equilibrium, magnetic reconnection, particle acceleration, plasma winds and jets, and interchange instabilities. Pre-requisite(s): ASTR 470 and PHYS 480.

ASTR 542 NEBULAR ASTROPHYSICS (3)

The physics of emission nebulae, including radiative transfer, photoionization and thermal equilibria, and internal gaseous dynamics. Physical processes in the interstellar medium.

ASTR 551 ASTROPHYSICS I: SUN AND STARS (3)

Physics of stellar interiors and atmospheres; solar phenomena. Concepts of stellar evolution. Graduate/Undergraduate version: ASTR 451.

ASTR 552 ASTROPHYSICS II: GALAXIES & COSMOLOGY (3)

The physics of interstellar matter; structure of the Milky Way and other normal galaxies; physical cosmology and high-redshift phenomena. Graduate/Undergraduate version: ASTR 452.

ASTR 554 ASTROPHYSICS OF THE SUN (3)

Analysis of physical processes at work in the sun, such as helioseismology, solar variability, solar activity, magnetic reconnection, heliosphere interactions and modern observational techniques.

ASTR 565 COMPACT OBJECTS (3)

Selected topics involving white dwarfs, neutron stars, black holes and their environments, e.g., pulsars, supernova remnants, and accretion disks.

ASTR 600 ADVANCED TOPICS IN ASTROPHYSICS (3)

Lecture/seminars which treat topics of departmental interest. Not offered every year. Repeatable for Credit.

BIOE (BIOENGINEERING)**School of Engineering/Bioengineering****BIOE 252 BIOENGINEERING FUNDAMENTALS (3)**

Introduction to material, energy, charge and momentum balances in biological systems. Steady-state and transient conservation equations for mass, energy, charge and momentum will be derived and applied using basic mathematical principles, physical laws, stoichiometry, and thermodynamics properties. Required for students intending to major in bioengineering. Pre-requisite(s): (PHYS 125 and PHYS 126) or (PHYS 101 and PHYS 102) and CHEM 121 and CHEM 122 and MATH 101 and MATH 102 and CAAM 211 or CAAM 210. Recommended co or prerequisite(s): MATH 211. Offered Fall. Instructor(s): Saterbak; Richards-Kortum.

BIOE 301 BIOTECHNOLOGY AND WORLD HEALTH (3)

This course provides an overview of contemporary technological advances to improve human health. The course opens with an introduction to the epidemiology and physiology of the major human health problems throughout the world. With this introduction, we examine medical technologies to prevent infection, detect cancer and treat heart disease. We discuss legal and ethical issues associated with developing new medical technologies. The course is designed for non-engineering majors.

BIOE 320 SYSTEMS PHYSIOLOGY LAB MODULE (1)

Exploration of physiologic systems through measurement of biologic signals. EEG, ECG, EMG pulmonary function tests etc., are performed and analyzed. Students will explore physiologic concepts through computer simulations, data collection and analysis, and bench top laboratory tests. Enrollment in or completion of BIOE 322 is expected. For students intending to major in Bioengineering. Pre-requisite(s): BIOE 252. Corequisite(s): BIOE 322 Limited enrollment. Offered Spring. Instructor(s): Oden.

BIOE 321 CELLULAR ENGINEERING (3)

Introduction to engineering principles and modeling at the cellular level. Topics include cytomechanics, receptor/ligand binding, genetic engineering, enzyme kinetics, and metabolic pathway engineering. Pre-requisite(s): BIOE 252, or permission of instructor. Instructor(s): Athanasiou.

BIOE 322 FUNDAMENTALS OF SYSTEMS PHYSIOLOGY (3)

This course will teach the fundamentals of physiology at the organism, tissue, and cellular levels. Emphasis will be on engineering aspects of physiology. Cross-listed with BIOS 332. Pre-requisite(s): BIOS 201 and MATH 211. Instructor(s): West.

BIOE 332 THERMODYNAMICS (3)

This course will be mathematically rigorous coverage of the fundamentals of thermodynamics with applications drawn from contemporary bioengineering problems. Advanced topics covered include thermodynamics of self assembly, the hydrophobic effect, polymer and membrane phase transitions, membrane transport, cell mechanics, electromechanical coupling in biological systems, nonequilibrium thermodynamics, open systems and statistical mechanics. Pre-requisite(s): BIOE 252 and BIOE 391 and BIOE 383, or permission of instructor. Instructor(s): Raphael.

BIOE 342 LAB MODULE IN TISSUE CULTURE (1)

Introduction to tissue culture techniques, including cell passage, cell attachment and proliferation assays, and a transfection assay. Sections 1 and 2 are taught during the first half of the semester. Sections 3 and 4 are taught during the second half of the semester. Section sign-up is required by the instructor in Keck 108 during preregistration week. Cross-listed with BIOS 320. Pre-requisite(s): BIOS 211 or CHEM 214, or permission of instructor. Limited enrollment. Instructor(s): Saterbak.

BIOE 372 INTRODUCTION TO BIOMECHANICS AND BIOMATERIALS (3)

The focus of this course is on the understanding of fundamental issues related to biomechanics of the human body, reactions of different types of tissue and synthetic material to load and the biomechanics of biomaterial. In examples, the effect of mechanical conditions on the human body function and the effect of tissue property on whole body behavior will be reviewed. Pre-requisite(s): BIOE 252 and MECH 211, or permission of instructor. Instructor(s): Liebschner.

BIOE 381 FUNDAMENTALS OF ELECTROPHYSIOLOGY (3)

Introduction to cellular electrophysiology. Includes the development of whole-cell models for neurons and muscle (cardiac, skeletal and smooth muscle) cells, based on ion channel currents obtained from whole-cell voltage-clamp experiments. Ion balance equations are developed, as well as, those for chemical signaling agents such as "second messengers." The construction of small neuron circuits are discussed. Volume conductor boundary-value problems frequently encountered in electrophysiology are posed, and solutions obtained based on adequate descriptions of the bioelectric current source and the volume conductor (surrounding tissue) medium. This course provides a basis for the interpretation of macroscopic bioelectric signals such as the electrocardiogram (ECG), electromyogram (EMG) and electroencephalogram (EEG). Cross-listed with ELEC 381. Instructor permission required. Instructor(s): Clark.

BIOE 383 BIOMEDICAL ENGINEERING INSTRUMENTATION (3)

This is an introductory level course on fundamentals of biomedical engineering instrumentation and analysis. Topics include measurement principles; fundamental concepts in electronics including circuit analysis, data acquisition, amplifiers, filters and A/D converters; Fourier analysis; temperature, pressure, and flow measurements in biological systems. Laboratory sections will be offered 2-5pm on M, T, W, TH, F. Sign up for lab section is required during preregistration week in KECK 108. Cross-listed with ELEC 383. Pre-requisite(s): MATH 211 and MATH 212 and PHYS 126 and CHEM 122 and BIOS 201 and BIOE 252. Instructor(s): Anvari.

BIOE 384 BIOPHOTONICS INSTRUMENTATION AND APPLICATIONS (3)

Introduction to fundamentals of biophotonics instrumentation related to coherent light generation, transmission by optical components such as lenses and fibers, and modulation and detection. Interference and polarization concepts and light theories including ray and wave optics will be covered. Biomedical applications in optical sensing and diagnosis will be discussed. Pre-requisite(s): MATH 211 and MATH 212 and PHYS 126 and BIOS 201. Instructor(s): Drezek.

BIOE 391 NUMERICAL METHODS AND STATISTICS (3)

Introduction to numerical approximation techniques and statistical methods with bioengineering applications. Topics include error propagation, Taylor's Series expansions, roots of equations, numerical differentiation and integration techniques for solving ordinary differential equations. Statistical methods for hypothesis testing, analysis of variance, probability and regression analysis are also covered. MATLAB and other software will be used for solving equations. Pre-requisite(s): (CAAM 210 or CAAM 211) and (MATH 211 or MATH 212). Instructor(s): Grande-Allen.

BIOE 400 UNDERGRADUATE RESEARCH (1 TO 5)

Independent investigation of a specific topic or problem in modern bioengineering research under the direction of a selected faculty member. Instructor permission required. Repeatable for Credit. Instructor(s): Athanasiou; San.

BIOE 405 INDEPENDENT RESEARCH/INTERNSHIP PROGRAM (0)

This independent research course offers multi-disciplinary training in the area of cellular engineering within the Departments of Bioengineering and Biochemistry & Cell Biology. Areas of research will include engineering of hard and soft tissue formation, cardiovascular tissue engineering, engineering cell surface interactions regulating movement and metabolic engineering. Students will conduct independent research under the supervision of a faculty mentor.

BIOE 410 CLINICAL MEDICAL INTERNSHIP (3)

Students participate in clinical inpatient rounds, outpatient visits, operating room procedures and medical grand rounds. Designed to provide direct contact with the medical needs addressed by bioengineering. Instructor permission required. Offered Fall.

BIOE 415 CLINICAL RESEARCH INTERNSHIP(3)

Students participate in clinical inpatient rounds, outpatient visits, operating room procedures and medical grand rounds. Designed to provide direct contact with the medical needs addressed by bioengineering. Instructor permission required. Offered Fall. Instructor(s): Richards-Kortum.

BIOE 420 BIOSYSTEMS TRANSPORT AND REACTION PROCESSES (3)

The principles of reaction kinetics and transport phenomena will be used to quantitatively describe biological systems. Cell biology, physiology, anatomy, and materials science topics will be covered as background for the study of cell membrane transport, receptor-ligand interactions, and normal organ function. Models will be introduced to describe pathological conditions, drug pharmacokinetics, and artificial organ designs. Cross-listed with CHBE 420. Pre-requisite(s): MATH 211 and MATH 212. Instructor(s): Mikos.

BIOE 425 PHARMACEUTICAL ENGINEERING (3)

This course will examine how pharmaceutical active agents function in the body and how they are delivered to the body. Topics to be covered include the kinetics of drug absorption and tissue distribution along with the transport phenomena associated with the release bioactive agents. Focus will be placed on mathematical modeling of pharmacokinetic and diffusional processes. Graduate/Undergraduate version: BIOE 625. Pre-requisite(s): BIOE 391, or permission of instructor. Offered Spring. URL: www.owl.net.rice.edu/~bioe425. Instructor(s): Nichol.

BIOE 440 STATISTICS FOR BIOENGINEERING (1)

Course covers application of statistics to bioengineering. Topics include descriptive statistics, estimation, hypothesis testing, ANOVA, and regression. Required for students not taking BIOE 391. Pre-requisite(s): CAAM 210 or CAAM 211. Instructor(s): Saterbak.

BIOE 441 ADVANCED BIOENGINEERING LAB AND STATISTICS (4)

Laboratory modules include biomaterial synthesis and characterization, systems physiology, ethics, mechanical testing of bone and skin, laser tweezers. Lectures focus on application of statistics in bioengineering. Required for students majoring in bioengineering. Pre-requisite(s): BIOE 342 and BIOE 252 and BIOE 372. Instructor(s): Saterbak.

BIOE 442 TISSUE ENGINEERING LAB MODULE (1)

Students conduct a series of tests to synthesize PLLA, characterize PLLA and PLGA, monitor PLLA and PLGA degradation, and assess the viability, attachment, and proliferation of HDF cells on PLLA films. The experiments include many of the basic types of experiments that would be required to do a preliminary investigation of a tissue engineered product. Sections 1 and 2 will be taught during the first half of the semester and sections 3 and 4 will be taught during the second half of the semester. In addition sections 1 and 3 will need to come into lab on 2-3 Fridays and sections 2 and 4 will need to come into lab on 2-3 Saturdays. Section sign-up is required by the instructor in Keck 108 during preregistration week. Pre-requisite(s): BIOE 342. Limited enrollment. Instructor(s): Saterbak.

BIOE 443 BIOPROCESSING LAB MODULE (1)

Students conduct a series of experiments to observe the growth of *E. coli* under different conditions, including agar platters, shake flasks, and a small-scale bioreactor. The *E. coli* has been transformed with a plasmid that produces beta-galactosidase. Some work "off hours" (early evening) is required. Section 1 is taught in the first half of the semester and Sections 2 and 3 will be taught in the second half of the semester. Section sign-up is required by the instructor in Keck 108 during preregistration week. Pre-requisite(s): BIOE 342. Limited enrollment. Instructor(s): Saterbak.

BIOE 444 MECHANICAL TESTING LAB MODULE (1)

Students conduct a series of tests to elucidate the mechanical and material properties of chicken bones, tendons, and skin using the Instron. Sections 1 through 6 will be taught in the first half of the semester. Sections 7 through 12 will be taught in the second half of the semester. Section sign-up is required by the instructor in Keck 108 during the preregistration week. Pre-requisite(s): BIOE 372. Limited enrollment. Offered Fall and Spring. Instructor(s): Oden.

BIOE 445 ADVANCED INSTRUMENTATION LAB MODULE (1)

Students design and build a biomedical instrumentation device. Sign up is required in Keck 108 during preregistration week. Pre-requisite(s): BIOE 383. Offered Fall. Instructor(s): Oden.

BIOE 451 BIOENGINEERING DESIGN I (3)

Senior Bioengineering students will design devices in biotechnology or biomedicine. This project-based course covers systematic design processes, engineering economics, FDA requirements, safety, engineering ethics, design failures, research design, intellectual property rights, business planning and marketing. Students will be expected to compile concise documentation and present orally progress of their teams. It is required that students take both parts of this course in the same year. BIOE 451 and 452 must be taken the same academic year. Pre-requisite(s): BIOE 252 and BIOE 372 and BIOE 383. Offered Fall. Instructor(s): Oden.

BIOE 452 BIOENGINEERING DESIGN II (3)

Senior Bioengineering students will design devices in biotechnology or biomedicine. This project-based course covers systematic design processes, engineering economics, FDA requirements, safety, engineering ethics, design failures, research design, intellectual property rights, business planning and marketing. Students will be expected to compile concise documentation and present orally progress of their teams. It is required that students take both parts of this course in the same school year. BIOE 451 and 452 must be taken the same academic year. Pre-requisite(s): BIOE 451. Offered Spring. Instructor(s): Oden.

BIOE 454 FINITE ELEMENT OF METHODS IN FLUID MECHANICS (3)
 Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Cross-listed with CEVE 454, MECH 454. Graduate/Undergraduate version: BIOE 554. Pre-requisite(s): MECH 371, or permission of instructor. Instructor(s): Tezduyar.

BIOE 460 BIOCHEMICAL ENGINEERING (3)
 Design, operation, and analysis of processes in the biochemical industries. Topics include enzyme kinetics, cell growth kinetics, energetics, recombinant DNA technology, microbial, tissue and plant cell cultures, bioreactor design and operation, and down stream processing. Cross-listed with CHBE 460. Instructor(s): San.

BIOE 464 EXTRACELLULAR MATRIX (3)
 This course will address the biology, organization, mechanics, and turnover of extracellular matrix. There will be an emphasis on cells and cell-matrix interactions, matrix distributions in connective tissues and organs, techniques for measurement and modeling, changes with growth and aging, and tissue/matrix degradation including enzyme kinetics. Pre-requisite(s): BIOE 372, or permission of instructor. Instructor(s): Grande-Allen.

BIOE 470 FROM SEQUENCE TO STRUCTURE: AN INTRODUCTION TO COMPUTATIONAL BIOLOGY (4)
 This course is a modern introduction to problems in computational biology spanning sequence to structure. The course has three modules: the first introduces statistical techniques in sequence analysis; the second covers statistical machine learning techniques for understanding experimental data generated in computational biology; and the third introduces problems in the structure of complex biomolecules.

BIOE 472 EXPERIMENTAL TECHNIQUES IN BIOENGINEERING (3)
 Introduction to experimental techniques used in bioengineering to assess biomaterials and tissues. This course will primarily concentrate on basic concepts of measurement methods, experimental design, signal analysis, and the development of experimental protocols. In laboratory modules focusing on mechanical testing of non-Newtonian materials, parameter extraction out of signal data sets, and electronic circuits. The theoretical concepts covered in class will be implemented hands-on. Pre-requisite(s): BIOE 372, or permission of instructor. Instructor(s): Liebschner.

BIOE 481 COMPUTATIONAL NEUROSCIENCE (3)
 Cross-listed with ELEC 481. Graduate/Undergraduate version: BIOE 581. Instructor(s): Clark.

BIOE 482 PHYSIOLOGICAL CONTROL SYSTEMS (4)
 Nervous system control of biological systems can be represented utilizing techniques common to the field of linear, nonlinear or adaptive control theory. This course begins with a review of the basic aspects of control theory, followed by detailed discussion of the structure of several biological systems including the visual, cardiovascular and pulmonary systems. Specific examples of neural control are developed for each system utilizing modeling and simulation techniques. Parameter sensitivity analysis and parameter estimation techniques are likewise brought to bear on some of these models to achieve good least-squares fits to experimental data. Cross-listed with ELEC 482. Instructor(s): Clark.

BIOE 485 FUNDAMENTALS OF MEDICAL IMAGING I (3)
 The course will introduce basic medical imaging modalities, such as x-ray, CT, and MRI, used to identify the anatomy of human organs, as well as other modalities, such as PET, SPECT, fMRI, and MEG, specifically developed to localize brain function. The course includes visits to clinical sites. Cross-listed with COMP 485, ELEC 485. Graduate/Undergraduate version: BIOE 685. Instructor permission required. Instructor(s): Mawlawi.

BIOE 486 FUNDAMENTALS OF MEDICAL IMAGING II (3)
 This course is directed towards graduate and senior undergraduate students interested in acquiring an in depth knowledge of Positron Emission Tomography (PET). The course will focus on PET physical principles, image formation, and processing. The course will also cover the various correction techniques used to quantify PET images as well as lay the foundations for understanding tracer kinetic modeling. A field trip to MD Anderson's PET facility will be organized to provide the students with hands on experience of PET imaging and data analysis. The use of PET imaging in various medical applications will also be covered. Cross-listed with COMP 486, ELEC 486. Graduate/Undergraduate version: BIOE 686. Instructor(s): Mawlawi.

BIOE 492 SENSORY NEUROENGINEERING (3)
 This course will explore how bioengineering techniques and principles are applied to sensory systems, with a focus on the auditory, vestibular, and retinal systems. The interaction between the electrical, mechanical and optical aspects of these systems, and ways to modulate these interactions, will be explored. Design and current technologies used as auditory and visual prosthetics will be covered. Pre-requisite(s): BIOE 322 and BIOE 332, or permission of instructor. Limited enrollment. Not offered Fall and Spring. Instructor(s): Raphael.

BIOE 500 GRADUATE RESEARCH (1 TO 15)

Repeatable for Credit.

BIOE 505 OPTICAL IMAGING (3)

This course includes a theoretical portion which will introduce the fundamentals of optical imaging of neural activity, present the devices that are employed, and review applications and discuss their results. In addition, in a practical part, students will design, set up, and perform simple in vitro experiments to gain practical experience with this exciting and powerful technology. Course meets in S744, Vivian Smith Res. Bldg., Baylor College of Medicine. Instructor(s): Saggau.

BIOE 520 BIOSYSTEMS TRANSPORT PHENOMENA (3)

The principles of transport phenomena will be used to quantitatively describe biological systems. Instructor permission required. Instructor(s): Deem.

BIOE 522 GENE AND CELL THERAPY (3)

This course will review the principles and strategies underlying gene therapy approaches in animal models and human beings. The current methods for gene delivery to cells ex vivo and in vivo will be discussed along with current cutting-edge approaches for improving the specificity and persistence of gene expression. The course will also cover current disease applications of gene therapy and the strategies taken to produce therapeutic results. Regulatory issues concerning biomaterials will also be addressed. Location: Baylor College of Medicine. Must be enrolled in one of the following Level(s):Graduate. Pre-requisite(s): CHEM 212 and BIOS 201. Offered Spring. Instructor(s): Barry.

BIOE 531 BIOMATERIALS ENGINEERING (3)

Emphasis will be placed on issues regarding design and synthesis of materials to achieve specific properties and biocompatibility. An overview of significant biomaterials application will be given, including topics such as ophthalmic biomaterials, orthopedic applications, cardiovascular biomaterials, and drug delivery systems. Regulatory issues concerning biomaterials will also be addressed. Recommended prerequisite(s): Organic chemistry and biology. Repeatable for Credit. Instructor(s): West.

BIOE 551 INTRODUCTION TO BIOENGINEERING (1)

Seminar/tutorial introducing current research in bioengineering and biotechnology to acquaint students with activities of various labs at Rice and the Texas Medical Center. Cross-listed with CHBE 551. Must be enrolled in one of the following Level(s):Graduate. Instructor permission required. Recommended prerequisite(s): Graduate standing or permission of instructor. Instructor(s): Deem.

BIOE 554 FINITE ELEMENT METHODS IN FLUID MECHANICS (3)

Graduate version of BIOE 454. Additional work required. Cross-listed with CEVE 554, MECH 554. Graduate/Undergraduate version: BIOE 454. Must be enrolled in one of the following Level(s):Graduate. Pre-requisite(s): MECH 371 and MECH 517, or permission of instructor. Instructor(s): Tezduyar.

BIOE 572 FUNDAMENTALS OF SYSTEMS PHYSIOLOGY (3)

This course will teach the fundamentals of physiology at the organism, tissue, and cellular levels. Emphasis will be on engineering aspects of physiology. Pre-requisite(s): BIOS 201 and MATH 212. Instructor(s): Drezek.

BIOE 575 CONTINUUM BIOMECHANICS (3)

Graduate level introduction to continuum mechanics. The course covers important concepts in tensor calculus, kinematics and strain, stress and constitutive theories of continua, including elasticity, Newtonian fluids, viscoelasticity, and mixture theory. Selective topics in bone, articular cartilage, and cell biomechanics will be discussed to illustrate the application of continuum mechanics to bioengineering problems. Must be enrolled in one of the following Level(s):Graduate. Pre-requisite(s): BIOE 372, or permission of instructor. Instructor(s): Athanasiou.

BIOE 576 FOUNDATIONS OF BIOTECHNOLOGY (1)

Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the Biosciences and Bioengineering will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-listed with BIOS 576. Must be enrolled in one of the following Level(s):Graduate.

BIOE 577 FOUNDATIONS OF BIOTECHNOLOGY (1)

Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the biosciences and bioengineering will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-listed with BIOS 577. Must be enrolled in one of the following Level(s):Graduate. Instructor(s): Cates.

BIOE 581 CARDIOVASCULAR DYNAMICS (3)

Analysis of properties and functions of the cardiovascular system. Includes detailed study of cardiac electrophysiology, ventricular mechanics, arterial hemodynamics, coronary and cerebral circulations, heart rate control, and imaging methods for determining ventricular volume and output flow, as well as therapeutic devices and computer controlled drug delivery systems with their mathematical models. Internship project with engineer or life scientist working in the Texas Medical Center required. Not offered every year. Cross-listed with ELEC 581. Graduate/Undergraduate version: BIOE 481. Pre-requisite(s): ELEC 481 and ELEC 482 and ELEC 507. Repeatable for Credit. Instructor(s): Clark.

BIOE 584 LASERS IN MEDICINE AND BIOENGINEERING (3)

This course will provide an overview of various types of interactions between lasers and biological tissues. Methods of optical properties measurements, mathematical modeling of light propagation, and selected therapeutic applications of lasers will be addressed. Optically based diagnostic procedures, including absorption and scattering-based techniques, will be introduced. Physics of optical tweezers and their applications in biomedical sciences will be discussed. Recommended prerequisite(s): Differential Equations, Introductory Physics, and Engineering Computation. Repeatable for Credit. Instructor(s): Anvari.

BIOE 589 COMPUTATIONAL MOLECULAR BIOENGINEERING (3)

This is a course designed for students in computationally-oriented biomedical and bioengineering majors to introduce the principles and methods used for the simulations and modeling of macromolecules of biological interest. Protein conformation and dynamics are emphasized. Empirical energy function and molecular dynamics calculations are described. Specific biological problems are discussed to illustrate the methodology. Classic examples such as the cooperative mechanism of hemoglobin and more frontier topics such as the motional properties of molecular motors and ion channels as well as results derived from the current literature are covered. Cross-listed with BIOS 589. Recommended prerequisite(s): MATH 212, BIOS 301, BIOE 332. Instructor(s): Ma.

BIOE 592 SENSORY NEUROENGINEERING (3)

This course will explore how bioengineering techniques and principles are applied to sensory systems, with a focus on the auditory, vestibular, and retinal systems. The interaction between the electrical, mechanical and optical aspects of these systems, and ways to modulate these interactions, will be explored. Design and current technologies used as auditory and visual prosthetics will be covered. Not offered Fall and Spring. Instructor(s): Raphael.

BIOE 594 TRAINING IN THE RESPONSIBLE CONDUCT OF RESEARCH (1)

This course will consider ethical issues involving human and animal subjects, record keeping, publications, potential conflict of interest, and behavior toward colleagues, research fellows, students, and employees. Cross-listed with BIOS 594. Must be enrolled in one of the following Level(s): Graduate. Limited enrollment.

BIOE 610 METHODS OF MOLECULAR SIMULATION (3)

Modern simulation techniques for classical atomistic systems. Review of statistical mechanical systems. Monte Carlo and molecular dynamics simulation techniques. Extensions of the basic methods to various ensembles. Applications to simulations of large molecules such as proteins. Advanced techniques for simulation of complex systems, including constraint satisfaction, cluster moves, biased sampling, and random energy models. Cross-listed with PHYS 610. Pre-requisite(s): CHBE 611 or BIOE 589 or BIOS 589 or CHEM 520 or PHYS 526, or permission of instructor. Instructor(s): Deem.

BIOE 620 TISSUE ENGINEERING (3)

Study of cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues. Includes strategies to regenerate metabolic organs and repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs, with emphasis on issues related to cell and tissue transplantation such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection. Cross-listed with CHBE 620. Instructor(s): Mikos.

BIOE 625 PHARMACEUTICAL ENGINEERING (3)

This course will examine how pharmaceutical active agents function in the body and how they are delivered to the body. Topics to be covered include the kinetics of drug absorption and tissue distribution along with the transport phenomena associated with the release bioactive agents. Focus will be placed on mathematical modeling of pharmacokinetic and diffusional processes. Graduate/Undergraduate version: BIOE 425. Must be enrolled in one of the following Level(s): Graduate. Instructor(s): Nichol.

BIOE 654 ADVANCED COMPUTATIONAL MECHANICS (3)

Advanced topics in computational mechanics with emphasis on finite element methods and fluid mechanics. Stabilized formulations. Fluid-particle and fluid-structure interactions and free-surface and two-fluid flows. Interface tracking and interface-capturing techniques, space-time formulations, and mesh update methods. Enhanced discretization and solution techniques. Iterative solution methods, matrix-free computations, and advanced preconditioning techniques. Cross-listed with CEVE 654, MECH 654. Pre-requisite(s): MECH 654, or permission of instructor. Instructor(s): Tezduyar.

BIOE 690 SPECIAL TOPICS COURSE: INTRODUCTION TO BIOMECHANICS AND BIOENGINEERING (3)

Introduction to the fundamentals of Biomechanics including force analysis, mechanics of deformable bodies, stress and strain, multiaxial deformation, and viscoelasticity. Biomechanics of soft and hard tissues. Physical and chemical properties of biomaterials. Materials covered include both natural and synthetic ones intended to function in the biological environment. Instructor(s): Liebschner.

BIOE 695 ADVANCED MODELING OF TISSUE MICROMECHANICS (3)

Continuation of MECH 595/BIOE 595 with emphasis on advanced modeling the micromechanics of biological tissues. Independent study and seminar/discussion course. Data from experiments will be used to refine the predictions of mathematical models. Designed for juniors, seniors, and graduate students. Laboratory work performed at Baylor College of Medicine and Computer work at Rice University. Pre-requisite(s): BIOE 595. Instructor(s): Boriek.

BIOE 698 GRADUATE SEMINAR (1)

Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Instructor(s): Grande-Allen.

BIOE 699 GRADUATE SEMINAR (1)

Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Instructor(s): Grande-Allen.

BIOS (BIOSCIENCES)**School of Natural Sciences/Biosciences****BIOS 113 ENVIRONMENTAL CRISIS SEMINAR: WATER (1)**

Water—one of the most basic and important components of the environment. But how is the water cycle changing and what are the current issues? In this semester's course we will discuss the water from an interdisciplinary perspective, from reservoirs and flow, through life and uses, to pollution and rights. Cross-listed with ENST 113, ESCI 113.

BIOS 122 FUNDAMENTAL CONCEPTS IN BIOLOGY (3)

Current topics in biological research with an emphasis on human health. Topics include the Human Genome Project, transgenic plants, cancer, heart disease, viruses, and others. Papers from scientific journals covering novel techniques and advances in medicine will be discussed. Offered Fall. Instructor(s): Bondos.

BIOS 201 INTRODUCTORY BIOLOGY (3)

The first in an integrated sequence of four courses (BIOS 201, 202, 301, 302). Chemistry and energetics, cell physiology, cell biology, Mendelian genetics, plant physiology, and animal physiology. Offered Fall. Instructor(s): Gustin.

BIOS 202 INTRODUCTORY BIOLOGY (3)

The second in an integrated sequence of four courses (BIOS 201, 202, 301, 302). Molecular genetics, DNA technology, antibiotics and antivirals, animal behavior, evolution, ecology, diversity, and conservation biology. Pre-requisite(s): BIOS 201. Offered Spring. Instructor(s): Gomer; Meffert.

BIOS 211 INTRODUCTION TO EXPERIMENTAL BIOSCIENCES (2)

Your registration for this course will NOT be accepted until you sign up at <http://www.ruf.rice.edu/~bioslabs/bios211/> Introduction to the scientific method, principles of experimental design, selected research strategies, record keeping, and technical communication as related to biological science. Taught in the first half of each semester. Pre-requisite(s): BIOS 201. Offered Fall and Spring. URL: www.ruf.rice.edu/~bioslab/bios211/. Instructor(s): Caprette.

BIOS 213 INTRO LAB MOD ECOLOGY AND EVOLUTIONARY BIOLOGY (1)

Experimental, laboratory, and field studies of natural history, ecology, evolution, and animal behavior. Computer simulations of population genetics. Course will begin after mid-semester break in the Fall semester and after mid-term recess in the Spring semester. Offered Fall and Spring. Instructor(s): Sullender.

BIOS 301 BIOCHEMISTRY (3)

The third in an integrated sequence of four courses (BIOS 201, 202, 301, 302). Structure and function of proteins, enzymes, and nucleic acids; enzyme kinetics; glycolysis, aerobic metabolism, and energy coupling. Pre-requisite(s): CHEM 211. Recommended prerequisite(s): CHEM 212 Offered Fall. Instructor(s): Olson; Shamoo.

BIOS 302 BIOCHEMISTRY (3)

The final in an integrated sequence of four courses (BIOS 201, 202, 301, 302). Introduction to metabolism, membranes, electron transport, oxidative phosphorylation, and regulation. Biosciences Group A. Pre-requisite(s): BIOS 301 and CHEM 211. Recommended prerequisite(s): CHEM 212. Offered Spring. Instructor(s): MacKenzie; Shamoo.

BIOS 307 GENETICS: BIOLOGICAL, CULTURE-HISTORICAL, AND ETHICAL PERSPECTIVES (1 TO 4)

The course uses an interdisciplinary perspective. The course will cover biological basics of genes, DNA, and sequencing techniques; cultural and historical aspects to genetics, including essentialism and eugenics and policy issues. Cross-listed with ANTH 314, UNIV 314. May not be in any of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): McIntosh; Novotny.

BIOS 309 SEMINAR IN RESEARCH METHODOLOGY (2)

A course based on laboratory research done outside the university which will use seminars, discussion and papers to develop communication skills in research. Department permission required. Offered Fall and Spring. Instructor(s): Bennett.

BIOS 310 INDEPENDENT STUDY FOR UNDERGRADUATES (1 TO 4)

Section 1 is Biochemistry and Cell Biology. Section 2 is Ecology and Evolutionary Biology. Program of independent study for students with previous training in the biosciences. Includes a research paper. Students are expected to spend at least three hours per week in the laboratory for each semester hour of credit. If taken for 2 or more hours, counts as one required lab course but not as a Group A or Group B course. If receiving more than 2 credits, students will be required to participate in the university annual undergraduate symposium in the spring semester. Biosciences Group B. Pre-requisite(s): BIOS 211. Instructor permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Bennett; Meffert.

BIOS 311 ADVANCED EXPERIMENTAL BIOSCIENCES (1)

Your registration for this course will NOT be accepted until you obtain Dr. Beason's signature (bbeason@rice.edu). Introduction to biochemical laboratory techniques with an emphasis on studies of proteins. Taught first half of the semester for 7 weeks. Pre-requisite(s): BIOS 211 and BIOS 301. Instructor permission required. Limited enrollment. Offered Fall and Spring. Instructor(s): Beason.

BIOS 312 EXPERIMENTAL MOLECULAR BIOLOGY (1)

Your registration for this course will NOT be accepted until you obtain Dr. Beason's signature (bbeason@rice.edu). Introduction to molecular biology techniques. Taught first or second half of the semester for 3 1/2 weeks. Pre-requisite(s): BIOS 311. Instructor permission required. Limited enrollment. Offered Fall & Spring. Instructor(s): Beason.

BIOS 313 ADVANCED EXPERIMENTAL MOLECULAR BIOLOGY (1)

Your registration for this course will NOT be accepted until you obtain Dr. Beason's signature (bbeason@rice.edu). Introduction to microarrays. Taught second half of the spring semester for 3 1/2 weeks. Pre-requisite(s): BIOS 312. Instructor permission required. Limited enrollment. Offered Spring. Instructor(s): Beason.

BIOS 314 EXPERIMENTAL CELL BIOLOGY (1)

Application of transmission electron microscopy to research in cell biology. Students will interview a faculty investigator and design and conduct an experiment involving preparation and examination of samples for the electron microscope. Recommended for students interested in a research career. Contact the instructor first week of classes. Pre-requisite(s): BIOS 301 and BIOS 311 and BIOS 341. Limited enrollment. Offered Fall & Spring. Instructor(s): Caprette.

BIOS 315 EXPERIMENTAL PHYSIOLOGY (1)

An instrumentation-intensive short course in membrane electrophysiology and vertebrate nerve and muscle physiology. Research reports require interpretation of laboratory data in terms of concepts at the molecular level. Starts the second half of the semester. Pre-requisite(s): BIOS 301 and BIOS 311. Limited enrollment. Offered Spring. URL: www.ruf.rice.edu/~bioslabs/bios315/. Instructor(s): Caprette.

BIOS 316 LAB MODULE IN ECOLOGY (1)

Field and lab experiments in ecology. Course taught for 1/2 semester. Pre-requisite(s): BIOS 323 or BIOS 325, or permission of instructor. Offered Fall. Instructor(s): Harcombe; Siemann.

BIOS 317 LAB MODULE IN BEHAVIOR (1)

Field experiments in behavior. Learn to formulate and test hypotheses on bird behavior using mockingbirds, grackles, and herons nesting on campus. Pre-requisite(s): BIOS 321 and BIOS 213, or permission of instructor. Limited enrollment. Offered Spring. Instructor(s): Strassmann.

BIOS 318 LAB MODULE IN MICROBIOLOGY (1)

Training in the isolation, culture, observation, and assay of bacteria. Qualitative analysis of water and mixed bacterial cultures. Starts the second half of the semester, self-scheduled after the first four formal meetings. Requires daily attention to cultures during the week. Pre-requisite(s): BIOS 311. Limited enrollment. Offered Fall. Instructor(s): Caprette.

BIOS 319 TROPICAL FIELD BIOLOGY (3)

The course consists of weekly meetings involving lectures and discussion of readings. Immediately following commencement, a 3-week field trip to southern Mexico will conclude the class. Selection of students for the course is determined through an interview with the instructor. While a background in biology is desirable (minimally including the following courses: BIOS 201, 202, and 213), individuals lacking this background but having a special interest in the tropics are encouraged to enroll. Pre-requisite(s): BIOS 201 and BIOS 213 and BIOS 202. Recommended prerequisite(s): BIOS 325, BIOS 336, BIOS 316, BIOS 317. Limited enrollment. Offered Spring. URL: www.owl.net.rice.edu/~bios319/. Instructor(s): Sullender.

BIOS 320 LAB MODULE IN TISSUE CULTURE (1)

Introduction to tissue culture techniques, including cell passage, cell attachment and proliferation assays, and a transfection assay. Taught in first and second halves of spring semester. See BIOE 342 for preregistration procedure. Cross-listed with BIOE 342. Offered Spring.

BIOS 321 ANIMAL BEHAVIOR (3)

Evolutionary theory is used to evaluate behavioral adaptations of organisms to their environment. Biosciences Group B. Pre-requisite(s): BIOS 202. Offered Fall. Instructor(s): Strassmann.

BIOS 322 GLOBAL ECOSYSTEM DYNAMICS (3)

A systems analysis of the Earth from a biological perspective stressing biogeochemical cycles and global change. Biosciences Group B. Offered Spring.

BIOS 323 CONSERVATION BIOLOGY (3)

The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Biosciences Group B. Pre-requisite(s): BIOS 201 and BIOS 202, or permission of instructor. Offered Spring. Instructor(s): Siemann.

BIOS 325 ECOLOGY (3)

Study of population dynamics, species interactions, plant and animal community organization, and ecosystem function. Biosciences Group B. Pre-requisite(s): BIOS 201 and BIOS 202, or permission of instructor. Offered Fall. Instructor(s): Holland.

BIOS 327 BIOLOGICAL DIVERSITY LABORATORY (1)

The course will examine (1) measures of biological diversity (taxic, molecular, and phylogenetic); (2) the ecological and evolutionary causes of biological diversity; (3) issues regarding the contribution of biological diversity to ecosystem function. A primary emphasis will be placed on experimental design and the measurement and estimation of biological diversity. Possible problems associated with the measurement and estimation of biological diversity will also be discussed. The course will take form of weekly preparatory meetings and culminate in a three-day exercise (taking place over fall break) at a field site in Texas where student will be responsible for designing and carrying out a study examining some aspect of biological diversity (taxic or functional group) with respect to such variables as habitat diversity, disturbance rate, or productivity. The course will emphasize oral presentations and written "publication" format papers. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 213. Offered Fall. Instructor(s): Sullender.

BIOS 328 EVOLUTION OF GENES AND GENOMES (3)

The course provides an overview of the evolution of genes and genomes. Using many examples, the course introduces databases and the Worldwide Web, and molecular and statistical methods used to study the evolution of genes and genomes. Broad-scale evolutionary patterns and medical applications based on genome analyses are presented. Biosciences Group B. Pre-requisite(s): BIOS 201 and BIOS 202. Limited enrollment. Offered Spring. Instructor(s): Kohn.

BIOS 329 ANIMAL BIOLOGY AND PHYSIOLOGY (3)

The evolution and systematics of the animal kingdom with consideration of functional anatomy, comparative physiology, behavior, medical implications and resource management. Biosciences Group B. Pre-requisite(s): BIOS 201 or BIOS 202, or permission of instructor. Offered Fall. Instructor(s): Fisher.

BIOS 332 FUNDAMENTALS OF SYSTEMS PHYSIOLOGY (3)

This course will teach the fundamentals of physiology at the organism, tissue, and cellular levels. Emphasis will be on engineering aspects of physiology. This course includes several projects and written assignments. Biosciences Group A. Cross-listed with BIOE 322. Pre-requisite(s): BIOS 201 and MATH 211. Offered Spring.

BIOS 334 EVOLUTION (3)

Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Biosciences Group B. Pre-requisite(s): BIOS 202, or permission of instructor. Offered Fall. Instructor(s): Queller.

BIOS 336 PLANT DIVERSITY (3)

The evolution and systematics of plants, with emphasis on flowering plants and biodiversity. Biosciences Group B. Pre-requisite(s): BIOS 202 and BIOS 201. Limited enrollment. Offered Spring. Instructor(s): Harcombe.

BIOS 341 CELL BIOLOGY (3)

Molecular mechanisms of the processes common to all cells, including exposition of structure, function, and biogenesis of all subcellular organelles. Emphasis will be on cytoplasmic events; molecular studies of transcription will be taught in BIOS 344. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202. Offered Fall. Instructor(s): McNew; Braam.

BIOS 344 MOLECULAR BIOLOGY AND GENETICS (3)

Mendelian genetics, population genetics, mapping, gene expression and regulation, genetic engineering, DNA replication and recombination, human genetics, genetic disease and gene therapy. Biosciences Group A. Recommended prerequisite(s): BIOS 201, BIOS 202. Offered Spring. Instructor(s): Stewart.

BIOS 352 PHYSICAL CHEMISTRY FOR THE BIOSCIENCES (3)

Study of selected aspects of physical chemistry as it relates to the biosciences. Includes thermodynamics, reaction rate theory, quantum mechanics, and atomic and molecular structure. Biosciences Group A. Pre-requisite(s): CHEM 211 and CHEM 212 and PHYS 125 and PHYS 126 and BIOS 301. Offered Spring. Instructor(s): MacKenzie; Olson.

BIOS 390 TRANSFER CREDIT IN BIOCHEMISTRY AND CELL BIOLOGY (3)

For transfer of courses which have no current equivalent in the Rice curriculum, but which can be counted as Group A Biosciences courses in satisfying requirements for majors in Biosciences. Biosciences Group A. Repeatable for Credit.

BIOS 391 TRANSFER CREDIT IN ECOLOGY AND EVOLUTIONARY BIOLOGY (3)

For transfer of courses which have no current equivalent in the Rice curriculum, but which can be counted as Group B Biosciences courses in satisfying requirements for majors in the Biosciences. Biosciences Group B. Repeatable for Credit.

BIOS 401 UNDERGRADUATE HONORS RESEARCH (5)

Open only to undergraduate majors who meet specific requirements and with the permission of the research supervisor and chair. Registration for BIOS 401 implies a commitment to participate in research for at least 2 semesters. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301 and BIOS 302. Department permission required. Offered Fall. Instructor(s): Bennett.

BIOS 402 UNDERGRADUATE HONORS RESEARCH (5)

See BIOS 401. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301 and BIOS 302. Department permission required. Corequisite(s): BIOS 412 Offered Spring. Instructor(s): Bennett.

BIOS 403 UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY (5)

Open only to undergraduate majors who meet specific requirements and with permission of the research supervisor and chair. Registration for BIOS 403/404 implies a commitment to participate in research for at least 2 semesters Biosciences Group B. Department permission required. Offered Spring. Instructor(s): Siemann.

BIOS 404 UNDERGRADUATE HONORS RESEARCH IN ECOLOGY AND EVOLUTIONARY BIOLOGY (5)

See BIOS 403. Biosciences Group B. Instructor permission required. Offered Fall. Instructor(s): Siemann.

BIOS 405 INDEPENDENT RESEARCH/INTERNSHIP PROGRAM (0)

This independent research course offers multi-disciplinary training in the area of cellular engineering within the Departments of Bioengineering and Biochemistry and Cell Biology. Areas of research will include engineering of hard and soft tissue formation, cardiovascular tissue engineering, engineering cell surface interactions regulating movement and metabolic engineering. Students will conduct independent research under the supervision of a faculty mentor. Offered Summer.

BIOS 412 UNDERGRADUATE RESEARCH SEMINAR (1)

Discussion of current research in the area under investigation. Corequisite(s): BIOS 402, BIOS 404. Offered Spring. Instructor(s): Silberg.

BIOS 421 NEUROBIOLOGY (3)

Cellular and molecular mechanisms of nervous system function. Emphasis on membrane and synaptic biophysics, sensory and motor systems, neuronal plasticity, and development. Open to juniors and seniors. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301. Offered Spring. Instructor(s): Glantz.

BIOS 422 ENDOCRINOLOGY (3)

Study of the molecular and cellular mechanisms of hormone synthesis and of target cell responses. Includes hormonal interactions in mammalian homeostasis. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301 and BIOS 341. Limited enrollment. Offered Spring. Instructor(s): Beckingham.

BIOS 423 IMMUNOBIOLOGY (3)

Cellular and molecular basis of immune function in mammals. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202. Recommended prerequisite(s): BIOS 301 or BIOS 341. Offered Fall. Instructor(s): Novotny.

BIOS 424 MICROBIOLOGY AND BIOTECHNOLOGY (3)

Structure and functions of microorganisms with emphasis on their environmental, industrial and medical importance. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301, or permission of instructor. Offered Fall. Instructor(s): Bennett.

BIOS 425 PLANT MOLECULAR GENETICS AND DEVELOPMENT (3)

Novel aspects of plant biology and development with emphasis on molecular and genetic mechanisms. Plant responses to the environment and the use of bioengineering and other means to develop new plant products will also be covered. Biosciences Group A. Graduate/Undergraduate version: BIOS 525. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301, or permission of instructor. Offered Fall. Instructor(s): Braam; Bartel.

BIOS 432 ADVANCED EVOLUTIONARY BIOLOGY (3)

Develop a critical understanding of evolutionary theory through lectures and discussion across a wide range of evolutionary topics. With the instructor's help, students will use current papers to stimulate debate on the theories, philosophies and methods of the study of evolution. Biosciences Group B. Pre-requisite(s): BIOS 201 and BIOS 202 and (BIOS 334 or BIOS 321). Offered Spring. Instructor(s): Danielson-Francois.

BIOS 433 ADVANCED ECOLOGY (3)

Students will develop a critical understanding of the discipline of ecology through a combination of lectures and discussion that span a range of topics. With the instructor's help, students will use current papers to stimulate debate on the theories, philosophies and methods of the study of populations, communities, and ecosystems. Biosciences Group B. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 325, or permission of instructor. Offered Spring.

BIOS 440 ENZYME MECHANISMS (3)

Enzymology is a biological extension of organic chemistry. This course will survey examples of enzyme-catalyzed reactions with emphasis on mechanisms. Enzymes that use catalytic cofactors (vitamins) will be covered, as will those that rely on amino acid side chains. Biosciences Group A. Cross-listed with CHEM 440. Pre-requisite(s): CHEM 212. Offered Spring. Instructor(s): Parry.

BIOS 443 DEVELOPMENT (3)

Analysis of the processes and principles of development as seen in a broad spectrum of eukaryotic organisms. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 341, or permission of instructor. Offered Spring. Instructor(s): Lane.

BIOS 445 ADVANCED MOLECULAR BIOLOGY AND GENETICS (3)

Molecular and genetic aspects of the regulation of gene expression as seen in simple prokaryotic systems and the model eukaryotic systems used for studies of development. Biosciences Group A. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301 and BIOS 344. Offered Fall. Instructor(s): Stern; Gustin; Wagner.

BIOS 481 MOLECULAR BIOPHYSICS I (3)

Emphasis on biophysical methods used to study conformation and dynamics of biological macromolecules, in particular proteins. Focus will be on spectroscopic methods, transport processes, chromatography and sedimentation, as well as light scattering and calorimetry. Ligand protein interactions, chemical kinetics and protein folding will also be covered. Biosciences Group A. Graduate/Undergraduate version: BIOS 551. Pre-requisite(s): BIOS 301 and BIOS 352, or permission of instructor. Offered Fall. Instructor(s): Wittung-Stafshede.

BIOS 482 MOLECULAR BIOPHYSICS II (3)

Advanced treatment of X-ray crystallography, NMR spectroscopy, and electron microscopy. Emphasis on theory and application of these methods for the determination of the three-dimensional structure and dynamics of biological molecules and complexes. Graduate/Undergraduate version: BIOS 552. Recommended prerequisite(s): BIOS 301, BIOS 352, BIOS 481, working knowledge of a programming language such as Fortran, C, Basic, MATLAB, or Pascal. Limited enrollment. Offered Spring. Instructor(s): Nikonowicz; Tao.

BIOS 525 PLANT MOLECULAR GENETICS AND DEVELOPMENT (3)

Novel aspects of plant biology and development with emphasis on molecular and genetic mechanisms. Plant responses to the environment and the use of bioengineering and other means to develop new plant products will also be covered. Graduate/Undergraduate version: BIOS 425. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301. Offered Fall. Instructor(s): Braam; Bartel.

BIOS 530 LAB MODULE IN NMR SPECTROSCOPY AND MOLECULAR MODELING (2)

The students will learn to set up, acquire, and process one-dimensional and basic two-dimensional NMR experiments. Spectral interpretation (resonance assignment and extraction of structural information) for nucleic acids and proteins using homonuclear and heteronuclear data will be performed. Enrollment limited to 12, with priority to graduate students. Pre-requisite(s): BIOS 352 and BIOS 481, or permission of instructor. Limited enrollment. Offered Spring. Instructor(s): Nikonowicz; Moran.

BIOS 532 LABORATORY MODULE IN OPTICAL SPECTROSCOPY AND KINETICS (2)

Students learn the principles behind fluorescence, circular dichroism, analytical ultracentrifugation, spectroscopy and rapid kinetics by carrying out experiments with genetically engineered proteins and state-of-the-art equipment. Data will be interpreted and manipulated using curve-fitting and graphics software. Recommended prerequisite(s): BIOS 352, BIOS 481. Limited enrollment. Offered Fall. URL: www.bioc.rice.edu/bios532/bios532.html. Instructor(s): Cates.

BIOS 533 COMPUTATIONAL BIOLOGY (2)

An introduction to the emerging field of bioinformatics. A series of lectures, combined with hands-on exercises. The topics to be discussed include sequence comparison, structure analysis, phylogenetics, database searching, microarrays and proteomics. Recommended prerequisite(s): BIOS 301 or permission of instructor. Offered Spring. URL: www.bioc.rice.edu/bios533/bioinfo.html. Instructor(s): Cates.

BIOS 535 PRACTICAL X-RAY CRYSTALLOGRAPHY (2)

This is an introduction to macromolecular crystallography with emphasis on crystallization methods, data acquisition, processing and molecular model-building. Approaches to solving structures will be discussed, as well as refinement of molecular models. Recommended prerequisite(s): BIOS 481 or BIOS 551 or permission of instructor. Offered Spring. URL: www.owl.net.rice.edu/~bios535/. Instructor(s): Cates.

BIOS 541 SPECIAL TOPICS IN ECOLOGY AND EVOLUTIONARY BIOLOGY (3)**BIOS 542 SPECIAL TOPICS IN ECOLOGY AND EVOLUTIONARY BIOLOGY (3)****BIOS 543 SECONDARY METABOLISM (3)**

A survey of the biosynthetic pathways leading to the major classes of natural products. Topics covered include the use of radioactive and stable isotopes, the synthesis of labeled organic compounds, mechanistic investigations of secondary metabolic enzymes, and the cloning and characterization of secondary metabolic genes. Biosciences Group A. Cross-listed with CHEM 543. Pre-requisite(s): BIOS 440. Offered Spring. Instructor(s): Parry.

BIOS 545 ADVANCED MOLECULAR BIOLOGY AND GENETICS (3)

Molecular and genetic aspects of the regulation of gene expression as seen in simple prokaryotic systems and the model eukaryotic systems used for studies of development. Pre-requisite(s): BIOS 201 and BIOS 202 and BIOS 301 and BIOS 344. Offered Fall. Instructor(s): Stern; Gustin; Wagner.

BIOS 551 MOLECULAR BIOPHYSICS (3)

Examination, at an intermediate level, of the interaction of light with matter. Includes UV-visible absorption, natural optical activity, fluorescence, EXAFS, NMR of biomolecules, x-ray diffraction and crystallography, neutron scattering, electron microscopy, and theoretical protein dynamics. Graduate/Undergraduate version: BIOS 481. Pre-requisite(s): BIOS 301 and BIOS 352, or permission of instructor. Limited enrollment. Offered Fall. Instructor(s): Wittung-Stafshede.

BIOS 552 MOLECULAR BIOPHYSICS II (3)

Advanced treatment of X-ray crystallography, NMR spectroscopy, and electron microscopy. Emphasis on theory and application of these methods for the determination of the three-dimensional structure and dynamics of biological molecules and complexes. Graduate/Undergraduate version: BIOS 482. Recommended prerequisite(s): BIOS 301, BIOS 352, BIOS 481. Limited enrollment. Offered Spring. Instructor(s): Nikonowicz; Tao.

BIOS 561 TOPICS IN EVOLUTION (2)

Review and discussion of the literature on current research in evolution. Recommended prerequisite(s): Graduate standing or permission of chair or instructor. Offered Fall. Instructor(s): Strassmann; Meffert; Queller.

BIOS 562 TOPICS IN BEHAVIORAL BIOLOGY (2)

Review and discussion of the literature on current research in animal behavior and evolution. Recommended prerequisite(s): Graduate standing or permission of chair or instructor. Offered Spring. Instructor(s): Meffert; Strassmann; Queller.

BIOS 563 TOPICS IN ECOLOGY (2)

Review and discussion of the literature on current research in ecology. Instructor permission required. Offered Fall. Instructor(s): Harcombe; Siemann; Holland.

BIOS 567 RESEARCH METHODS IN FIELD BIOLOGY (2)

Introduction to the field research techniques and practices of individual faculty members. Not offered Fall & Spring.

BIOS 568 TOPICS IN BIOLOGICAL DIVERSITY (2)

Review and discussion of literature on current research in biological diversity. Instructor permission required. Limited enrollment. Offered Spring. Instructor(s): Harcombe; Siemann; Holland.

BIOS 575 INTRODUCTION TO RESEARCH (1)

Introduction of first-year graduate students to the research programs and laboratories of individual faculty members. Offered Fall.

BIOS 576 FOUNDATIONS OF BIOTECHNOLOGY (1)

Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the Biosciences will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-listed with BIOE 576. Offered Fall. Instructor(s): Cates.

BIOS 577 FOUNDATIONS OF BIOTECHNOLOGY (1)

Graduate level introduction to a wide range of research methods in biosciences and bioengineering. Individual faculty members from the biosciences and bioengineering will each present practices and techniques for their areas of expertise. A web-based methods database will be constructed, with student involvement, from the library of lectures. Cross-listed with BIOE 577. Offered Spring. Instructor(s): Cates.

BIOS 581 GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (1)

A discussion of selected research topics. Required of all Biochemistry and Cell Biology graduate students. Offered Fall. Instructor(s): Bennett; Tao.

BIOS 582 GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY (1)

See BIOS 581. Offered Spring. Instructor(s): Stern; Nikonowicz.

BIOS 583 MOLECULAR INTERACTIONS (3)

Review of literature on current biosciences research. Offered Fall. Instructor(s): Silberg; Tao; McNew; Lane.

BIOS 585 GRADUATE SEMINAR IN ECOLOGY AND EVOLUTIONARY BIOLOGY (1)

Faculty and student presentations on current research. Required of all Ecology & Evolutionary Biology graduate students. Offered Fall and Spring. Instructor(s): Holland.

BIOS 586 GRADUATE SEMINAR/ECOLOGY AND EVOLUTIONARY BIOLOGY (1)

Continuation of BIOS 585. Instructor(s): Holland.

BIOS 587 GRADUATE SEMINAR FOR 1ST YEAR GRADUATE STUDENTS IN BIOCHEMISTRY AND CELL BIOLOGY (3)

Preparation and presentation of research proposals. Offered Spring. Instructor(s): Bartel; Stern.

BIOS 588 ADVANCED CELL BIOLOGY (3)

Review of literature on current biosciences research. Biosciences Group A. Offered Spring. Instructor(s): Gomer; McNew.

BIOS 589 COMPUTATIONAL MOLECULAR BIOPHYSICS (3)

This is a course designed for students in computationally-oriented biomedical and bioengineering majors to introduce the principles and methods used for the simulations and modeling of macromolecules of biological interest. Protein conformation and dynamics are emphasized. Empirical energy function and molecular dynamics calculations, as well as other approaches, are described. Specific biological problems are discussed to illustrate the methodology. Cross-listed with BIOE 589. Offered Fall. Instructor(s): Ma.

BIOS 590 SPECIAL TOPICS IN BIOCHEMISTRY AND CELL BIOLOGY (1)

Development of specific topic areas at the graduate level.

BIOS 591 GRADUATE TEACHING (3)

Supervised instruction in teaching Ecology & Evolutionary Biology. Offered Fall and Spring. Instructor(s): Sullender.

BIOS 592 SEMINAR IN COMPUTATIONAL BIOLOGY (1)

A discussion of selected research topics in computational biology. Repeatable for Credit. Offered Fall and Spring.

BIOS 593 SPECIAL TOPICS IN BIOCHEMISTRY AND CELL BIOLOGY (1)

Discussion of selected research topics in current plant biology literature. Repeatable for Credit. Offered Fall & Spring. Instructor(s): Braam; Bartel.

BIOS 594 RESPONSIBLE CONDUCT OF RESEARCH (1)

This course will consider ethical issues involving human and animal subjects, record keeping, publications, potential conflict of interest, and behavior toward colleagues, research fellows, students, and employees. Cross-listed with BIOE 594. Must be enrolled in one of the following Level(s): Graduate. Limited enrollment. Offered Fall. Instructor(s): Novotny.

BIOS 599 GRADUATE TEACHING IN BIOCHEMISTRY AND CELL BIOLOGY (1)

Supervised instruction in teaching biochemistry and cell biology. Repeatable for Credit. Limited enrollment. Offered Fall and Spring.

BIOS 611 RESEARCH SEMINAR (3)

Discussion of individual laboratory research or current topics in particular areas. Offered Fall.

BIOS 612 RESEARCH SEMINAR (3)

Continuation of BIOS 611. Offered Spring.

BIOS 621 THESIS SEMINAR (1)**BIOS 622 THESIS SEMINAR (1)****BIOS 701 GRADUATE LAB RESEARCH I (1 TO 4)**

Graduate research in Biochemistry and Cell Biology. Design for short term laboratory projects for first year graduate students. Recommended prerequisite(s): Graduate standing in Biochemistry and Cell Biology. Repeatable for Credit. Offered Fall and Spring.

BIOS 702 GRADUATE LAB RESEARCH II (1 TO 4)

Graduate research in Biochemistry and Cell Biology. Designed for short term laboratory projects for first year graduate students. Recommended prerequisite(s): Graduate standing in Biochemistry and Cell Biology. Repeatable for Credit. Offered Fall and Spring.

BIOS 800 GRADUATE RESEARCH (1 TO 15)

Repeatable for Credit. Offered Fall and Spring.

CAAM (COMP. & APPLIED MATHEMATICS)**School of Engineering/Computational & Applied Math****CAAM 210 INTRODUCTION TO ENGINEERING COMPUTATION (3)**

Modeling, Simulation, and Visualization via MATLAB. Numerical methods: Newton's method in one and several dimensions. Gaussian elimination and optimization. Application to gene nets, fiber nets, and neural nets. Pre-requisite(s): MATH 101. Offered Fall and Spring.

CAAM 335 MATRIX ANALYSIS (3)

Equilibria and the solution of linear and linear least squares problems. Dynamical systems and the eigenvalue problem with the Jordan form and Laplace transform via complex integration. Pre-requisite(s): MATH 212 and CAAM 210. Offered Fall and Spring.

CAAM 336 DIFFERENTIAL EQUATIONS IN SCIENCE AND ENGINEERING(3)

Classical solution techniques for ordinary and partial differential equations. Green's functions, fourier series, finite element method for initial and boundary value problems arising in diffusion and wave propagation phenomena. Pre-requisite(s): MATH 212 and CAAM 210. Offered Fall and Spring.

CAAM 353 COMPUTATIONAL NUMERICAL ANALYSIS (3)

An introductory course in numerical analysis with computer applications. Pre-requisite(s): MATH 210. Offered Spring.

CAAM 378 INTRODUCTION TO OPERATIONS RESEARCH AND OPTIMIZATION(3)

Formulation and solution of mathematical models in management, economics, engineering and science applications in which one seeks to minimize or maximize an objective function subject to constraints, including models in linear, nonlinear and integer programming; basic solution methods for these optimization models; problem-solving using a modeling language and optimization software. Pre-requisite(s): MATH 212 and (CAAM 335 or MATH 211 or MATH 355). Offered Fall.

CAAM 401 ANALYSIS I (3)

Real numbers completeness, sequences and convergence, compactness, continuity, the derivative, the Riemann integral, fundamental theorem of calculus. Vectors spaces, dimension, linear maps, inner products and norms. Pre-requisite(s): MATH 211 and MATH 212, or permission of instructor. Offered Fall.

CAAM 402 ANALYSIS II (3)

Continuation of Analysis I. Vector spaces of functions, sequences and series, convergence. Continuity and differentiability of functions of several variables, the derivative as a linear map, the contraction mapping principle, inverse and implicit function theorems, fundamental theorems on differential equations, multivariable integration, Stoke's theorem and relatives. Pre-requisite(s): CAAM 401. Offered Spring.

CAAM 415 THEORETICAL NEUROSCIENCE (3)

This course introduces current theoretical methods used to model the properties of nerve cells and the processing of information by neuronal networks. Concrete examples that can be implemented using MATLAB will be emphasized. The starting point is the passive cable properties of single neurons and the Hodgkin-Huxley model of action potential generation. Subsequently, models of synaptic transmission and active properties of dendritic trees will be considered. This will be followed by stochastic properties of single neurons and information encoding using mean and instantaneous firing rate in visual neurons. Finally, methods to analyze phase-locking and activity in populations of cells as well as learning algorithms will be considered. Cross-listed with NEUR 415. Pre-requisite(s): MATH 211 or CAAM 335. Offered Spring.

CAAM 420 COMPUTATIONAL SCIENCE I (3)

Scientific programming using high level languages, including C, Fortran, and C++. Emphasis on use of numerical libraries. Basic techniques of project planning, source management, documentation, program construction, i/o, visualization. Object-oriented design for numerical Pre-requisite(s): CAAM 210 and CAAM 335 or CAAM 353, or permission of instructor. Offered Fall.

CAAM 435 DYNAMICAL SYSTEMS (3)

Existence and uniqueness for solutions of ordinary differential equations and difference equations, linear systems, nonlinear systems, stability, periodic solutions, bifurcation theory. Theory and theoretical examples are complemented by computational, model driven examples from biological and physical sciences. Cross-listed with MATH 435. Pre-requisite(s): CAAM 210 and MATH 212 and (CAAM 335 or MATH 335) and (CAAM 401 or MATH 321). Offered Fall.

CAAM 436 PDES OF MATHEMATICAL PHYSICS (3)

Derivation and properties of solutions of the partial differential equations of continuum physics. Basic concepts of continuum mechanics, ideal fluids, Navier-Stokes equations, linear elasticity, acoustics, basic principles of thermodynamics, Newtonian heat flow, porous flow, Maxwell's equations, electrical circuits. Pre-requisite(s): CAAM 336, or permission of instructor. Offered Fall.

CAAM 437 METHODS OF MATHEMATICAL PHYSICS (3)

Analysis of the solutions of the partial differential equations of continuum physics. First order linear and non-linear PDE's and systems of PDE's, characteristics, shocks. Sturm-Liouville problems and Fourier series. Integral transforms: Fourier and Laplace. Integral relations and Green's functions. Asymptotic methods: regular perturbation methods, singular perturbations, geometric optics. CAAM 402 may be taken concurrently. Pre-requisite(s): CAAM 402 and CAAM 436, or permission of instructor. Offered Spring.

CAAM 441 SEISMOLOGY I (3)

Principles of elastic wave propagation, the determination of Earth structure, and the understanding of earthquake systems. Cross-listed with ESCI 461. Pre-requisite(s): MATH 211 and PHYS 101 and PHYS 102. Offered Fall.

CAAM 442 SEISMOLOGY II (3)

Review elastodynamics. Calculation of synthetic seismograms for acoustic and elastic media using reflectivity, asymptotic and finite difference methods. Migration of reflection data by finite differences, FK and Kirchhoff methods. Travel time inversion. Graduate/Undergraduate version: ESCI 542. Pre-requisite(s): CAAM 441 or ESCI 461. Offered Fall.

CAAM 452 NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS (4)

Structure and properties of the finite element method for static problems in mechanics, electromagnetism, and other field theories. Finite difference methods for initial/boundary value problems of fluid flow, heat transfer, and wave motion. Computer programming in MATLAB is required. Pre-requisite(s): CAAM 336, or permission of instructor. Recommended prerequisite(s): CAAM 436.

CAAM 453 NUMERICAL ANALYSIS I (3)

Construction and analysis of numerical algorithms for root finding, interpolation and approximation of functions, quadrature, and the solution of differential equations: fundamentals of computer arithmetic; solution of linear systems, least squares problems, and eigenvalue problems via matrix factorizations; the singular value decomposition (SVD) and basic sensitivity analysis. Computer programming in MATLAB is required. Pre-requisite(s): CAAM 335, or permission of instructor.

CAAM 454 NUMERICAL ANALYSIS II (3)

Iterative methods for linear systems of equations including Krylov subspace methods; gradient method for unconstrained optimization; Newton and Newton-like methods for nonlinear system of equations, unconstrained optimization and nonlinear least squares problems; techniques for improving the global convergence of these algorithms. Theoretical and practical considerations for these algorithms will be discussed. Computer programming in MATLAB required. Pre-requisite(s): CAAM 453, or permission of instructor. Offered Spring.

CAAM 460 OPTIMIZATION THEORY (3)

Derivation and application of necessity conditions and sufficiency conditions for constrained optimization problems. Pre-requisite(s): MATH 212 and (CAAM 335 or MATH 355). Offered Fall. Instructor(s): Tapia.

CAAM 464 NUMERICAL OPTIMIZATION (3)

Numerical algorithms for constrained optimization problems in engineering and sciences, including simplex and interior-point methods for linear programming, penalty, barrier, augmented Lagrangian and SQP methods for nonlinear programming). Pre-requisite(s): CAAM 454, or permission of instructor. Recommended prerequisite(s): CAAM 460 (may be taken concurrently). Offered Fall.

CAAM 469 DYNAMICAL SYSTEMS LAB (1)

Modeling, simulation and visualization of dynamical systems in MATLAB. Offered Fall and Spring.

CAAM 475 INTEGER AND COMBINATORIAL OPTIMIZATION (3)

Modeling and solving optimization problems with discrete components, graphs and networks; network flow problems; minimum spanning trees; basic polyhedral theory; the knapsack problem; the plant location problem; the set packing problem; computational complexity; branch and bound; cutting planes; Lagrangian relaxation and Bender's decomposition. Cross-listed with ECON 475. Pre-requisite(s): CAAM 378 or CAAM 464, or permission of instructor. Offered Spring.

CAAM 490 INDEPENDENT STUDY (1 TO 6)

Repeatable for Credit. Offered Spring.

CAAM 491 INDEPENDENT STUDY (1 TO 6)

Repeatable for Credit. Offered Fall.

CAAM 499 MATHEMATICAL SCIENCES VIGRE SEMINAR (1 TO 6)

This course prepares a student for research in the mathematical sciences on a specific topic. Each section is dedicated to a different topic. Current topics include bioinformatics, biomathematics, computational finance, simulation driven optimization, and data simulation. The topics change each semester. Cross-listed with MATH 499, STAT 499. Repeatable for Credit. Offered Fall and Spring.

CAAM 500 GRADUATE RESEARCH SEMINAR (1)

Presentations of ongoing projects by CAAM students and faculty. Repeatable for Credit. Offered Fall and Spring.

CAAM 508 ORDINARY DIFFERENTIAL EQUATIONS (3)

Review of the fundamental properties of nonlinear systems, includes nonlinear ordinary differential equations (e.g., the existence and uniqueness of solution), Lyapunov stability (e.g., stability of definitions, Lyapunov's direct method, invariance theory, stability of linear systems, Lyapunov's linearization methods, and converse theorems), and input-output stability (e.g., the small gain theorem and passivity theorem), as well as case studies showing applications to nonlinear and adaptive control and robotics. Course not offered every year. Cross-listed with ELEC 508, MECH 508.

CAAM 520 COMPUTATIONAL SCIENCE II (3)

Vector shared-memory, and message-passing parallel computer architectures. Numerical linear algebra for these architectures. Memory hierarchy issues, analysis and enhancement of performance, and use of programming tools and environments. Application interfaces including OpenMP and MPI, Parallel numerical algorithms and scientific visualization. Pre-requisite(s): CAAM 420. Offered Spring.

CAAM 533 ADVANCED STATISTICAL INFERENCE (3)

Cross-listed with STAT 533.

CAAM 540 APPLIED FUNCTIONAL ANALYSIS (3)

Hilbert spaces, Banach spaces, spectral theory, and weak topologies with applications to signal processing, control, and partial differential equations. Pre-requisite(s): CAAM 402, or permission of instructor. Offered Spring.

CAAM 551 NUMERICAL LINEAR ALGEBRA (3)

Direct methods for large, sparse linear system; regularization of ill-conditioned least squares problems; backward error analysis of basic algorithms for linear equations and least squares, condition estimation. Preconditioned iterative methods for linear systems (CG, GMRES, BiCGstab, QMR); matrix theory including spectral decompositions, Schur form, eigenvalue perturbations, and the geometry of subspaces. Eigenvalue algorithms, Sylvester's equation, the implicit shifted QR algorithm, computation of the SVD, generalized eigenvalue problems. Introduction to large scale eigen value algorithms and multigrid. Computer programming in MATLAB and one or more of C, F77, C++, F90 is required. Pre-requisite(s): CAAM 454, or permission of instructor. Offered Fall.

CAAM 552 PARTIAL DIFFERENTIAL EQUATIONS (3)

Analysis of boundary and initial value problems. Dirichlet problem for Laplace's equation, variational formulation, Rayleigh-Ritz principle. Sobolev spaces, weak solutions, convergence of the finite element method, interior and boundary regularity, heat equation and the Gaussian kernel, energy estimates, maximum principle, stability, consistency, and convergence of numerical methods, the Fourier transform, Fourier synthesis of Green's functions for the wave equation, von Neumann analysis of finite difference methods for waves. Pre-requisite(s): CAAM 402 and CAAM 436. Not offered Fall and Spring.

CAAM 563 ENGINEERING APPROACH TO MATH PROGRAM (3)

Study of the minimization of functions of variables that are either unconstrained, subject to equality constraints, subject to inequality constraints, or subject to both equality and inequality constraints. Includes analytical and computational methods. Cross-listed with MECH 563.

CAAM 581 MATHEMATICAL PROBABILITY I (3)

Measure-theoretic foundations of probability for students who need access to advanced mathematical literature in probability and random processes. Cross-listed with STAT 581.

CAAM 583 INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS (3)

Review of basic probability and the formulation, analysis, representation, and application of some random standard random processes. Include sequences of random variables, random vectors and estimation, basic concepts of random processes, random processes in linear systems, expansions of random processes, Wiener filtering, spectral representation of random processes, and white-noise integrals. Cross-listed with ELEC 533, STAT 583. Pre-requisite(s): STAT 381. Recommended prerequisite(s): STAT 581.

CAAM 590 INDEPENDENT STUDY (1 TO 15)

Repeatable for Credit. Offered Spring.

CAAM 591 INDEPENDENT STUDY (1 TO 15)

Repeatable for Credit. Offered Fall.

CAAM 640 OPTIMIZATION WITH SIMULATION CONSTRAINTS (3)

Content varies from year to year. Pre-requisite(s): CAAM 464, or permission of instructor. Repeatable for Credit. Not offered Fall and Spring.

CAAM 641 TOPICS IN INVERSE PROBLEMS (3)

Theoretical, computational and practical issues for inverse problems in science and engineering. Selected topics will vary depending on instructor and student interests. Instructor permission required. Repeatable for Credit. Not offered Fall and Spring.

CAAM 651 TOPICS IN NUMERICAL LINEAR ALGEBRA (3)

Selected topics will vary depending on instructor and student interests. Derivation and analysis of Krylov and subspace iteration methods for large eigenvalue problems (Lanczos, Arnoldi, Jacobi-Davidson algorithms); preconditioning for linear systems and eigenvalue problems (incomplete LU, domain decomposition, multigrid); convergence analysis including potential theory and pseudospectra. Applications: regularization of discrete inverse problems; dimensions reduction for large dynamical control systems; applications involving nonnormal matrices. Pre-requisite(s): CAAM 551, or permission of instructor. Repeatable for Credit. Offered Spring.

CAAM 652 TOPICS IN NUMERICAL DIFFERENTIAL EQUATIONS (3)

Content varies from year to year. Repeatable for Credit. Not offered Fall and Spring.

CAAM 654 TOPICS IN OPTIMIZATION (3)

Content varies from year to year. Repeatable for Credit.

CAAM 664 TOPICS IN NONLINEAR PROGRAMMING (3)

Content varies from year to year.

CAAM 699 MATHEMATICAL SCIENCES VIGRE SEMINAR (1 TO 9)

This course prepares a student for research in the mathematical sciences on a specific topic. Each section is dedicated to a different topic. Current topics include bioinformatics, biomathematics, computational finance, simulation driven optimization, and data simulation. The topics change each semester. Cross-listed with MATH 699, STAT 699. Repeatable for Credit. Offered Fall and Spring.

CAAM 800 THESIS (1 TO 15)

Repeatable for Credit. Offered Fall and Spring.

CEVE (CIVIL AND ENVIRONMENTAL ENGINEERING)

School of Engineering/Civil & Environmental Engineering

CEVE 101 FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING (3)

This introduction will cover the essential topics and quantitative techniques in civil and environmental engineering. Fluid flow, solid mechanics, and mass balance techniques will be presented followed by applications to sustainable urban infrastructure, water quality and water treatment, bridge construction, air and water quality, and urban planning and management principles.

CEVE 201 INTRODUCTION TO ENVIRONMENTAL SYSTEMS (4)

The chemical, physical, and biological components of the natural environment as resources and their utilization and interaction in environmental control engineering and technology. Lecture and Laboratory is required. Cross-listed with HEAL 201.

CEVE 203 PRINCIPLES OF ENVIRONMENTAL ENGINEERING (3)

This course provides basic information on principles of water quality engineering, air pollution control and solid and hazardous waste management. Elements of risk assessment, global atmospheric change, and pollution prevention are also addressed to contribute to bare-level competency in Environmental Engineering. Corequisite(s): CEVE 204. Instructor(s): Alvarez.

CEVE 204 PRINCIPLES OF ENVIRONMENTAL ENGINEERING LAB (1)

Laboratory for CEVE 203. Offered Fall. Instructor(s): Alvarez.

CEVE 211 ENGINEERING MECHANICS (3)

The study of equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Includes elements of vibrational analysis. Required for mechanical engineering and materials science and engineering majors. Cross-listed with MECH 211. Pre-requisite(s): PHYS 101 and MATH 101 and MATH 102.

CEVE 304 STRUCTURAL ANALYSIS I (3)

Analysis of statically determinate structures; stability and determinacy; influence lines and moving loads. Calculation of deflections. Introduction to analysis of indeterminate structures.

CEVE 308 GLOBAL ENVIRONMENTAL LAW AND SUSTAINABLE DEVELOPMENT (3)

Examination of emerging trends toward sustainable development and global environmental protection. Includes international treaties on management of the oceans, global warming, ozone depletion, biodiversity and development pattern; impact of treaties such as NAFTA and GATT. Graduate/Undergraduate version: CEVE 508.

CEVE 311 MECHANICS OF SOLIDS AND STRUCTURES (3)

Analysis of stress and deformation of solids with applications to bars, beams, and columns. Study of engineering properties of materials. Applying equilibrium, compatibility, and force-deformation relationships to structural elements. Introduction to flexibility and stiffness method structural analysis. Pre-requisite(s): CEVE 211 or MECH 211.

CEVE 312 STRENGTH OF MATERIALS LAB (1)

Instruction in standard tension, compression, and torsion tests of ferrous and nonferrous metals. Includes experimental techniques and the behavior of structural elements.

CEVE 315 SUSTAINABLE TECHNOLOGIES FOR DEVELOPING COUNTRIES (2)

This course focuses on the appropriate use of sustainable technology in developing countries. Topics of focus include water supply and treatment, energy and electrical systems, building design and construction and sustainable agriculture.

CEVE 316 SUSTAINABLE DEVELOPMENT ENGINEERING PROJECTS (2)

This course provides a hands-on opportunity for field implementation of sustainable technologies for the benefit of underdeveloped communities. Working in teams, students define needs, identify technologies, develop engineering plans, execute the project and assess outcomes. Recommended prerequisite(s): CEVE 315. Offered Spring. Instructor(s): Durrani.

CEVE 320 ETHICAL DECISION-MAKING FOR ENGINEERS (2)

Seminar introduces students to a framework for discussing and making ethical engineering and business decisions. Using case studies and exercises, students will look at their own profession and its Engineering Code of Ethics as well as at the issues and risks they may face as managers and executives. Offered Fall. Instructor(s): Ferrill.

CEVE 322 ENGINEERING ECONOMICS FOR ENGINEERING (3)

Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. Requires oral and written presentations by students. Cross-listed with ENGI 303.

CEVE 401 INTRODUCTION TO ENVIRONMENTAL CHEMISTRY (3)

Principles and significance of measurements used to assess environmental quality. Hands-on measurements of both classical titrations, and modern instrumental methods of measuring both bulk and trace level pollutant concentrations. Lecture and lab. Corequisite(s): CEVE 402

CEVE 402 INTRODUCTION TO ENVIRONMENTAL CHEMISTRY LAB (1)

Lab for Introduction to Environmental Chemistry, CEVE 401. Corequisite(s): CEVE 401. Limited enrollment. Offered Fall. Instructor(s): Tomson.

CEVE 405 STEEL DESIGN (3)

Design of steel members, connections, and assemblies. Behavior of a member as related to design.

CEVE 406 INTRODUCTION TO ENVIRONMENTAL LAW (3)

Legal techniques by societies to plan and regulate the use of environmental resources.

CEVE 407 REINFORCED CONCRETE DESIGN (3)

Instruction in tests of materials and reinforced concrete members. Corequisite(s): CEVE 408.

CEVE 408 CONCRETE LABORATORY (1)

Instruction in tests of materials and reinforced concrete members. Corequisite(s): CEVE 407.

CEVE 411 AIR RESOURCE MANAGEMENT (3)

Introductory principles necessary for understanding air quality and the sources and control of air pollution. Instructor(s): Fraser.

CEVE 412 HYDROLOGY AND WATERSHED ANALYSIS (3)

Fundamentals of the hydrologic cycle, hydrograph techniques, flood routing, and open channel flow. Topics in ground water and well mechanics are covered. Includes computational hydrology, hydrologic design and local watershed applications.

CEVE 417 FINITE ELEMENT ANALYSIS (3)

An introduction to finite element analysis by Galerkin's method and the method of least squares as applied to both ordinary and partial differential equations common in engineering applications. Element interpolations, numerical integration, computational considerations for efficient solution and post-processing methods. Application of educational and commercial codes to heat transfer and stress analysis. Cross-listed with MECH 417. Prerequisite(s): MATH 212 and CAAM 210 or CAAM 211. Instructor(s): Akin.

CEVE 427 MATRIX METHODS IN STRUCTURAL MECHANICS (3)

Introduction to matrix structural analysis and finite element method, applied to trusses, beams, frames and two dimensional elasticity problems. Use of computer programs for structural analysis. Pre-requisite(s): CEVE 311. Instructor(s): Nagarajaiah.

CEVE 434 CHEMICAL TRANSPORT AND FATE IN THE ENVIRONMENT (3)

Principles of mass balance, chemical partitioning, transport, and transformation in surface waters, ground waters, and the atmosphere. Repeatable for Credit.

CEVE 443 ATMOSPHERIC SCIENCE (3)

This course emphasizes the science of the atmosphere. Subjects studied include: radiation; climate dynamics; energy balance models; structure and stability; water cloud, and precipitation physics; atmosphere dynamics; storms and special systems; and atmospheric electricity. Cross-listed with PHYS 443.

CEVE 451 INTRODUCTION TO TRANSPORTATION (3)

Survey of the operational characteristics of transport modes the elements of transportation planning, and the design of stationary elements.

CEVE 452 URBAN TRANSPORTATION SYSTEMS (3)

Survey of operation characteristics of transport modes the elements of transportation planning, and the design of stationary elements.

CEVE 454 FINITE ELEMENT METHODS IN FLUID MECHANICS (3)

Fundamental concept of finite element methods in fluid mechanics, including spatial discretization and numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Cross-listed with BIOE 454, MECH 454. Graduate/Undergraduate version: CEVE 554.

CEVE 470 BASIC SOIL MECHANICS (4)

Index and classification properties of soil including soil classification systems; clay minerals and soil structure; compaction theory; engineering behavior and properties of soils including permeability, compressibility and strength; design considerations. Required for B.S.C.E.

CEVE 480 SENIOR DESIGN (4)

Synthesis and application of engineering knowledge of the design of projects.

CEVE 490 SPECIAL STUDY AND RESEARCH (1 TO 12)

Open to environmental science or engineering majors with permission of instructor. Written report required. Instructor permission required.

CEVE 499 SPECIAL PROBLEMS (1 TO 15)

Study of selected topics including individual investigations special lectures, and seminars. Offered upon mutual agreement of faculty and student.

CEVE 501 ADVANCED MECHANICS OF SOLIDS II (3)

Analysis of the nonlinear behavior of elastic and inelastic solids with engineering applications.

CEVE 505 ENGINEERING PROJECT MANAGEMENT (3)

Systems approach to project management, project life cycle and management methodologies, success factors, project planning, network scheduling techniques, pricing and cost control, risk management, global context, and recent advancements in project management. Case studies. Offered Fall. Instructor(s): Durrani.

CEVE 508 GLOBAL ENVIRONMENTAL LAW AND SUSTAINABLE DEVELOPMENT (3)

Graduate/Undergraduate version: CEVE 308. Instructor(s): Blackburn.

CEVE 511 ATMOSPHERIC CHEMISTRY AND PHYSICS (3)

Study of the principal chemical and physical processes affecting gases and particles in the atmosphere. Overview of the atmospheric transport, transformation and dispersion of air pollutants on the urban, regional and global scale; atmospheric photochemistry and tropospheric ozone formation; influence of meteorology on air pollution; stratospheric chemistry and global climate change; interactions between gases and particles; characterization; chemical composition and size distributions of atmospheric particles.

CEVE 512 HYDROLOGIC DESIGN LAB (3)

Use of Geographic Information Systems (GIS) and design of GIS-developed hydrologic models commonly applied in the water resources field. The course covers principles and operation of the ArcView/ArcGIS programs, design and implementation of standard hydrologic and hydraulic models, and the linkage of these models to engineering analysis of current water problems. Limited enrollment. Instructor(s): Bedient.

CEVE 513 THEORY OF ELASTICITY (3)

Advanced topics in the linear and nonlinear theory of elasticity. Cross-listed with MECH 513.

CEVE 516 PLATES AND SHELLS (3)

Introduction to theories of plates and cylindrical shells with an applications to practical problems.

CEVE 518 GROUNDWATER HYDROLOGY AND CONTAMINATION (3)

Groundwater hydrology, well mechanics, hydraulics. Contaminant issues in aquifer systems, numerical models, of large aquifers. Topics in water resources engineering and aquifer management.

CEVE 520 REMEDIATION TECHNOLOGIES (3)

Study of current remediation technologies for soil, water, and air. Includes selection criteria, costs, operating strategies and engineering design.

CEVE 521 STRUCTURAL DYNAMICS I (3)

Dynamics of force-excited discrete linear systems with applications to design.

CEVE 522 STRUCTURAL DYNAMICS II (3)

Dynamics of force-excited continuous linear systems and ground-excited linear and yielding structures. Fundamentals of earthquake engineering.

CEVE 525 STRUCTURAL DYNAMICS III (3)

Study of special topics in structural dynamics. Includes problems of wave propagation, the response of structures to waves, the dynamics of foundations, and soil-structure and fluid-structure interaction.

CEVE 526 STRUCTURAL STABILITY (3)

General analysis of stress and strain, linear elastic, thermo-elastic stress-strain relations. Approximate solutions by energy methods and finite element method.

CEVE 527 COMPUTATIONAL METHODS IN STRUCTURAL MECHANICS (3)

Introduction to differential and integral formulations, variational principles, weighted residuals, and principle of virtual work. Simple boundary, initial, and eigenvalue problems. Finite element, boundary element, and finite difference methods for structural mechanics. Study of nonlinearities. Computational methods for geometric and material nonlinear analysis. Applications to static and dynamic problems. Programming and use of computer software. Cross-listed with MECH 527.

CEVE 530 CONCRETE BUILDING DESIGN (3)

Design of reinforced concrete building structures and floor slab systems. Case histories will be discussed.

CEVE 531 BEHAVIOR OF REINFORCED CONCRETE MEMBERS (3)

Study of moment-curvature relationship for beams and columns biaxially loaded columns, slenderness effects, interaction diagrams, shear and torsion in members, shear wall-frame interaction, and behavior under large load reversals. Includes extensive use of microcomputers.

CEVE 532 PRESTRESSED CONCRETE (3)

Study of prestressing techniques, prestress losses, deflections, shear and torsion, and the analysis and design of members using microcomputers. Includes composite members, continuous beams, and prestressed slabs. Pre-requisite(s): CEVE 407.

CEVE 533 PHYSICAL-CHEMICAL PROCESSES IN ENVIRONMENT (3)

Introduction to colloid and surface chemistry, precipitation, settling, packed bed filtration, membrane separations and other operations used in environmental pollution control and portable water treatment.

CEVE 534 TRANSPORT PHENOMENA AND ENVIRONMENTAL MODELING (3)

Principles of fluid flow, mass transport and transformation processes in natural and engineered systems. Applications of reactor engineering, chemical and biological reaction kinetics to environmental systems modeling including streams, lakes, estuaries and the atmosphere. Previous course work in fluid mechanics and calculus through differential equations is strongly suggested.

CEVE 536 ENVIRONMENTAL BIOTECHNOLOGY (3)

Theory and application of biochemical processes in environmental engineering. Pre-requisite(s): CEVE 203 and CEVE 204. Recommended prerequisite(s): CEVE 401.

CEVE 540 STEEL BUILDING DESIGN (3)

Exploration of practical design from conceptual stage to final analysis. Includes design parameters and serviceability limitations. Pre-requisite(s): CEVE 305 and CEVE 306 and CEVE 407.

CEVE 550 ENVIRONMENTAL ORGANIC CHEMISTRY (3)

A course covering parameter estimation methods, thermodynamics, and kinetic needed to predict the fate, transports, and reactivity of organic compounds in air, water, and soils. Topics: volatilization, solubility, sorption, partitioning, diffusion, aquatic reactivity, photochemistry, and transport modeling.

CEVE 554 FINITE ELEMENT METHODS IN FLUID MECHANICS (3)

Cross-listed with BIOE 554, MECH 554. Graduate/Undergraduate version: CEVE 454.

CEVE 570 FOUNDATION ENGINEERING (3)

Subsurface exploration methods and techniques; lateral earth pressures and design of retaining walls; bearing capacity and shallow foundation design; settlement considerations; design of deep foundations; temporary excavations and dewatering. Pre-requisite(s): CEVE 470.

CEVE 576 STRUCTURAL DYNAMICS AND CONTROL (3)

Elements of linear systems and control theory, transform methods, state space methods, feedback control, and Lyapunov's method. Analytical modeling of structures, control algorithms, and response to dynamic loading. Base isolation, smart materials and devices, sensors, structural control applications, monitoring, and case studies. Cross-listed with MECH 576. Pre-requisite(s): CEVE 521 or MECH 502 and CEVE 527.

CEVE 590 M.E.E. AND M.E.S. SPECIAL STUDY AND RESEARCH

Independent investigation of a specific topic or problem in environmental engineering under the direction of a selected faculty member. Preparation of a formal report and oral presentation of results are required.

CEVE 601 SEMINAR (3 TO 9)

Continuing seminar on environmental research. Repeatable for Credit.

CEVE 602 SEMINAR (3)

See CEVE 601. Repeatable for Credit.

CEVE 630 MEMBRANE PROCESSES AND SPECIAL TOPICS IN COLLOID AND NANOCHEMISTRY (3)

Fundamentals of membrane processes, theory and methods for characterizing aquasols, particle transport in porous media and simple flows, particle aggregation, aggregate and deposit morphology, and other special topics. Must be in one of the following Classification(s): Graduate.

CEVE 631 ENVIRONMENTAL SYSTEMS ANALYSIS (3)

Formulation of optimization models for environmental decision weekly.

CEVE 635 ADVANCED TOPICS: WATER CHEMISTRY (1 TO 12)

Formal lecture and assigned reading in topics such as redox kinetics and thermodynamics, absorption and desorption, and the associated mathematics. An advanced topics course. Instructor permission required. Repeatable for Credit.

CEVE 636 ADVANCED TOPICS IN WATER CHEMISTRY (1 TO 12)

See CEVE 635. Repeatable for Credit.

CEVE 640 ADVANCED TOPICS IN ENVIRONMENTAL ENGINEERING SCIENCES (1 TO 12)

Special topics in Graduate Study.

CEVE 641 ADVANCED TOPICS IN ENVIRONMENTAL ENGINEERING (1 TO 12)

Advanced topics in Graduate Study.

CEVE 651 M.S. RESEARCH AND THESIS (1 TO 15)

Repeatable for Credit.

CEVE 652 M.S. RESEARCH AND THESIS (1 TO 15)

Repeatable for Credit.

CEVE 654 ADVANCED COMPUTATIONAL MECHANICS (3)

Advanced topics in computational mechanics with emphasis on finite element methods and fluid mechanics. Stabilized formulations. Fluid-particle and fluid-structure interactions and free-surface and two-fluid flows. Interface-tracking and interface-capturing techniques, space-time formulations, and mesh update methods. Enhanced discretization and solution techniques. Iterative solution methods, matrix-free computations, and advanced preconditioning techniques. Cross-listed with MECH 654, BIOE 654. Pre-requisite(s): MECH 554, or permission of instructor. Instructor(s): Tezduyar.

CEVE 678 ADVANCED STOCHASTIC MECHANICS (3)

Nonlinear random vibrations, Statistical Linearization, ARMA filters modeling, Monte Carlo Simulation, Wiener-Volterra series, time-variant structural reliability, and Stochastic Finite Elements are presented from a perspective of usefulness to aerospace, civil, marine, and mechanical applications. Cross-listed with MECH 678.

CEVE 679 APPLIED MONTE CARLO ANALYSIS (3)

Probability density and power spectrum based simulation concepts and procedures are discussed. Scalar and vectorial simulation are addressed. Spectral decomposition and digital filter algorithms are presented. Applications from aerospace, earthquake, marine, and wind engineering, and from other applied science disciplines are included. Cross-listed with MECH 679.

CEVE 699 SPECIAL PROBLEMS (3)

Study of selected topics including individual investigations under the direction of a member of the civil engineering faculty. Offered upon mutual agreement of faculty and student. Repeatable for Credit.

CEVE 800 PH.D. RESEARCH AND THESIS (1 TO 15)

Repeatable for Credit.

CEVE 801 PH.D. RESEARCH AND THESIS (1 TO 15)

Repeatable for Credit.

CHBE (CHEMICAL & BIOMOLECULAR ENGINEERING)**School of Engineering/Chemical & Biomolecular Engineering****CHBE 301 CHEMICAL ENGINEERING FUNDAMENTALS (3)**

Use of basic mathematical concepts and computer tools, physical laws, stoichiometry and the thermodynamic properties of matter to obtain material and energy balances for steady and unsteady state systems. Required for sophomores intending to major in chemical engineering. Corequisite(s): CHBE 303. Instructor(s): Davis; Zygourakis.

CHBE 303 COMPUTER PROGRAMMING IN CHEMICAL ENGINEERING (2)

An introduction to computer programming for chemical engineering applications using MATLAB, FORTRAN and Maple. Corequisite(s): CHBE 301. Instructor(s): Davis.

CHBE 305 COMPUTATIONAL METHODS IN CHEMICAL ENGINEERING (3)

Introduction to modern practice and chemical engineering applications of scientific computing: linear algebra (review); computer-aided solution of systems of linear equations (direct, iterative); evaluation of integrals; systems of nonlinear algebraic equations; systems of ordinary differential equations; one-dimensional boundary value problems; stability and accuracy of computational methods; computational software libraries. Principles illustrated through chemical engineering examples. Pre-requisite(s): CHBE 301 and CHBE 303. Offered Spring. Instructor(s): Pasquali.

CHBE 343 CHEMICAL ENGINEERING LAB I (3)

Experiments demonstrating principles presented in core chemical engineering courses. Pre-requisite(s): CHBE 390 and CHBE 401 and CHBE 412. Offered Spring. Instructor(s): Cox.

CHBE 390 KINETICS AND REACTOR DESIGN (4)

General areas that are covered in this course are (1) principles of chemical kinetics; (2) analysis of reaction rate data; (3) heterogeneous catalysis; (4) ideal reactor design and sizing; and (5) heat effects in reactor designs. Pre-requisite(s): CHBE 301 and CHBE 303 and CHBE 305 and MATH 211 and MATH 212. Offered Fall. Instructor(s): Wong.

CHBE 401 TRANSPORT PHENOMENA I (3)

Fundamental principles of heat, mass, and momentum transport applied to the continuum; analysis of macroscopic physical systems based on the continuum equations; applications in chemical engineering practice. Pre-requisite(s): CHBE 411 and CHBE 305 and MATH 211 and MATH 212 and PHYS 101 and PHYS 102. Offered Fall. Instructor(s): Miller.

CHBE 402 TRANSPORT PHENOMENA II (3)

Continuation of CHBE 401. Emphasis on energy and mass transport applied to the continuum. Pre-requisite(s): CHBE 401 and (CAAM 336 or MATH 381). Offered Spring. Instructor(s): Davis.

CHBE 403 DESIGN FUNDAMENTALS (4)

Product and process design fundamentals. Economic analysis. Use of modern simulation tools for chemical engineering design. Pre-requisite(s): CHBE 390 and CHBE 402 and CHBE 412 and MECH 211. Offered Fall. Instructor(s): Cox.

CHBE 404 PRODUCT AND PROCESS DESIGN (4)

Strategies for optimal product and process design. Industrial economic principles. Special process or product design projects in small groups. Pre-requisite(s): CHBE 403. Offered Spring. Instructor(s): Cox.

CHBE 411 THERMODYNAMICS I (3)

Development and application of the first and second laws of thermodynamics. Pre-requisite(s): CHBE 301 and CHBE 303. Instructor(s): Laibinis.

CHBE 412 THERMODYNAMICS II (3)

Advanced treatment of chemical and phase equilibria in multicomponent systems. Includes a detailed study of nonideal solutions. Offered Fall. Instructor(s): Chapman.

CHBE 420 BIOSYSTEMS TRANSPORT AND REACTION PROCESSES (3)

Application of the basic principles of transport and reaction to analyze momentum, heat, and mass transport, and reaction processes in the human body. Includes mathematical modeling to describe physiologic function, to understand pathological conditions, and to design bioartificial organs with emphasis on the quantification of biomedical systems in relation to underlying molecular mechanisms and cellular behavior. Offered Fall. Instructor(s): Mikos.

CHBE 443 CHEMICAL ENGINEERING LAB II (3)

Experiments demonstrating principles presented in core chemical engineering courses, operations, and thermodynamic principles as covered in CHBE 401, 402, 411. Pre-requisite(s): CHBE 343 and CHBE 402. Offered Fall. Instructor(s): Cox.

CHBE 460 BIOCHEMICAL ENGINEERING (3)

Design, operation, and analysis of processes in the biochemical industries. Topics include enzyme kinetics, cell growth kinetics, energetics, recombinant DNA technology, microbial, tissue and plant cell cultures, bioreactor design and operation, down stream processing. Offered Spring. Instructor(s): San.

CHBE 470 PROCESS DYNAMICS AND CONTROL (3)

Modeling of dynamic processes. Response of uncontrolled systems. Transfer functions. Feedback controllers; response and stability of controlled systems; frequency response. Design of feedback controllers. Cascade, feed forward and multivariable control systems. Introduction to computer control. Use of simulators to design feedback controllers. Required for B.S. majors in chemical engineering. Pre-requisite(s): CHBE 390 and CHBE 402 and CHBE 412. Offered Fall. Instructor(s): Pasquali.

CHBE 500 UNDERGRADUATE RESEARCH (1 TO 6)

Independent investigation of a specific topic or problem in modern chemical engineering research under the direction of a selected faculty member. Department permission required. Repeatable for Credit. Offered Fall & Spring. Instructor(s): Robert.

CHBE 501 FLUID MECHANICS AND TRANSPORT PROCESSES (3)

Advanced study in fluid mechanics and transport processes including analytical and numerical approximation methods, boundary layer theory, and potential flow theory. Offered Fall. Instructor(s): Hirasaki.

CHBE 503 AIR POLLUTION CONTROL (3)

Examines sources, characterization, and effects of atmospheric pollutants O₃, CO, HC, VOC, NO_x, SO_x, and particulates; regulatory issues and pollution standards; dispersion models and meteorology; and techniques, with emphasis on those employing catalysts, used in pollution control. Not offered Fall and Spring.

CHBE 530 MOLECULAR ASPECTS OF CHEMICAL ENGINEERING (3)

An integrated engineering course in process analysis and product design that combines molecular chemistry, property-based thermodynamic descriptions, and a focus on intermolecular energetics. The course paradigm is demonstrated through case studies involving molecular, macromolecular, supramolecular, and biomolecular systems. Offered Fall. Instructor(s): Laibinis.

CHBE 540 STATISTICAL MECHANICS (3)

A development of the principles of statistical mechanics with applications. Offered Spring. Instructor(s): Robert.

CHBE 551 INTRODUCTION TO BIOENGINEERING (1)

A seminar course introducing current research areas in Bioengineering and Biotechnology. Taught in a tutorial manner to help acquaint students with the research activities of various laboratories at Rice and the Texas Medical Center. Offered Fall.

CHBE 560 INTERFACIAL PHENOMENA (3)

Interfacial tension, wetting and spreading, contact angle hysteresis, interaction between colloid particles, stability of interfaces, flow and transport near interfaces. Not offered Fall and Spring. Instructor(s): Miller.

CHBE 571 FLOW AND TRANSPORT THROUGH POROUS MEDIA I (3)

Study of the geology, chemistry, and physics of multicomponent, multiphase fluids in porous media. Includes hydrostatic and hydrodynamic properties of fluids in soils and rocks and the simulation of fundamental transport processes in one dimension. Not offered Fall and Spring. Instructor(s): Hirasaki.

CHBE 590 KINETICS, CATALYSIS, AND REACTION ENGINEERING (3)

Review of kinetics and reactor design equations; heterogeneous catalysis; catalyst preparation, characterization, testing; catalytic reaction mechanisms; diffusion and reaction in catalyst pellets; conservation equations; reactor analysis. Offered Spring. Instructor(s): Hightower; Zygourakis.

CHBE 593 POLYMER SCIENCE AND ENGINEERING (3)

Basic concepts in macromolecular chemistry and their application in the synthesis and chemical modification of polymers. Offered Fall. Instructor(s): Armeniades.

CHBE 594 PROPERTIES OF POLYMERS (3)

Study of the molecular organization and physical properties of polymeric materials. Includes elastomeric, semi-crystalline, and glassy polymers, as well as the processing and technology of polymeric systems. Offered Spring. Instructor(s): Armeniades.

CHBE 597 POLYMER SYNTHESIS, SOFT NANOMATERIALS AND NANOCOMPOSITES (3)

The course will cover methods of characterization and some basic synthetic polymer methods (step growth and chain growth approaches). New synthetic polymer methods will be presented including ATRP, ADMET, ROMP, metallocene catalysts and the development of flame retardant polymer blends. Carbon-carbon composites will be discussed along with the functionalization of carbon nanotubes and their use in nanocomposites. Pre-requisite(s): CHEM 211 and CHEM 212. Repeatable for Credit. Offered Spring. Instructor(s): Tour; Barrera.

CHBE 600 MASTER OF CHEMICAL ENGINEERING RESEARCH (1 TO 12)

Independent investigation of a topic or problem in modern chemical engineering research under the direction of a selected faculty member. Department permission required. Repeatable for Credit. Offered Fall and Spring

CHBE 601 FLUID MECHANICS AND TRANSPORT (3)

Advanced study in one of several areas of fluid mechanics or transport, including tensor analysis, continuum mechanics, rheology, and mathematical methods of special interest in fluid mechanics. Not offered Fall and Spring.

CHBE 602 PHYSICO-CHEMICAL HYDRODYNAMICS (3)

Topics in hydrodynamics including areas such as waves on liquid surfaces, convection and diffusion in liquids, motion of drops and bubbles, and electrophoresis. Offered Spring. Instructor(s): Miller.

CHBE 603 RHEOLOGY (3)

Calculus and time derivatives of directed quantities. Elastic solid, Newtonian liquid. Shear and extensional flows. Linear viscoelasticity. Non-linear viscoelasticity: rate- and time-dependent shear and extensional viscosity, normal stresses in shear. Elementary theories of non-linear viscoelastic behavior. Isotropy, objectivity, frame-indifference. Shear and extensional rheometry. Special topics: thermodynamics of microstructured materials; fine-grained theories of polymer dynamics; computational rheology. Not offered Fall and Spring. Instructor(s): Pasquali.

CHBE 611 ADVANCED TOPICS-THERMODYNAMICS (3)

An advanced treatment of the thermodynamics of pure and multicomponent systems. Topics range from classical thermodynamics to a discussion of modern developments, and include an introduction to statistical thermodynamics. Offered Fall. Instructor(s): Chapman.

CHBE 615 APPLICATION OF MOLECULAR SIMULATION AND STATISTICAL MECHANICS (3)

Introduction to molecular simulation techniques and applications of statistical mechanics-based theory to engineering problems. Projects involve topics of current research interest. Students are expected to know thermodynamics and to have had some introduction to statistical mechanics. Not offered Fall and Spring. Instructor(s): Chapman.

CHBE 620 TISSUE ENGINEERING (3)

This course will focus on cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues. Includes strategies to regenerate metabolic organs and repair structural tissues, as well as cell-based therapies to deliver proteins and other therapeutic drugs, with emphasis on issues related to cell and tissue transplantation such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection. Offered Spring. Instructor(s): Mikos.

CHBE 630 CHEMICAL ENGINEERING OF NANOSTRUCTURED MATERIALS (3)

Overview of materials with structural features on the nanometer scale. Discussion of general concepts of synthesis, characterization and applications. Highlight advances found in recent literature. Not offered Fall & Spring. Instructor(s): Wong.

CHBE 661 GRADUATE SEMINAR (1)

Repeatable for Credit. Offered Fall.

CHBE 662 GRADUATE SEMINAR (1)

Repeatable for Credit. Offered Spring.

CHBE 671 FLOW AND TRANSPORT THROUGH POROUS MEDIA II (3)

Calculation of multicomponent-multiphase transport in one to three dimensions using finite difference methods. Includes development of multidimensional models of systems and representation and estimation of geological heterogeneity. Offered Spring. Instructor(s): Hirasaki.

CHBE 672 APPLIED MATHEMATICS I (3)

Vector Spaces. Linear Transformations. Existence and uniqueness of solutions for linear equations. Numerical solution of linear equations. Gauss elimination, band matrices, finite differences. Determinants. Inner products, norms, orthogonality. Not offered Fall and Spring.

CHBE 692 NUMERICAL METHODS FOR DIFFERENTIAL EQUATIONS IN ENGINEERING AND BIOLOGY (3)

The class focuses on the numerical analysis of various times integration techniques for ordinary differential equations, as well as spatial and temporal discretization methods for hyperbolic and parabolic partial differential equations that describe processes in engineering and biology. Homework and projects aim at the comparative evaluation of the various schemes discussed in class. Recommended prerequisite(s): Knowledge of a programming language (Fortran preferably) elementary P.D.E.'s, basic concepts of calculus. Offered Fall. Instructor(s): Mantzaris.

CHBE 700 M.S. RESEARCH AND THESIS (1 TO 15)

Repeatable for Credit. Offered Fall and Spring.

CHBE 720 SPECIAL TOPICS IN CHEMICAL ENGINEERING I (1 TO 15)

A course which covers various special topics in chemical engineering. Offered at irregular intervals on demand. Instructor permission required. Repeatable for Credit. Not offered Fall and Spring.

CHBE 760 BAYLOR/RICE MD/PHD PROGRAM (1 TO 15)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

CHBE 800 GRADUATE RESEARCH (1 TO 15)

Repeatable for Credit. Offered Fall and Spring.

CHBE 801 SPECIAL TOPICS IN CHEMICAL ENGINEERING II (1)

Summer internship in an area related to thesis research or professional broadening. Permission of thesis advisor and department chair required. Repeatable for Credit.

CHEM (CHEMISTRY)**School of Natural Sciences/Chemistry****CHEM 121 GENERAL CHEMISTRY (4)**

Introduction of chemical phenomena emphasizing problems and methods in Chemistry. Either CHEM 121 or CHEM 151 may be taken as a prerequisite for higher study in chemistry, but only one of these may be taken for credit. Students must also register for CHEM 123 General Chemistry Laboratory I. Corequisite(s): CHEM 123. Offered Fall. URL: www.owl.net.rice.edu/~chem121. Instructor(s): Whitmire; Hennessy.

CHEM 122 GENERAL CHEMISTRY (4)

A continuation of CHEM 121. Either CHEM 122 or CHEM 152 may be taken as prerequisites for higher study in chemistry, but only one may be taken for credit. Students must also register for CHEM 124 General Chemistry Laboratory II. Corequisite(s): CHEM 124. Offered Spring. URL: www.owl.net.rice.edu/~chem122. Instructor(s): Hutchinson; Hennessy.

CHEM 123 GENERAL CHEMISTRY LABORATORY (0)

Required laboratory component of CHEM 121. Students must also register for CHEM 121. Corequisite(s): CHEM 121. Offered Fall. URL: www.owl.net.rice.edu/~chem121. Instructor(s): McHale.

CHEM 124 GENERAL CHEMISTRY WITH LABORATORY (0)

Required laboratory component of CHEM 122. Students must also register for CHEM 122. Corequisite(s): CHEM 122. Offered Spring. URL: www.owl.net.rice.edu/~chem122. Instructor(s): McHale.

CHEM 151 HONORS CHEMISTRY WITH LAB (4)

An accelerated introduction to chemical phenomena emphasizing principles and theories in chemistry. Recommended strongly for students who plan to major in chemistry or have a strong high school background. Includes a laboratory that meets once per week for 2.5 hours. Instructor permission required. Corequisite(s): CHEM 153. Recommended prerequisite(s): high school chemistry and physics. Offered Fall. URL: www.owl.net.rice.edu/~chem151. Instructor(s): Brooks; Weisman.

CHEM 152 HONORS CHEMISTRY WITH LAB (4)

See CHEM 151. Includes a laboratory that meets once per week for 2.5 hours. Pre-requisite(s): CHEM 151. Corequisite(s): CHEM 154. Offered Spring. URL: www.owl.net.rice.edu/chem151. Instructor(s): Brooks; Weisman.

CHEM 153 HONORS CHEMISTRY LABORATORY (0)

Corequisite(s): CHEM 151. Offered Fall. Instructor(s): McHale.

CHEM 154 HONORS CHEMISTRY LABORATORY (0)

Corequisite(s): CHEM 152. Offered Spring. Instructor(s): McHale.

CHEM 157 LABORATORY SKILLS REVIEW (0)

A laboratory refresher course for students who received AP credit for CHEM 121, 122. Instructor permission required. Offered Fall. Instructor(s): McHale.

CHEM 158 LABORATORY SKILLS REVIEW (1)

Continuation of CHEM 157. Instructor permission required. Offered Spring. Instructor(s): McHale.

CHEM 211 ORGANIC CHEMISTRY (3)

Organic chemistry of aliphatic and aromatic compounds with emphasis on structure, bonding, and reaction mechanisms. Offered Fall. URL: www.owl.net.rice.edu/~chem211. Instructor(s): Matsuda; Lapinsky.

CHEM 212 ORGANIC CHEMISTRY (3)

Continuation of CHEM 211 with a greater emphasis on the chemistry of various functional groups. Offered Spring. URL: www.owl.net.rice.edu/~chem212. Instructor(s): Hartgerink; Lapinsky.

CHEM 215 ORGANIC CHEMISTRY LAB (2)

Synthesis, purification, and characterization of organic compounds. Experiments related to topics covered in CHEM 211, 212. Includes identification of unknown organic compounds. (One hour lecture precedes each lab). One lab per week. Offered Spring. Instructor(s): Lapinsky; McHale.

CHEM 217 ORGANIC LABORATORY FOR CHEMICAL ENGINEERS (1)

Organic laboratory designed for chemical engineering majors. Emphasis placed on the synthesis and the characterization of organic compounds. This laboratory does not satisfy requirements for science majors or premedical students. Offered Fall. Instructor(s): Parry; McHale.

CHEM 235 NANOTECHNOLOGY: CONTENT AND CONTEXT (3)

Nanotechnology is science and engineering resulting from the manipulation of matter's most basic building blocks: atoms and molecules. This course is designed for humanities and science students who want to explore the content of nanotechnology, (e.g., the methods of visualization, experimentation, and manufacture, and technical feasibility) with the social context of nanotechnology (issues of ethics, regulation, risk assessment, history, funding, intellectual property, controversy and conflict). Preference will be given to freshmen and sophomore students. Register for CHEM 235 to receive Group 3 distribution credit; register for ANTH 235 to receive Group 2 distribution credit. You may receive credit only for one group, not both. Cross-listed with ANTH 235. Limited enrollment. Offered Fall. URL: kelty.rice.edu/235/. Instructor(s): Kelty; Kulinowski; Colvin.

CHEM 251 HONORS ORGANIC CHEMISTRY I (3)

Chemistry 251 HONORS is a 3-credit course with a limited enrollment. This course is specifically designed for chemistry majors plus any other students interested in a deeper study of the subject. Subjects will include current topics in organic chemistry along with in-depth descriptions of mechanisms and their implications, discussions of industrial and pharmaceutical chemistry and ethical questions that often arise with chemical use. Advanced problem solving sessions will be included. Pre-requisite(s): CHEM 121 and CHEM 122. Offered Fall. Instructor(s): Billups.

CHEM 252 HONORS ORGANIC CHEMISTRY II (3)

Chemistry 252 HONORS is a continuation of CHEM 251 with a limited, specifically designed for chemistry majors plus any other students interested in a deeper study of the subject. See CHEM 251 for description of topics. Advance problem sessions will be included. Pre-requisite(s): CHEM 251 or CHEM 211. Offered Spring. URL: www.owl.net.rice.edu/~chem252. Instructor(s): Lapinsky.

CHEM 311 PHYSICAL CHEMISTRY (3)

An introduction to the fundamental principles of physical chemistry, including quantum chemistry, chemical bonding and molecular spectroscopy. Offered Fall. URL: www.owl.net.rice.edu/~chem311. Instructor(s): Scuseria.

CHEM 312 PHYSICAL CHEMISTRY (3)

An introduction to the principles of thermodynamics, statistical thermodynamics, kinetic theory of gases, chemical kinetics and the statistical mechanics. Offered Spring. URL: www.owl.net.rice.edu/~chem312. Instructor(s): Kinsey; Kolomeisky.

CHEM 351 INTRODUCTORY MODULE IN EXPERIMENTAL CHEMISTRY I (1)

Experiments illustrating techniques in synthetic inorganic chemistry and instrumental methods of analysis. Required for chemistry majors. Offered in the first half of the semester. Freshman may take the course with permission from instructor. Offered Fall. Instructor(s): Hennessy.

CHEM 352 INTRODUCTORY MODULE IN EXPERIMENTAL CHEMISTRY II (1)

Experiments illustrating techniques in synthetic organic chemistry and instrumental methods of analysis. Required for chemistry majors. Offered in the second half of the semester. Offered Fall. Instructor(s): Lapinsky.

CHEM 353 INTRODUCTORY MODULE IN ANALYTICAL METHODS (1)

Experiments illustrating techniques in analytical chemistry; data analysis, data precision and accuracy. Required for Chemistry majors. Offered in the first half of the semester. Offered Spring. Instructor(s): Hennessy.

CHEM 360 INORGANIC CHEMISTRY (3)

Survey of the periodic table; atomic and molecular structure: bonding in covalent, ionic, and electron deficient systems; thermochemical principles and experimental techniques for analysis, structure determination, and synthesis. Offered Spring. Instructor(s): Barron.

CHEM 373 ADVANCED MODULE IN FULLERENE CHEMISTRY (1)

A mixture of fullerenes is extracted, separated, and purified. Spectroscopic, kinetic, and electrochemical properties of C₆₀ and C₇₀ are then measured and interpreted. Offered first half of the semester. Pre-requisite(s): CHEM 351 and CHEM 352. Offered Spring. Instructor(s): Weisman.

CHEM 374 ADVANCED MODULE IN SYNTHETIC CHEMISTRY (1)

Advanced techniques in organic synthesis are presented. Offered the second half of the semester. Pre-requisite(s): CHEM 351 and CHEM 352 and CHEM 353. Not offered Fall and Spring. Instructor(s): Parry.

CHEM 375 ADVANCED MODULE IN NANO CHEMISTRY (1)

Students explore synthesis and structure of nanoparticles and their physical characterization. Offered in the second half of the semester. Offered Fall. Instructor(s): Hennessy.

CHEM 381 ADVANCED MODULE IN PHYSICAL CHEMISTRY I (1)

Study of experimental physical chemistry. Offered in first half of semester. Some knowledge of MATLAB required. Not offered Fall and Spring. Instructor(s): Brooks.

- CHEM 382 ADVANCED MODULE IN PHYSICAL CHEMISTRY II (1)**
Study of experimental physical chemistry. Offered in first half of semester. Some knowledge of MATLAB required. The labs are offered M, T, W, or TH from 1-7 pm every other week. Corequisite(s): CHEM 311. Offered Fall. URL: python.rice.edu/~brooks/chem382. Instructor(s): Brooks.
- CHEM 383 ADVANCED MODULE IN INSTRUMENTAL ANALYSIS (1)**
Principles and application of modern instrumental methods to inorganic, pharmaceutical, organic and physical chemistry. Offered in the first half of the semester. Offered Spring. Instructor(s): Lapinsky.
- CHEM 384 ADVANCED MODULE INSTRUMENTAL ANALYSIS (1)**
Principles and application of modern instrumental methods to inorganic and physical chemistry. Offered in the second half of the semester Offered Spring. Instructor(s): Lapinsky.
- CHEM 391 ADVANCED MODULE IN CATALYSIS (1)**
Preparation and study of a homogeneous catalytic system. Offered Spring.
- CHEM 395 ADVANCED MODULE IN GREEN CHEMISTRY (1)**
Experimental laboratory designed to access the health and environmental impact of chemical processes and the strategies to improve them. Offered in the second half of the semester. Offered Spring. Instructor(s): Wilson.
- CHEM 401 ADVANCED ORGANIC CHEMISTRY (3)**
The synthe of complex organic compounds are described using the basic outline of retrosynthetic analysis. An overview of numerous classical organic and organometallic methods is utilized. Offered Fall. Instructor(s): Behar; Zubarev.
- CHEM 411 SPECTRAL METHODS IN ORGANIC CHEMISTRY (3)**
Elucidation of organic structures by physical techniques. Interpretation of infrared, ultraviolet, nuclear magnetic resonance, and mass spectra. Offered Spring. Instructor(s): Engel.
- CHEM 413 NUCLEAR MAGNETIC RESONANCE IN CHEMISTRY (3)**
This course is designed to bring the practicing scientist to a sufficient level of competence in nuclear magnetic resonance (NMR) to understand multi-dimensional NMR techniques and the current literature. The course covers the mathematical and physical basis of NMR as well as the experimental aspects, which will lead to the selection of experiments appropriate to the class participants' research projects. CHEM 413 assumes a fundamental knowledge of ^{13}C and ^1H NMR Not offered Fall and Spring. Instructor(s): Willcott.
- CHEM 415 CHEMICAL KINETICS AND DYNAMICS (3)**
Description and analysis of the rates of unimolecular, bimolecular and composite chemical reactions in gas and solution phases. Both macroscopic kinetics and microscopic reaction dynamics are covered. Graduate/Undergraduate version: CHEM 515. Pre-requisite(s): CHEM 311 and CHEM 312. Offered Fall. Instructor(s): Kolomeisky.
- CHEM 425 ORGANIC GEOCHEMISTRY (3)**
This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes, and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-listed with ESCI 425. Offered Spring.
- CHEM 430 QUANTUM CHEMISTRY (3)**
Quantum mechanical principles, atomic structure and chemical bonding. Offered Fall. URL: www.owl.net.rice.edu/~chem430. Instructor(s): Kinsey.
- CHEM 435 METHODS OF COMPUTATIONAL QUANTUM CHEMISTRY (1)**
Methods of quantum chemistry will be examined with projects to explore the application of these techniques in solving questions about chemical structure, bonding and reactivity. Counts as an advanced laboratory module. Offered the second half of the semester. Limited enrollment. Offered Spring. URL: python.rice.edu/~guscus/chem435. Instructor(s): Scuseria.
- CHEM 440 ENZYME MECHANISMS (3)**
A survey of organic reactions catalyzed by enzymes, with an emphasis on arrow-pushing mechanisms. Both enzymes that use cofactors and those that do not will be covered. Cross-listed with BIOS 440. Not offered Fall & Spring. Instructor(s): Parry.
- CHEM 442 PRINCIPLES OF MEDICINAL CHEMISTRY I (3)**
The course will describe the relationship between the chemical structure and the biological action of natural and synthetic drug molecules. Emphasis will be placed on the underlying principles of medicinal chemistry as well as specific therapeutic agents. Organization will be according to pharmacological classification with discussion of how chemical properties relate to drug mechanism of action and disposition. Pre-requisite(s): CHEM 212. Offered Fall. Instructor(s): Lapinsky.

CHEM 443 PRINCIPLES OF MEDICINAL CHEMISTRY II (3)

The course will describe the relationships between chemical structure and biological action of drug molecules. Organization will be according to disease state and pharmacological classification with discussion of how chemical properties relate to drug mechanism of action and disposition. Pre-requisite(s): CHEM 212. Offered Spring. Instructor(s): Lapinsky.

CHEM 445 PHYSICAL ORGANIC CHEMISTRY (3)

Organic reaction mechanisms, molecular orbitals, reaction kinetics, and linear free energy relationships; substituent, solvent, and isotope effects. Offered Fall. Instructor(s): Engel.

CHEM 491 RESEARCH FOR UNDERGRADUATES (1 TO 5)

Open only to chemistry majors unless approved by the department chair. Written report required. Must be enrolled in one of the following Major(s): Chemistry. Repeatable for Credit. Offered Fall and Spring.

CHEM 494 UNDERGRADUATE LITERATURE RESEARCH (1 TO 3)

Students conduct literature research under the direction of a chemistry faculty member. The research project will culminate in a substantial written work describing the results of the project. Department permission required. Offered Fall and Spring. Instructor(s): Parry.

CHEM 495 TRANSITION METAL CHEMISTRY (3)

Structure, bonding and reactivity of coordination and organometallic compounds; ligand field theory; electronic spectroscopy; magnetism; reaction mechanisms; catalysis. Offered Fall. Instructor(s): Wilson

CHEM 515 CHEMICAL KINETICS AND DYNAMICS (3)

Description and analysis of the rates of unimolecular, bimolecular, and composite chemical reactions in gas and solution phases. Both macroscopic kinetics and microscopic reaction dynamics are covered. Graduate/Undergraduate version: CHEM 415. Pre-requisite(s): CHEM 311 and CHEM 312. Offered Fall. Instructor(s): Kolomeisky.

CHEM 520 CLASSICAL AND STATISTICAL THERMODYNAMICS (3)

A review of the principles of classical thermodynamics and an introduction to the theories and methods of statistical thermodynamics with applications to problems in chemistry. Offered Spring. Instructor(s): Clementi.

CHEM 531 QUANTUM MECHANICS II (3)

A hands-on approach to the methods of computational quantum chemistry and their application. Offered Spring. Instructor(s): Scuseria.

CHEM 533 NANOSTRUCTURE AND NANOTECHNOLOGY I (3)

An introduction to the basic principles of nanoscience and nanotechnology. Size dependent physical properties of nanoscopic solids will be described using solid state physics and molecular orbital theory as a foundation. Wet chemical techniques that produce nanoscale materials (e.g. carbon nanotubes, semiconductor and metallic nanocrystals, dendrimers...) will be introduced in the second half of the semester. Not offered Fall and Spring.

CHEM 543 SECONDARY METABOLISM (3)

A survey of the biosynthetic pathways leading to the major classes of natural products. Topics covered include the use of radioactive and stable isotopes, the synthesis of labeled organic compounds, mechanistic investigations of secondary metabolic enzymes, and the cloning and characterization of secondary metabolic genes. Cross-listed with BIOS 543. Offered Spring. Instructor(s): Parry.

CHEM 544 TRANSITION METALS IN ORGANIC SYNTHESIS (3)

The use of transition metals for complex organic synthesis is presented. This will include mechanistic implications. Additionally, an overview of main group metal use in organic synthesis is covered. Pre-requisite(s): CHEM 211 and CHEM 212. Offered Spring. Instructor(s): Tour.

CHEM 547 SUPRAMOLECULAR CHEMISTRY (3)

An examination of noncovalent interactions and their impact in biology, chemistry, and engineering. Topics will include self-assembly, molecular recognition, protein folding and structure, nucleic acid structure, polymer organization, crystallization and applications of the above for the design and synthesis of nanostructured materials. Offered Fall. Instructor(s): Hartgerink.

CHEM 561 ADVANCED ORGANIC CHEMISTRY (3)

The disconnection approach to organic synthesis. Heavy emphasis on reactions, reagents, and mechanisms. Offered Fall.

CHEM 562 ADVANCED ORGANIC CHEMISTRY (3)

Continues in the same vein as CHEM 561 but with emphasis on very recent advances in stereoselective synthesis. Not offered Fall and Spring. Instructor(s): Behar; Lapinsky.

CHEM 570 CONNECTING NANOSCIENCE TO 9TH GRADE IPC CURRICULUM (0 TO 3)

Seminar with a team of university faculty to refresh and enhance high school Integrated Physics and Chemistry (IPC) teachers understanding of course material. This material will then be connected to ongoing nanotechnology research to act as a stimulating and effective context for teaching scientific concepts. Instructor permission required. Limited enrollment. Offered Spring. Instructor(s): Ausman

CHEM 575 PHYSICAL METHODS IN INORGANIC CHEMISTRY (3)

A survey course of research techniques used in modern inorganic chemistry. Topics covered will include X-ray diffraction, matrix isolation, mass spectrometry, magnetism, electrochemistry, and various spectroscopies (IR, Raman, UV-Vis, nmr, epr, XPS, EXAFS, and Mossbauer). Open to undergraduates by special permission only. Instructor(s): Whitmire.

CHEM 595 SPECIAL TOPICS-INORGANIC CHEMISTRY (3)

Rotation of topics include: solid-state chemistry, organometallic chemistry, bioinorganic chemistry, and single-crystal X-ray diffraction. Open to undergraduates by special permission only. Repeatable for Credit. Offered Spring. Instructor(s): Hennessy.

CHEM 596 CHEMISTRY OF ELECTRONIC MATERIALS (3)

A review of the chemical processes involved in the manufacture of microelectronic chips, including; crystallization, purification, oxidation, thin film methods, lithography and ceramic processing. Open to undergraduates by special permission only. Cross-listed with MSCI 596.

CHEM 597 POLYMER SYNTHESIS, SOFT NANOMATERIAL AND NANOCOMPOSITES (3)

The course will cover methods of characterization and some basic synthetic polymer methods (step growth and chain growth approaches). New synthetic polymer methods will be presented including ATRP, ADMET, ROMP, metallocene catalysts and the development of flame retardant polymer blends. Carbon-carbon composites will be discussed, along with the functionalization of carbon nanotubes and their use in nanocomposites. Cross-listed with CHBE 597, MSCI 597. Pre-requisite(s): CHEM 211 and CHEM 212. Repeatable for Credit. Offered Spring. Instructor(s): Tour, Barrera.

CHEM 600 GRADUATE SEMINAR (1 TO 12)

Section 1: BIOLOGICAL CHEMISTRY Section 2: SYNTHETIC AND MECHANISTIC CHEMISTRY Section 3: MATERIALS CHEMISTRY-NANO Section 4: PHYSICAL CHEMISTRY-NANO Repeatable for Credit. Offered Fall and Spring

CHEM 606 EFFECTIVE PRESENTATIONS FOR CHEMISTS (1)

Students learn to plan effective technical seminars with applications to chemical conferences such as the national and regional meetings of the American Chemical Society, as well as job interview presentations. Open to undergraduates by special permission only.

CHEM 630 MOLECULAR SPECTROSCOPY AND GROUP THEORY (3)

The spectra of simple molecules, including microwave, infrared, visible, ultraviolet, and Raman spectra; introductory aspects of molecular symmetry and group theory; resonance spectroscopy. Instructor(s): Curl.

CHEM 700 TEACHING PRACTICUM (2)

Open to graduate students in chemistry and only in exceptional circumstances to undergraduates. Repeatable for Credit. Offered Fall and Spring. Instructor(s): McHale.

CHEM 750 MANAGEMENT FOR SCIENTISTS AND ENGINEERS (3)

This course is designed for science and engineering students who want to understand the management of new and/or small technology based businesses. The course is taught in modular format to give students insights into how technology oriented firms manage intellectual property, marketing, organization behavior, strategy, accounting and finance. Concepts covered will be particularly relevant to students interested in careers in technology or entrepreneurial ventures. This course is part of a two-class sequence and provides the foundation for students taking NEW VENTURE CREATION for SCIENCE and ENGINEERING which is offered in the spring. Cross-listed with MGMT 750, MSCI 750. Offered Fall. Instructor(s): Barron.

CHEM 751 NEW VENTURE CREATION FOR SCIENCE AND ENGINEERING (3)

This course deals with the concepts and theories relevant to new venture creation. Our primary focus is the start-up process with particular emphasis being placed on market issues, intellectual property and entrepreneurial finance. As part of the course we will evaluate the commercial potential of a live technology drawn from the Rice engineering/science community. The concepts covered will be particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. Course is offered to junior and senior students and graduate students and MBA students. Cross-listed with MGMT 751, MSCI 751. Offered Spring. Instructor(s): Barron; Heeley.

CHEM 800 GRADUATE RESEARCH (12 TO 15)

Repeatable for Credit.

CHEM 801 REU RESEARCH IN CHEMISTRY (1 TO 3)

(#) = credit hours per semester

CHIN (CHINESE)

School of Humanities/Center for Study of Languages

CHIN 101 INTRODUCTORY CHINESE I (5)

For students with no background in Chinese. Students will learn Pinyin writing system, vocabulary and structure required for basic communicative tasks. Students will learn to write approximately 100 Chinese characters. Chinese culture will be introduced. Weekly laboratory assignment and tutorial participation are required to receive full credit. Recommended prerequisite(s): No prior knowledge of Chinese. Limited enrollment. Offered Fall.

CHIN 102 INTRODUCTORY CHINESE II (5)

Continuation of CHIN 101. More attention will be paid to the Chinese characters while conversation skills still receive priority. Weekly laboratory assignment and tutorial participation are required. Students will learn to write approximately 200 Chinese characters and be able to perform communicative tasks appropriate to this range of characters. Pre-requisite(s): CHIN 101, or placement test, or permission of instructor. Limited enrollment. Offered Spring.

CHIN 201 ELEMENTARY CHINESE I (4)

Continuation of CHIN 102. Emphasis on reading, writing, and speaking for personal needs. Weekly attendance in the language lab and participation in weekly tutorials is required. Students will be familiar with approximately 300 characters at the end of the course, and able to perform communicative tasks appropriate to this range of characters. Pre-requisite(s): CHIN 102, or placement test, or permission of instructor. Limited enrollment.

CHIN 202 ELEMENTARY CHINESE II (4)

Continuation of CHIN 201. Emphasis on developing oral fluency at the sentence level, reading articles, and cultivating a socio-cultural understanding of the Chinese-speaking society. Upon completion, students expected to be able to write approximately 400 characters and perform communicative tasks, surrounding basic personal needs, appropriate to this range of characters. Class conducted primarily in Chinese and a weekly tutorial is required to receive full credit. Pre-requisite(s): CHIN 201, or placement test, or permission of instructor. Limited enrollment.

CHIN 203 INTERMEDIATE CHINESE CONVERSATION (3)

Three week semi-immersion intermediate Chinese course on listening and speaking with minimal emphasis on the learning of characters. Course aims to help students develop oral fluency at the sentence-to-paragraph level and the ability to perform communicative tasks to satisfy various personal and social needs through classroom activities and lab assignments. Intensive conversational course for enhancing aural/oral proficiency or in preparation for internships or study-abroad in Chinese-speaking societies. Course conducted in Chinese. Recommended prerequisite(s): Two semesters of Chinese or permission of the instructor.

CHIN 211 ACCELERATED ELEMENTARY CHINESE I (4)

For students with some background in spoken Chinese but with limited writing ability. Introduces the Chinese writing system and the use of Chinese dictionaries. Students will be familiar with approximately 200 characters at the end of the course, and able to perform communicative tasks appropriate to this range of characters. Limited enrollment.

CHIN 212 ACCELERATED ELEMENTARY CHINESE II (4)

Increasing attention paid to narrative texts of an formal style. Writing focused on personal needs, with some attention to social correspondence. Students will be familiar with approximately 400 characters at the end of the course, and able to perform communicative tasks appropriate to this range of characters. Pre-requisite(s): CHIN 211, or placement test, or permission of instructor. Limited enrollment.

CHIN 215 CLASSICAL CHINESE (3)

This course develops students a reading knowledge of classical Chinese through studying selected original passages from the great classic texts of Chinese literature, history and philosophy. The lectures are in English. The understanding of classical Chinese improves reading proficiency and writing skill in modern written language. Pre-requisite(s): CHIN 202 and CHIN 212. Limited enrollment. Offered Fall.

CHIN 301 INTERMEDIATE CHINESE I (3)

Continuation of CHIN 202, for students whose home language is not Chinese. Oral skills cultivated through discussion after reading narrative texts and writing focused on techniques necessary for satisfying personal and social needs. Upon completion, students expected to be able to write approximately 550 characters and be able perform communicative tasks appropriate to this range of characters. Pre-requisite(s): CHIN 202, or placement test, or permission of instructor. Limited enrollment.

CHIN 302 INTERMEDIATE CHINESE II (3)

Continuation of CHIN 301, emphasis on developing oral fluency at the paragraph level and cultivating writing skills as more authentic materials and socio-cultural topics are introduced. Upon completion, students expected to be able to write approximately 800 characters and perform communicative tasks appropriate to this range of characters. Pre-requisite(s): CHIN 301, or placement test, or permission of instructor. Limited enrollment.

(#) = credit hours per semester

CHIN 311 ACCELERATED INTERMEDIATE CHINESE I (3)

Emphasis on reading narrative texts, and understanding authentic oral texts. Writing assignments stress skills necessary for basic personal needs and tasks necessary for writing social correspondence. At the completion of 311, students will be able to write approximately 700 Chinese characters, and be able to perform communicative tasks appropriate to this range of characters. Pre-requisite(s): CHIN 212, or placement test, or permission of instructor. Offered Fall.

CHIN 312 ACCELERATED INTERMEDIATE CHINESE II (3)

Continuation of CHIN 311. More emphasis on reading narratives, comprehending authentic oral texts, and speaking in more formal contexts. Writing assignments stress skills necessary for expressing arguments on socio-cultural topics. At the completion of CHIN 312, students will be able to write approximately 800 Chinese characters. Pre-requisite(s): CHIN 302 and CHIN 311, or placement test, or permission of instructor. Recommended prerequisite(s): Ability to write approximately 700 characters assumed. Repeatable for Credit. Limited enrollment. Offered Fall.

CHIN 313 MEDIA CHINESE (3)

Advanced intermediate course, designed to familiarize students with the language of print and broadcast media with a focus on news media. Students will learn strategies and tactics applicable to newspaper reading and skills essential for understanding news broadcasting. Introduction to Classical Chinese discourse as related to modern Chinese media discourse also included. Pre-requisite(s): CHIN 302 or CHIN 312, or placement test, or permission of instructor. Recommended prerequisite(s): Ability to write 800 characters assumed.

CHIN 314 CONTEMPORARY CHINA: CULTURE AND SOCIETY SINCE 1978 (3)

The objective of this course is two-fold. First, this writing/reading intensive course aims at advancing the students' overall language proficiency to Intermediate High. Second, this course is designed to enhance the students' understanding of the social and cultural transformation in contemporary China that resulted from the Economic Reform of 1978. Pre-requisite(s): CHIN 311 and CHIN 302, or placement test, or permission of instructor. Limited enrollment. Offered Spring.

CHIN 316 TEXT FROM POPULAR CULTURE: ADVANCED AND INTERMEDIATE CHINESE (3)

Presents Chinese through film, popular songs, short fiction, and Chinese cuisine. Reading material is generally from authentic texts. Students perform regular short writing assignments in an increasing formal style. Pre-requisite(s): CHIN 302 and CHIN 311, or placement test, or permission of instructor. Recommended prerequisite(s): Ability to write approximately 700 characters assumed.

CHIN 321 STRUCTURE OF CHINESE: SYNTAX & SEMANTICS (3)

Examination of syntactic and semantic features of Chinese with special attention to contrastive analysis of selected topics of Chinese and English, including expressions of tense and aspect, conditional and counterfactual, word formation (morphology), the notion of syntactic category, grammaticalization, etc. Taught in English. Cross-listed with LING 321. Limited enrollment. Offered Fall.

CHIN 322 TAIWANESE LANGUAGE AND LITERATURE (3)

This course contains two parts running concurrently every week. Part one focuses on language acquisition. Online textbook is Taiwanese on Campus, by L. Chen. Emphasis is on daily, practical expressions. Part two is an examination of Taiwanese nativist literature with special attention to its language/cultural and political/historical background. Limited enrollment. Offered Spring.

CHIN 330 INTRODUCTION TO TRADITIONAL CHINESE POETRY (3)

This course seeks to decode enchanting features of traditional Chinese poetry through examining the transformation of poetic genres, the interaction between poetic creation and political, social, and cultural changes, and the close association of poetry with art. Thus, this course also serves to understand Chinese culture and history through poetic perspectives. All readings in English translation. No knowledge of Chinese language required. Cross-listed with ASIA 330.

CHIN 332 CHINESE FILMS & MODERN CHINESE LITERATURE (3)

Exploration of modern Chinese literature through visual imagery of Chinese films. Includes an analysis using literary history and narrative structure to link film adaptations to their original texts with emphasis on narratology and movie theory. Films subtitled in English, shown outside of class. All readings in English translation. Cross-listed with ASIA 332.

CHIN 334 TRADITIONAL CHINESE TALES AND SHORT STORIES (3)

Learning Chinese Literature and culture through reading vernacular stories, fantastic tales, biographies, and philosophical parables. Discussion topics: literature and Confucianism, Taoism, and Buddhism; literature and history; self and other; fantastic world and reality; women as domestic aliens and aliens portrayed as women; etc. Readings are in English translation. Cross-listed with ASIA 334.

CHIN 335 INTRODUCTION TO CLASSICAL CHINESE LITERATURE (3)

Examination of the basic characteristics of classical Chinese novels, primarily through six important works from the 16th to 18th centuries: Water Margin, Monkey, Golden Lotus, Scholars, Romance of the Three Kingdoms, and Dream of the Red Chamber. Cross-listed with ASIA 335.

CHIN 399 CHINESE TEACHING PRACTICUM (1 TO 3)

This course gives students with advanced proficiency in Chinese the opportunity to acquire teaching experience in tutorial format. Regular meetings with supervising faculty member. Repeatable for Credit. Limited enrollment. Offered Fall and Spring.

CHIN 3XX DEPARTMENT APPROVED TRANSFER CREDIT (1 TO 15)

Repeatable for Credit.

CHIN 411 ADVANCED CHINESE I (3)

First advanced course, uses authentic materials (literary texts, films, Chinese media, and websites) to expose students to different discourse styles, help them cultivate sociocultural awareness and engage them in purposeful communicative tasks. Emphasis on essay writing, oral fluency (summarizing, comparing, narrating, describing...), and communicative competence. Classical Chinese also introduced. Pre-requisite(s): CHIN 312 and CHIN 313 and CHIN 314 and CHIN 316 and CHIN 302, or placement test, or permission of instructor. Recommended prerequisite(s): Ability to write 1000 characters.

CHIN 412 ADVANCED CHINESE LANGUAGE AND CULTURE II (3)

Continuation of CHIN 411, aims to help students further develop oral and writing skills to provide structured arguments for supporting opinions, to construct hypotheses, to discuss abstract topics, and to critique sociopolitical issues. Continued emphasis on developing communicative strategies, discourse styles, cultural literacy, and the ability to read Classical Chinese texts. Pre-requisite(s): CHIN 411, or placement test, or permission of instructor. Recommended prerequisite(s): Ability to write 1200 characters.

CHIN 422 THE ORIGINAL BEAUTY OF CHINESE LITERATURE (3)

The course will expose students to the best literary works created in the Chinese tradition, both classical and modern, and give them a general introduction to different genres, including poetry, fiction, drama, and philosophical essays. It will improve their language proficiency through reading original texts of Chinese literature. Cross-listed with ASIA 422.

CHIN 4XX DEPARTMENT APPROVED TRANSFER CREDIT (1 TO 15)

Repeatable for Credit.

CLAS (CLASSICAL STUDIES)**School of Humanities/Classical Studies****CLAS 101 FRESHMAN SEMINAR: SOCRATES: THE MAN AND HIS PHILOSOPHY (3)**

Socrates, the first moral philosopher, was convicted of impiety and executed by his fellow citizens. His influence on Western thought has been immense, though he left no writings. Readings from Plato's dialogues, with emphasis on the Apology and Gorgias. In addition to papers, each participant will make one presentation and lead one. Cross-listed with FSEM 101. Limited enrollment. Not offered Fall and Spring. Instructor(s): Yunis.

CLAS 107 GREEK CIVILIZATION AND ITS LEGACY (3)

An examination of the literary, artistic, and intellectual achievements of classical Greek civilization from Homer through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. The influence of ancient Greece on Western culture will be a focus. Case studies in the later reception of classical Greek literature (e.g., tragedy), philosophy (e.g., Socrates), history (e.g., democracy), and art (e.g., Parthenon) will be examined. Cross-listed with HUMA 109. Offered Fall. URL: www.ruf.rice.edu/~tel/.

CLAS 108 ROMAN CIVILIZATION AND ITS LEGACY (3)

This course will investigate central aspects of Roman civilization: governmental institutions, politics, warfare, religion, law, oratory, private life, public entertainment, literature, and visual art and architecture. We will also examine case studies in how subsequent western societies reacted to ancient Rome. Offered Spring. URL: www.ruf.rice.edu/~tel/. Instructor(s): McGill.

CLAS 131 NO HAPPY ENDINGS: TRAGEDY IN LITERATURE AND FILM (3)

Tragedy stages the suffering and fall of a hero. It excites pity and fear. Why, then, do we take pleasure in tragedy? This course explores the importance of tragedy in Western culture through a reading of plays by Sophocles, Shakespeare, Racine, and Ibsen. Films include works by Robinson and Schlöndorff. Cross-listed with FREN 131, FSEM 131. Offered Fall. URL: www.ruf.rice.edu/~tel/. Instructor(s): Shea.

CLAS 201 HISTORY OF PHILOSOPHY I (3)

Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-listed with MDST 201, PHIL 201. Offered Fall. Instructor(s): Morrison.

CLAS 209 GREEK AND ROMAN DRAMA (3)

Greek: A reading and dramatic analysis of Aeschylus's "Oresteia" (three plays), Sophocles's "Oedipus the King", "Oedipus at Colonus", "Electra and Antigone"; The "Medea" "Orestes", and "Electra" of Euripides. Latin: A reading and analysis of the "Menaechmi" and the "Miles Gloriosus" of Plautus, the "Phormio" of Terencen and the "Medea" of Seneca. Cross-listed with ENGL 209. Offered Fall. Instructor(s): Mitchell.

CLAS 210 HOMER AND VIRGIL AND THEIR RECEPTION (3)

This course will read Homer's Iliad and Odyssey and Virgil's Aeneid in translation and will examine case studies in the reception of those works in post-classical western literature and criticism. Offered Fall.

URL: www.ruf.rice.edu/~tel/.

CLAS 220 THE NOVEL IN CLASSICAL ANTIQUITY (3)

Shipwrecks, romance, travel, warfare, feasting, and a man metamorphosed into a donkey. All appear in ancient Greek and Roman prose fiction, examples of which we will read in translation. Topics will include the form's origins, whether the term "novel" adequately defines the texts, and the works' ancient readership. Not offered Fall & Spring. Instructor(s): McGill.

CLAS 225 WOMEN IN GREECE AND ROME (3)

Survey of the depiction of women in Greek and Roman mythology, literature, and art. Includes a study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Cross-listed with WGST 225. Offered Spring. Instructor(s): Wallace.

CLAS 235 CLASSICAL MYTHOLOGY: INTERPRETATION, ORIGINS, AND INFLUENCE (3)

We will read and analyze some of the most influential Greek myths (including their parallels and permutations in other cultures). Employing insights from a variety of theoretical approaches to myth, we will identify typical story patterns, characters, and events, and the values, anxieties, and aspirations for which they stand. Offered Fall. URL: www.ruf.rice.edu/~tel/.

CLAS 301 ANCIENT AND MEDIEVAL PHILOSOPHY (3)

Topics in the history of philosophy from the 4th century B.C. through the 14th century. Cross-listed with MDST 301, PHIL 301. Not offered Fall and Spring. Instructor(s): Morrison.

CLAS 311 TEXT AS PROPERTY, PROPERTY AS TEXT: ACROSS THE AGES (3)

Examines forms and norms of authorship and ownership from antiquity to the present. What is an author? Is a text public or private property? What are the licit/illicit forms of rewriting and appropriating a text, and how are those forms defined? This class investigates historically these and other issues. Cross-listed with ANTH 321. Not offered Fall and Spring. Instructor(s): McGill.

CLAS 312 GREEK ART AND ARCHITECTURE (3)

A chronological survey of sculpture, painting, and architecture of Greece, and the Aegean Islands, and Western Asia Minor from the Bronze Age through the Hellenistic period (3300-31 BC). Analysis of style, content, and purpose within the cultural and historical contexts. Cross-listed with HART 312. Not offered Fall and Spring. Instructor(s): Quenemoen.

CLAS 315 ROMAN ART AND ARCHITECTURE (3)

A chronological survey of Roman sculpture, painting, and architecture from its Etruscan beginnings to the late Empire. Art and architecture of Rome and the provinces considered within their larger social, political, and urban contexts. Particular attention given to patronage, the relation between Roman and Greek art, and Rome's position as an artistic center. Cross-listed with AMCI 315, HART 315. Not offered Fall and Spring. Instructor(s): Quenemoen.

CLAS 316 DEMOCRACY AND POLITICAL THEORY IN ANCIENT GREECE (3)

This course will consider how democracy arose and developed in classical Greece. The course will consider how Athenian direct democracy functioned and what are the differences between ancient and modern democracy. Not offered Fall and Spring. Instructor(s): Yunis.

CLAS 318 THE INVENTION OF PAGANISM IN THE ROMAN EMPIRE (3)

This interdisciplinary course examines the development of the concept of "paganism" in the Roman empire during the first through seventh centuries AD. We will examine the mutually tolerant character of the many religions of the Roman world and see how the category of paganism was invented and applied by Christians to all the polytheists of the empire and beyond. Cross-listed with HIST 316, RELI 316. Not offered Fall and Spring. Instructor(s): McGill; Maas.

CLAS 320 THE AGE OF AUGUSTUS (3)

After defeating Antony and Cleopatra the emperor Augustus restored stability to Rome, oversaw the expansion of the empire, and made Rome a capital city. Study of art and literature of this 'Golden Age' will address Augustus' construction of identity, imperial and non-imperial patronage, and the formation of Augustan ideology in Rome and the provinces. Cross-listed with HART 320. Not offered Fall and Spring. Instructor(s): McGill; Quenomeon.

CLAS 336 THE ORIGIN OF THE LANGUAGES OF EUROPE (3)

Languages as superficially different as English, Greek, Latin, and Sanskrit in fact all developed from a single "proto-language". This course will explore the following questions: What was this proto-language like? How do we know what it was like? What can we learn about its speakers on the basis of the words that have survived in the various daughter languages? Not offered Fall and Spring.

CLAS 337 EPIC AND NOVEL (3)

Why did novelists of the eighteenth, nineteenth, twentieth centuries allude to classical epic, and how did they transform the genre? We will address these questions, reading the Homeric and other ancient epics alongside such novels as Fielding's *Tom Jones*, Eliot's *Middlemarch*, and Joyce's *Ulysses*. Cross-listed with ENGL 335. Not offered Fall and Spring. Instructor(s): Mackie.

CLAS 339 MYTHS OF OTHERWORLD JOURNEY (3)

Analysis and comparison of myths of "otherworld journey" in ancient, medieval, and modern texts. Who are the typical tellers of and audiences for such tales, and how do they function both in their immediate and in their broader cultural contexts? All works read in English translation. Not offered Fall and Spring. Instructor(s): Mackie.

CLAS 491 SPECIAL TOPICS (3)

Independent work. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Fall.

CLAS 492 SPECIAL TOPICS (3)

Independent work. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Spring.

CLAS 493 SENIOR THESIS (3)

Open to classics majors in the final semester of study. Thesis, to be written on a topic of the student's choice in consultation with a member of the faculty. Must be in one of the following Classification(s): Senior. Repeatable for Credit. Offered Spring.

COMP (COMPUTER SCIENCE)**School of Engineering/Computer Science****COMP 110 COMPUTATION IN SCIENCE AND ENGINEERING (3)**

The course introduces basic techniques for problem solving and visualization using computational environments such as Mathematica and MATLAB. Class will consist of a mixture of traditional lectures held in classrooms and self-paced modules covering topics in science and engineering that will be completed in Symonds II. No previous experience is required or expected. Cross-listed with NSCI 230. Limited enrollment. URL: www.owl.net.rice.edu/~comp110.

COMP 200 ELEMENTS OF COMPUTER SCIENCE (3)

Broad introduction to major topics in computer science. Includes algorithms, mathematical models of computation, machine organization and design, programming languages, communication, and artificial intelligence. This course is intended for majors outside of Science and Engineering. URL: www.owl.net.rice.edu/~comp200.

COMP 201 PRINCIPLES OF OBJECT-ORIENTED PROGRAMMING I (4)

Introduction to computing focusing on the principles of object-oriented programming using design patterns coupled with progressively richer subsets of the Java programming language. Program design concepts such as structural and behavioral abstractions are emphasized in building contemporary dynamic software systems. Design Patterns are used as a vocabulary for codifying these abstractions and expressing fundamental computing principles. They are illustrated in the design and implementation of lists, trees and arrays and their associated algorithms that leverage both run-time and parametric polymorphism. The course utilizes UML diagrams for object modeling and unit testing as a part of an incremental, test-driven approach to writing programs. Recommended for Engineering and other non-Comp majors, plus students who have yet not committed to a COMP major. Offered Spring. URL: www.owl.net.rice.edu/~comp201. Instructor(s): Wong; Nguyen.

COMP 202 PRINCIPLES OF OBJECT-ORIENTED PROGRAMMING II (4)

Continuation of COMP 201 covering advanced object-oriented data structures and their associated algorithms such as lazy evaluation, heaps, self-balancing trees, graphs, sorting, and generative recursion. Applications of Software Engineering principles such as abstract decomposition, decoupling, and command passing to large- and small scale component-framework systems. Multi-threaded event-driven applications provide compelling illustrations for such principles. Recommended for Engineering majors, non-Engineering students, and potential Computer Science majors. Pre-requisite(s): COMP 201. Offered Fall. Instructor(s): Wong, Nguyen.

COMP 210 PRINCIPLES OF COMPUTING AND PROGRAMMING (4)

Introduction to the principles of computer programming. Includes functional programming, data abstraction, procedural abstraction, reduction rules, use of control and state, object-oriented programming, program optimization, algorithm efficiency. Students will learn the practical skills required to write and modify programs. Laboratory assignments use Scheme. May not receive credit for COMP 211 after taking COMP 210. Required for computer science majors. Offered Fall.

COMP 211 COMPUTER SCIENCE ADVANCED PLACEMENT COMPUTING (3)

This course is used only to provide credit for students who have received a 4 or 5 on the Computer Advanced Placement Examination. This credit does not count toward satisfying any course requirements for the Computer Science major, but does count toward the total credit hours required for graduation.

COMP 212 INTRODUCTION TO THE PRINCIPLES OF OBJECT-ORIENTED PROGRAMMING (4)

This course focuses on teaching students how to apply the principles of program design taught in COMP 210 to the context of object-oriented programming using JAVA. Many of these principles are codified in an object-oriented context as object-oriented design patterns. The course also covers basic algorithms and data structures from an object-oriented perspective. Pre-requisite(s): COMP 210. Offered Spring.

COMP 280 MATHEMATICS OF COMPUTATION (3)

This course provides an introduction to the use of mathematics in modeling and reasoning about problems in computer science. Topics include logic, proof methods (including mathematical and structural induction), reasoning about recursive and iterative programs, sets, functions and their asymptotic growth, counting, and modular arithmetic. Pre-requisite(s): COMP 210. Corequisite(s): MATH 102 Offered Spring.

COMP 290 COMPUTER SCIENCE PROJECTS (1 TO 3)

Theoretical and experimental investigations under staff direction. Instructor permission required. Repeatable for Credit.

COMP 300 ORGANIZATIONS IN THE INFORMATION AGE (3)

We will review the remarkable technology of the Information Age and examine some of its effects on businesses and institutions. Information technology is re-shaping the structure of organizations and markets and challenging business leaders to re-think the ways in which businesses will prosper in the years ahead. We will explore these challenges and also speculate about the ways in which advancing information technology might further transform organizations. Offered Spring. Instructor(s): Gorry.

COMP 311 PROGRAMMING LANGUAGES (4)

The design, definition and abstract implementation of programming languages including methods for precisely specifying syntax and semantics. Pre-requisite(s): COMP 212 or COMP 202. Offered Spring.

COMP 312 PRODUCTION PROGRAMMING (4)

This course focuses on the principles and practices of test-driven software development, which have been popularized under the banner of "Extreme Programming". To provide students with practical experience, the course engages students in the development of open source production programs written in JAVA or C#. The DRJAVA programming environment used in our core programming courses was developed by students in this course. Some of the major topics covered in course lectures include design patterns for controlling concurrency and refactoring transformations to improve legacy code. Pre-requisite(s): COMP 202 and COMP 212. Offered Spring.

COMP 314 APPLIED ALGORITHMS AND DATA STRUCTURES (4)

Design analysis of computer algorithms and data structures useful for applied problems. Laboratory assignments will use these techniques in conjunction with advanced programming methods. Cross-listed with ELEC 322. Pre-requisite(s): COMP 212 and COMP 280. URL: www.owl.net.rice.edu/~comp314.

COMP 320 INTRODUCTION TO COMPUTER SYSTEMS (4)

This course introduces computer systems from the programmer's perspective. Topics include data representation, the compilation process, and system-level programming concepts such as interrupts and concurrency. Pre-requisite(s): COMP 212 and ELEC 220. Offered Fall. URL: www.owl.net.rice.edu/~comp320.

COMP 326 DIGITAL LOGIC DESIGN (3)

Gates, flip-flops, combinational and sequential switching circuits, registers, logical and arithmetic operations. Cross-listed with ELEC 326. Pre-requisite(s): ELEC 220.

COMP 360 COMPUTER GRAPHICS (4)

2D graphics techniques including fast line and curve drawing and polygon filling. 3D graphics problems including representation of solids, shading, and hidden surface elimination. Fractals, graphics standards. Pre-requisite(s): COMP 212. Offered Fall.

COMP 390 COMPUTER SCIENCE PROJECTS (1 TO 3)

See COMP 290. Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

COMP 409 LOGIC IN COMPUTER SCIENCE (3)

Set theoretical concepts. Propositional and first-order logic. Soundness and completeness, incompleteness, undecidability. Logical issues in computer science. Pre-requisite(s): COMP 201 or COMP 210 and COMP 280. Offered Fall.

COMP 410 SOFTWARE ENGINEERING METHODOLOGY (4)

COMP 410 is a pure discovery-based learning course designed to give students real-life, hands-on training in a wide variety of software engineering issues that arise in creating large-scale, state-of-the-art software systems. The class forms a small software development "company" that works to deliver a product to a customer. The topics encountered include and are not limited to, dealing with new technologies (e.g. C#, .NET, distributed computing), advanced object-oriented programming and design, interacting with customers, problem specification and tasking, individual and group communications, human resource management, group leadership, testing, integration and documentation. Traditional development cycle methodologies will be compared to recent, "agile" techniques. Pre-requisite(s): (COMP 202 or COMP 212). Recommended prerequisite(s): COMP 312 or COMP 314. Offered Spring. URL: www.owlnet.rice.edu/~comp410. Instructor(s): Wong.

COMP 411 ADVANCED PROGRAMMING LANGUAGES (4)

The design, definition and abstract implementation of programming languages including methods for precisely specifying syntax and semantics. Pre-requisite(s): (COMP 212 or COMP 202) and COMP 280 and COMP 311. Offered Spring.

COMP 412 COMPILER CONSTRUCTION (4)

Topics in the design of programming language translators, including parsing, run-time storage management, error recovery, code generation and optimization. Pre-requisite(s): COMP 314 and COMP 320. Offered Fall.

COMP 413 DISTRIBUTED PROGRAM CONSTRUCTION (4)

This course focuses on modern principles for the construction of distributed programs, with an emphasis on design patterns, modern programming tools, and distributed object systems. The material will be applied in a substantial software design/construction project. Pre-requisite(s): COMP 312 and COMP 421, or permission of instructor. Not offered Fall and Spring.

COMP 420 INTRODUCTION TO DISTRIBUTED COMPUTER SYSTEMS (4)

Introduction to advanced operating systems and distributed systems. The course covers concepts, architecture, algorithms, protocols and implementation focusing on distribution, scale, robustness in the face of failure, and security. Pre-requisite(s): COMP 421. Not offered Fall and Spring.

COMP 421 OPERATING SYSTEMS AND CONCURRENT PROGRAMMING (4)

Introduction to the design, construction, and analysis of concurrent programs with an emphasis on operating systems, including filing systems, schedulers, and memory allocators. Specific attention is devoted to process synchronization and communication within concurrent programs. Cross-listed with ELEC 421. Pre-requisite(s): (COMP 212 and COMP 202) and COMP 320. Offered Spring.

COMP 425 COMPUTER SYSTEMS ARCHITECTURE (4)

Design of advanced uniprocessor system architecture and basics of parallel architectures. Advanced pipelining, including dynamic scheduling and precise interrupt handling. Advanced techniques for exploiting instruction level parallelism, including superscalar and VLIW architectures. Case studies of several recent high-performance microprocessors. Vector processors. Memory system design--techniques to improve cache performance, virtual memory systems, main memory enhancements. I/O systems--disk arrays and graphical interfaces. An overview of parallel computers. Cross-listed with ELEC 425. Pre-requisite(s): (COMP 320 or ELEC 320) and ELEC 326. Offered Fall. URL: www.owlnet.rice.edu/~comp425/.

COMP 429 INTRODUCTION TO COMPUTER NETWORKS (4)

Network architectures, algorithms and protocols. Local- and wide-area networking. Intra- and inter-domain routing. Transmission reliability. Flow and congestion control. TCP/IP. Multicast. Quality of service. Network security. Networked applications. Cross-listed with ELEC 429. Pre-requisite(s): (STAT 310 or ELEC 331), and (COMP 202 or COMP 212).

COMP 430 INTRODUCTION TO DATABASE SYSTEMS (4)

Query Introduction to relational database systems, SQL programming, Database application programming, and Database design. Pre-requisite(s): (COMP 202 or COMP 212) and COMP 280.

COMP 440 ARTIFICIAL INTELLIGENCE (4)

Techniques for simulating intelligent behavior by machine, problem solving, game playing, pattern perceiving, theorem proving, semantic information processing, and automatic programming. Cross-listed with ELEC 440. Pre-requisite(s): (COMP 212 or COMP 202) and COMP 280. Offered Fall.

COMP 446 MOBILE WIRELESS SERVICES PROJECT (3)

Design and implement a wireless mobile information system utilizing PocketPC hardware, Visual Studio .NET and .NET services to run over the Rice 802.11b wireless infrastructure. Students will be provided with PocketPCs, required software and access to a .NET server. Preference given to students who have experience with Visual Studio or have taken ELEC 694. Cross-listed with ELEC 446. Limited enrollment. Instructor(s): Cutler.

COMP 450 ALGORITHMIC ROBOTICS (4)

An introduction to computing object motion in application domains such as robotics, manufacturing, animation, and pharmaceutical drug design. Topics covered include motion planning in known and partially known environments, uncertainty, manipulation, and assembly planning. Pre-requisite(s): (COMP 202 or COMP 212) and COMP 314. Offered Fall.

COMP 460 ADVANCED COMPUTER GRAPHICS (4)

Advanced topics in computer graphics and geometric modeling, including B-spline curves and surfaces, solid modeling, radiosity, morphing, animation, simulation. Subdivision, fractals, wavelets, and other selected topics as time permits. Not offered every year. Pre-requisite(s): COMP 360. Offered Spring.

COMP 470 FROM SEQUENCE TO STRUCTURE: AN INTRODUCTION TO COMPUTATIONAL BIOLOGY (4)

This course is a modern introduction to problems in computational biology spanning sequence to structure. The course has three modules: the first introduces statistical techniques in sequence analysis; the second covers statistical machine learning techniques for understanding experimental data generated in computational biology; and the third introduces problems in the structure of complex biomolecules. Cross-listed with STAT 470. Pre-requisite(s): COMP 280 and COMP 210 and STAT 310. Offered Spring. Instructor(s): Kaviraki; Subramanian; Guerra, Kimmel.

COMP 481 AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY (3)

Finite automata, regular expressions, regular languages, pushdown automata, context-free languages, Turing machines, recursive languages, computability, and solvability. Pre-requisite(s): COMP 314 and COMP 280. Offered Spring.

COMP 482 DESIGN AND ANALYSIS OF ALGORITHMS (3)

Methods for designing and analyzing computer algorithms and data structures. The focus of this course will be on the theoretical and mathematical aspects of algorithms and data structures. Cross-listed with ELEC 420. Pre-requisite(s): COMP 314, or permission of instructor. Offered Fall.

COMP 485 FUNDAMENTALS OF MEDICAL IMAGING I (3)

Fundamentals of various medical imaging modalities (e.g., x-ray, CT, and MRI) used to identify the anatomy of human organs, as well as other modalities (e.g. PET, SPECT, fMRI, and MEG) specifically developed to identify the function of the brain. Cross-listed with BIOE 485, ELEC 485. Pre-requisite(s): MATH 211 and MATH 212.

COMP 486 FUNDAMENTALS OF MEDICAL IMAGING II (3)

This course is directed towards graduate and senior undergraduate students interested in acquiring an in depth knowledge of Positron Emission Tomography (PET). The course will focus on PET physical principles, image formation, and processing. The course will also cover the various correction techniques used to quantify PET images as well as lay the foundations for understanding tracer kinetic modeling. A field trip to MD Anderson's PET facility will be organized to provide the students with hands on experience of PET imaging and data analysis. The use of PET imaging in various medical applications will also be covered. Cross-listed with BIOE 486, ELEC 486. Pre-requisite(s): ELEC 485 or BIOE 485 or COMP 485.

COMP 490 COMPUTER SCIENCE PROJECTS (1 TO 4)

Theoretical and experimental investigations under staff direction. Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

COMP 491 COMPUTER SCIENCE TEACHING (3)

A combination of in-service teaching and a seminar. Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

COMP 492 COMPUTER SCIENCE HONORS PROJECT (1 TO 6)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

COMP 498 INTRODUCTION TO ROBOTICS (3)

Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Cross-listed with ELEC 498, MECH 498. Limited enrollment. Offered Spring. Instructor(s): O'Malley.

COMP 502 NEURAL NETWORKS AND INFORMATION THEORY I (3)
Review of major Artificial Neural Network paradigms. Analytical discussion of supervised and unsupervised learning. Emphasis on state-of-the-art Hebbian (biologically most plausible) learning paradigms and their relation to information theoretical methods. Applications to data analysis such as pattern recognition, clustering, classification, blind source separation, non-linear PCA. Cross-listed with ELEC 502. Pre-requisite(s): ELEC 430 and ELEC 431, or permission of instructor.

COMP 511 MULTI-STAGE PROGRAMMING (4)
Multi-stage programs can generate other programs at runtime, compile them, and execute them. Such programs can be significantly faster than single-stage ones. This course introduces multi-stage languages, their applications, theory, and implementation techniques. Coursework includes reading assignments, discussions, and various kinds of programming exercises using one such language (MetaOCaml). Pre-requisite(s): COMP 311 and COMP 411. Not offered Fall and Spring. URL: www.owlnet.rice.edu/~comp511.

COMP 512 ADVANCED COMPILER CONSTRUCTION (4)
Advanced topics in the design of an optimizing compiler. This course will focus on analysis and optimization of programs for uniprocessor machines, including program analysis (data-flow analysis, construction of static single-assignment form) and program transformation (redundance, constant values, strength reduction, etc.). The course uses a variety of readings from the literature and includes an implementation project. Pre-requisite(s): COMP 412. URL: www.owlnet.rice.edu/~comp512.

COMP 515 ADVANCED COMPILATION FOR VECTOR PARALLEL PROCESSORS (3)
Advanced compilation techniques for vector and parallel computer systems, including the analysis of program dependence, program transformations to enhance parallelism, compiler management of the memory hierarchy, interprocedural data flow analysis, and parallel debugging. Pre-requisite(s): COMP 412. Offered Spring.

COMP 517 RESOURCE AWARE PROGRAMMING (3)
This course explores the design space for high-level languages that can support the more specialized task of resource-aware programming (RAP). Three research papers are covered each week with emphasis placed on developing the skills needed to read, understand, and present current research papers. In addition, the course includes an interactive reading group component. Instructor permission required.

COMP 520 DISTRIBUTED SYSTEMS (4)
Distributed systems: workstations, local area networks, server machines. Multiprocess structuring and interprocess communication. File access and memory management. User interfaces: window systems and command interpreters. Case studies of selected distributed systems. Emphasis on performance aspects of system software design. Cross-listed with ELEC 520. Pre-requisite(s): COMP 421 and COMP 425. Offered Fall.

COMP 521 ADVANCED OPERATING SYSTEMS (4)
Advanced topics in the design and implementation of state-of-the-art operating systems for general-purpose computation, emphasizing solutions to performance and scalability bottlenecks that are common with today's commercial and scientific workloads: process and thread management; NUMA memory management, superpagesupport; SMP memory and address translation coherence; low-overhead, high-throughput I/O systems; robustness versus performance in file systems. Pre-requisite(s): COMP 421. Offered Fall. Instructor(s): Cox.

COMP 523 COMPUTER-AIDED DESIGN FOR VLSI (3)
Fundamental topics in computer-aided design for VLSI: logic synthesis and formal verification, timing analysis and optimization, technology mapping, logic and fault simulation, testing, and physical design will be covered. Relevant topics in algorithms and data structures, generic programming, and the C++ standard template library will also be covered. Cross-listed with ELEC 523.

COMP 524 MOBILE AND WIRELESS NETWORKING (3)
Study of network protocols for mobile and wireless networking, particularly at the media access control, network, and transport protocol layers. Focus is on the unique problems and challenges presented by the properties of wireless transmission and host or router mobility. Cross-listed with ELEC 524. Pre-requisite(s): COMP 429 or ELEC 429. Offered Fall.

COMP 525 ADVANCED MICROPROCESSOR ARCHITECTURE (4)
Exploration of the current trends and future directions of microprocessor architecture. Includes topics such as technology trends that affect microprocessor architecture, modern microprocessor design, techniques for statically and dynamically maximizing parallelism, memory system issues, and proposed future microprocessor architectures. Cross-listed with ELEC 525. Pre-requisite(s): ELEC 425 or COMP 425. Offered Spring. URL: www.owlnet.rice.edu/~elec525/.

COMP 526 HIGH PERFORMANCE COMPUTER ARCHITECTURE (4)
Design of high performance computer systems, including shared-memory and message-passing multiprocessors and vector systems. Hardware and software techniques to tolerate and reduce memory and communication latency. Case studies and performance simulation of high-performance systems. Cross-listed with ELEC 526.

COMP 527 COMPUTER SYSTEMS SECURITY (4)

This class will focus on computer security in real systems. We will cover theory and practice for the design of secure systems (formal modeling, hardware and compiler-enforced safety, software engineering processes, tamper-resistant and tamper-reactive hardware, firewalls, cryptography, and more). Pre-requisite(s): (COMP 311 or COMP 412) and (COMP 421 or COMP 429). Offered Fall.

COMP 528 COMPUTER SYSTEMS PERFORMANCE ANALYSIS (4)

Fundamental topics in performance analysis of computer systems: workload, characterization, measurement techniques, probability and statistics, experimental design, simulation, and analytical modeling. These techniques will be used to understand the performance of computer systems, serial and parallel programs, networks and client-server computing. Assignments will focus on applying these techniques in practice. Offered Spring.

COMP 529 COMPUTER NETWORK PROTOCOLS AND SYSTEMS (4)

Graduate level course on the study of protocols and systems for wide-area internetworks with an emphasis on the challenges presented by the scale and complexity of the Internet. Topics include network architecture, router design, intra- and inter-domain routing, multicast services, congestion control, quality of service, network security, active and overlay network, network management. Pre-requisite(s): COMP 429 or ELEC 429. Offered Fall.

COMP 540 ADAPTIVE SYSTEMS (4)

Multi-disciplinary methods of designing and analyzing adaptive systems. Discussion of recent research in the areas of planning, scheduling and control as well as machine learning. Pre-requisite(s): COMP 440, or permission of instructor. Offered Spring.

COMP 550 TOPICS IN PHYSICAL COMPUTING (4)

Advanced topics in the design and application of algorithms for solving problems in the physical world. Offered Spring.

COMP 559 MIGRATION AND DISPLACEMENT (4)**COMP 561 GEOMETRIC MODELING (4)**

Exploration of curves and surfaces (e.g. parametric form, implicit form, and conversion between forms), the representation of solida (e.g., wireframes, octrees, boundary representations, and constructive solid geometry), and applications (e.g., graphics, motion planning, simulation, and finite element mesh generation. Pre-requisite(s): COMP 360. Offered Spring.

COMP 571 BIOINFORMATICS: SEQUENCE ANALYSIS (3)

Pairwise and multiple sequence alignment, Markov chains and HMMs, Phylogenetic reconstruction, Haplotype inference, Computational models of RNA structure, Gene finding, Genome rearrangements, and comparative genomics. Limited enrollment. Offered Spring. Instructor(s): Nakhleh.

COMP 583 PARALLEL ALGORITHMS AND ARCHITECTURE (3)

Parallel architectures; shared memory, VLSI, message-passing. Structure and relation between architectures. Parallel time, work, and efficiency. Parallel algorithms for fundamental computational problems and applications. Network routing. Cross-listed with ELEC 519.

COMP 590 COMPUTER SCIENCE PROJECTS (1 TO 4)

Advanced theoretical and experimental investigations under staff direction. Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

COMP 602 NEURAL NETWORKS AND INFORMATION THEORY II (3)

Advanced topics in ANN theories, with a focus on Self-Organizing Maps and unsupervised learning. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-listed with ELEC 602. Pre-requisite(s): COMP 502 or ELEC 502. Repeatable for Credit. Limited enrollment.

COMP 607 AUTOMATED PROGRAM VERIFICATION (1)

Methods, tools and theories for the computer-aided verification of concurrent systems. Pre-requisite(s): COMP 409. Repeatable for Credit.

COMP 610 GRADUATE SEMINAR IN PROGRAMMING LANGUAGES (1)

A discussion of programming language semantics in computer science. Instructor permission required. Repeatable for Credit.

COMP 612 GRADUATE SEMINAR IN COMPILER CONSTRUCTION (2)

Topics in construction of programming language translators. Instructor permission required. Repeatable for Credit.

COMP 613 GRADUATE SEMINAR IN ADVANCED LANGUAGE IMPLEMENTATION (3)

Topics in advanced language implementation. Instructor permission required. Repeatable for Credit.

COMP 615 PARALLEL PROGRAMMING SYSTEMS (2)

This course will explore topics in parallel programming environments and compilers for parallel computers. Instructor permission required. Repeatable for Credit.

COMP 617 GRADUATE SEMINAR IN RESOURCE AWARE PROGRAMMING (1 TO 3)

While high-level programming languages can be very helpful for general-purpose programming, they can be unsuitable for programming systems that interact directly with the physical world. Such systems include real-time and embedded systems. This seminar explores the design space for high-level languages that can support the more specialized task of resource-aware programming (RAP). Instructor permission required. Repeatable for Credit. Limited enrollment.

COMP 620 GRADUATE SEMINAR IN DISTRIBUTED COMPUTING (1)
Content varies at discretion of instructor. Instructor permission required. Repeatable for Credit.

COMP 625 GRADUATE SEMINAR ON COMPUTER ARCHITECTURE (3)
Subjects covering virtual memory and security structures, pipelines and vector processing, instruction set definitions, multi-threading, will be discussed. Both contemporary and "ancient systems" will be analyzed. Instructor permission required. Repeatable for Credit.

COMP 629 GRADUATE SEMINAR IN COMPUTER NETWORKING (1)
This course will explore research topics in computer networking with an emphasis on the Internet. Topics include network algorithms and protocols, quality of service, network measurement, network management, network security, overlay networking. Instructor permission required. Repeatable for Credit. Limited enrollment.

COMP 630 MULTITIER WIRELESS NETWORKS (3)
Topics in multitier wireless networks Instructor permission required. Repeatable for Credit.

COMP 640 GRADUATE SEMINAR IN MACHINE LEARNING (3)
A reading course covering the latest developments in statistical machine learning and pattern recognition. Prerequisite(s): COMP 440, or permission of instructor. Repeatable for Credit.

COMP 650 GRADUATE SEMINAR ON PHYSICAL COMPUTING (1)
Algorithmic issues related to physical problems of all scales, from the molecular to the astrophysical. Instructor permission required. Repeatable for Credit.

COMP 661 GRADUATE SEMINAR: GEOMETRIC COMPUTATION (3)
Instructor permission required. Repeatable for Credit.

COMP 685 FUNDAMENTALS OF MEDICAL IMAGING (3)
The course will introduce basic medical imaging modalities, such as x-ray, CT, and MRI, used to identify the anatomy of human organs, as well as other modalities, such as PET, SPECT, fMRI, and MEG, specifically developed to localize brain function. The course includes visits to clinical sites. Cross-listed with ELEC 685. Repeatable for Credit.

COMP 690 RESEARCH AND THESIS (1 TO 12)
Repeatable for Credit.

COMP 800 GRADUATE RESEARCH (1 TO 15)
Repeatable for Credit. Offered Fall and Spring.

CSCI (COGNITIVE SCIENCES)**School of Humanities/Cognitive Sciences**

CSCI 390 SUPERVISED RESEARCH IN COGNITIVE SCIENCES (3)
Supervised research on topics relevant to the cognitive sciences. Limited to majors in Cognitive Sciences. Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

CSCI 481 HONORS PROJECT (3)
Independent directed research toward preparation of an undergraduate honors project or thesis. Instructor permission required. Offered Fall.

CSCI 482 HONORS PROJECT (3)
Independent directed research toward preparation of an undergraduate honors project or thesis. Instructor permission required. Offered Spring.

CSCS (CTR FOR THE STUDY OF CULTURES)
School of Humanities/Humanities Division

CSCS 501 CSC MELLON RESEARCH SEMINAR (1 TO 6)
Faculty and doctoral student collaboration seminars. Topics vary from year to year. Offered by the School of Humanities through the Center for the Study of Cultures. Instructor permission required. Repeatable for Credit.

CSCS 502 CSC MELLON RESEARCH SEMINAR (1 TO 6)
Faculty and doctoral student collaboration seminars. Topics vary from year to year. Offered by the School of Humanities through the Center for the Study of Cultures. Instructor permission required. Repeatable for Credit.

CSCS 503 CSC MELLON RESEARCH SEMINAR (1 TO 6)

Faculty and doctoral student collaboration seminars. Topics vary from year to year. Offered by the School of Humanities through the Center for the Study of Cultures. Instructor permission required. Repeatable for Credit.

CSCS 504 CSC MELLON RESEARCH SEMINAR (1 TO 6)

Faculty and doctoral student collaboration seminars. Topics vary from year to year. Offered by the School of Humanities through the Center for the Study of Cultures. Instructor permission required. Repeatable for Credit.

CSCS 505 CSC MELLON RESEARCH SEMINAR (1 TO 6)

Faculty and doctoral student collaboration seminars. Topics vary from year to year. Offered by the School of Humanities through the Center for the Study of Cultures. Instructor permission required. Repeatable for Credit.

ECON (ECONOMICS)**School of Social Sciences/Economics****ECON 211 PRINCIPLES OF ECONOMICS I (3)**

Introduction to the nature of economics. Includes price systems, household decisions, cost and supply, marginal productivity and capital theory, industrial organization and control, economic efficiency, externalities, and public goods. Required for economics and mathematical economic analysis majors. May also be offered in the summer. Students (both majors and non-majors) enrolled at Rice who wish to transfer this course from another institution must pass a departmental qualifying examination. Limited enrollment. Offered Fall and Spring. Instructor(s): Soligo.

ECON 212 PRINCIPLES OF ECONOMICS II (3)

Includes the measurement and determination of national income; money, banking, and fiscal policy; business cycles, unemployment, and inflation; international trade and balance of payments, and other contemporary economic problems. Required for economics and mathematical economic analysis majors. May also be offered in the summer. Students (majors and non-majors) enrolled at Rice who wish to transfer this course from another institution must pass a department qualifying examination. Pre-requisite(s): ECON 211. Limited enrollment.

ECON 348 ORGANIZATIONAL DESIGN (3)

An introduction to the analysis, design, and management of organizations with an emphasis on incentives and information. Principles from economics, political science, and game theory will be applied to problems in project and team management, in organizational computing, and in allocating and pricing shared facilities. Cross-listed with POLI 348. Pre-requisite(s): ECON 211. Limited enrollment. Offered Fall. Instructor(s): Boylan.

ECON 355 FINANCIAL MARKETS (3)

Study the principles of U.S. and international equity and debt markets, and the interactions between such markets and various countries' monetary and exchange rate policies. The role of financial markets and institutions in the allocation and transfer of credit and risk is highlighted, and various existing and suggested regulatory frameworks are discussed. Pre-requisite(s): ECON 211. Limited enrollment. Offered Spring. Instructor(s): El-Gamal.

ECON 370 MICROECONOMIC THEORY (3)

Intermediate level analysis of markets, firms, households, income distribution, and general equilibrium. Required for economics and mathematical economic analysis majors. Pre-requisite(s): (ECON 211 and MATH 101) or (MATH 111 and MATH 212). Limited enrollment. Offered Fall and Spring Instructor(s): Brown, J; Zodrow; Dudley.

ECON 375 MACROECONOMIC THEORY (3)

Micro-foundations of macroeconomic theory. Required for economics and mathematical economic analysis majors. Pre-requisite(s): ECON 211 and ECON 370 and MATH 101 or MATH 111 and MATH 212. Limited enrollment. Offered Fall and Spring. Instructor(s): Medlock; Cordoba.

ECON 382 PROBABILITY AND STATISTICS (3)

Study of probability theory and the central concepts and methods of statistics with applications to economics, marketing, and finance. Required for mathematical economic analysis majors; may substitute STAT 410 or 431. Cross-listed with STAT 310. Pre-requisite(s): ECON 211 and MATH 102.

ECON 400 ECONOMETRICS (3)

Survey of estimation and forecasting models. Includes multiple regression time series analysis. A good understanding of linear algebra is highly desirable. Required for mathematical economic analysis majors. Cross-listed with STAT 400. Pre-requisite(s): ECON 382 or STAT 310 or STAT 381 and MATH 211 or MATH 355 or CAAM 335, or permission of instructor. Offered Spring. Instructor(s): Brown, B.

ECON 403 SENIOR INDEPENDENT RESEARCH (3)

Independent research project for seniors on an approved topic of their choice. Instructor permission required.

ECON 404 SENIOR INDEPENDENT RESEARCH (3)

Independent research project for seniors on an approved topic of their choice. Instructor permission required.

ECON 415 LABOR ECONOMICS (3)

Covers theoretical and empirical work in labor supply, labor demand, and equilibrium in the labor market. The course requires a firm foundation in microeconomic theory and in ability to apply the basic tools of microeconomic analysis. ECON 415 requires no prior courses in statistics or economics, but some elementary knowledge of statistics and econometrics will be useful. Pre-requisite(s): ECON 211 and ECON 370 and MATH 101. Offered Fall. Instructor(s): Brown, J.

ECON 420 INTERNATIONAL TRADE (3)

Study of the economic relationships between countries. Includes trade theory, tariffs and other trade restrictions, international finance, trade and development, and current policy issues. Pre-requisite(s): ECON 211 and ECON 370.

ECON 421 INTERNATIONAL FINANCE (3)

Analysis of foreign exchange and international capital markets and linkages between exchange rates, interest rates, and prices. Includes an overview of historical and institutional developments, and current policy issues. Pre-requisite(s): ECON 370 and ECON 375 and STAT 280 or ECON 382. Offered Fall. Instructor(s): Yakhin.

ECON 435 INDUSTRIAL ORGANIZATION (3)

Study of market structure, concentration, barriers to entry, and oligopoly pricing. Includes the application of micro theory to industry problems. Pre-requisite(s): ECON 211 and MATH 101 and MATH 102, or permission of instructor. Offered Spring. Instructor(s): Dudley.

ECON 436 REGULATION (3)

Analysis of governmental regulatory activities under antitrust laws and in such regulated industries as communications, energy, and transportation. Pre-requisite(s): ECON 211. Recommended prerequisite(s): ECON 370 and ECON 435.

ECON 437 ENERGY ECONOMICS (3)

Discussion of key aspects in the supply and demand of energy. Topics include optimal extraction of depletable resources, transportation, storage, end-use and efficiency, and the relationship between economic activity, energy, and the environment. Pre-requisite(s): ECON 211 and ECON 370 and ECON 375. Limited enrollment. Offered Spring. Instructor(s): Medlock.

ECON 438 BUSINESS, LAW AND ECONOMICS (3)

Exploration of the area of the law most applicable to business using economic tools. Pre-requisite(s): ECON 211. Limited enrollment. Offered Fall. Instructor(s): Boylan.

ECON 439 TORTS, PROPERTY, AND CONTRACTS (3)

The course will address the role of economics in understanding the legal system, in particular, understanding how the law allocates entitlements and risk in property, tort and contract law. This course is primarily intended for students who are considering attending law school and uses instruction methods appropriate for that goal. Students wishing to enroll in this course should submit a one-page statement to the instructor explaining their interest in the course. Pre-requisite(s): ECON 211 and ECON 370. Instructor permission required. Limited enrollment. Offered Spring. Instructor(s): Brito.

ECON 440 RISK, UNCERTAINTY AND INFORMATION (3)

Microeconomic foundations of finance and insurance and other economic decisions involving risk and uncertainty. Pre-requisite(s): MATH 212. Recommended prerequisite(s): Some familiarity with probability theory. Offered Spring. Instructor(s): Grant.

ECON 445 MANAGERIAL ECONOMICS (3)

Application of economics to decision making within the firm. Includes organization theory and problems of control. Pre-requisite(s): ECON 211 and ECON 370. Offered Spring. Instructor(s): Boylan.

ECON 446 APPLIED ECONOMETRICS (3)

Applied econometrics methods; focus will be on the application of econometrics and complementary measurement methodologies to modeling, forecasting, and hypothesis testing. Applications will include firm decision-making, testing for discrimination in the workplace, competition policy, portfolio management, and macroeconomic forecasting. Some knowledge of calculus is required. Pre-requisite(s): ECON 211 and STAT 280. Offered Fall and Spring. Instructor(s): Brown, B.; Sickles.

ECON 448 CORPORATE FINANCE (3)

Study of financial theory and its application to practical problems in corporations. Covers the valuation of stocks and bonds, investment decisions, financing decisions, corporate control and the interaction between investment and financing decisions. Pre-requisite(s): ECON 370 and ACCO 305 and STAT 280, or permission of instructor. Offered Fall and Spring. Instructor(s): Hartley; Bejan.

ECON 449 BASICS OF FINANCIAL ENGINEERING (3)

The course will cover the following: mathematical background for continuous time stochastic modeling in finance and financial engineering; statistical methodologies to estimate and test the models commonly used in finance and financial engineering; and applications which all include, Black-Scholes option pricing and term structure models for interest rates. Graduate/Undergraduate version: ECON 524. Pre-requisite(s): ECON 400 or STAT 421 and STAT 431 and MATH 221 and MATH 222. Offered Fall. Instructor(s): Park.

ECON 450 WORLD ECONOMIC AND SOCIAL DEVELOPMENT (3)

Examines past and future development in advanced and poor countries, emphasizing resources, population, entrepreneurship, education, and planning. Pre-requisite(s): ECON 211. Offered Spring. Instructor(s): Gillis.

ECON 451 THE POLITICAL ECONOMY OF LATIN AMERICA (3)

Examination of economic and political development, as well as, current policy, in contemporary Latin America. Includes a comparative analysis of selected countries, with emphasis on the interaction between public policies and economic outcomes. Pre-requisite(s): ECON 211. Offered Fall. Instructor(s): Soligo.

ECON 452 RELIGION, ETHICS, AND ECONOMICS (3)

Review economic models of the formation of religious groups and ethical norms, as well as, the interactions of religious beliefs and ethical norms with economic incentives and legal systems. Also review recent debates on the role of ethics in corporate culture, especially in highly competitive industries and markets. Students will write term papers on topics of their choosing, subject to professor's approval. Pre-requisite(s): ECON 211. Limited enrollment.

ECON 455 MONEY AND FINANCIAL MARKETS (3)

Micro-foundation of monetary, fiscal and financial theory. Pre-requisite(s): ECON 211 and ECON 370 and MATH 101. Offered Spring. Instructor(s): Bryant.

ECON 461 URBAN ECONOMICS (3)

Economic analysis of the development and problems of urban areas, with emphasis on current policy issues. Pre-requisite(s): ECON 211, or permission of instructor. Offered Fall. Instructor(s): Mieszowski.

ECON 472 INTRODUCTION TO GAME THEORY (3)

Study of solution concepts for different games (e.g. strategic form game, coalition form game and extensive form game). Includes elementary application to economics and political science. Offered Spring. Instructor(s): Grant.

ECON 475 INTEGER AND COMBINATORIAL OPTIMIZATION (3)

Modeling and solving optimization problems with discrete components, graphs and networks; network flow problems; minimum spanning trees; basic polyhedral theory; the knapsack problem; the plant location problem; the set packing problem; computational complexity, branch and bound; cutting planes; Lagrangian relaxation and Bender's decomposition. Cross-listed with CAAM 475. Pre-requisite(s): CAAM 378 or CAAM 464, or permission of instructor.

ECON 477 MATHEMATICAL STRUCTURE OF ECONOMIC THEORY (3)

This course acquaints students with constrained optimization techniques and other advanced tools used in modern economic theory including multivariate analysis, basic linear algebra, topology, convexity, fixed point theorems, separation and dynamic optimization. The course concentrates on individual optimization. Two person zero sum games are discussed including their connection to duality in linear programming. Pre-requisite(s): MATH 212 or MATH 221 and MATH 355 or CAAM 335 and ECON 211. Offered Fall. Instructor(s): Bogomolnaia.

ECON 480 ENVIRONMENTAL AND ENERGY ECONOMICS (3)

The economic theories of externalities and common property resources are used to analyze environmental problems. Regulation, taxes and subsidies, transferable pollution rights and legal solutions to environmental problems are evaluated. Environmental and other aspects of alternative energy sources are considered and the pricing of depletable energy resources is analyzed. Pre-requisite(s): ECON 211.

ECON 481 HEALTH ECONOMICS (3)

Study of determinants of health, including behavioral, economic and social factors and access to health care. Analysis of the medical care industry, production, cost, demand and supply factors. Effects of regulation and methods of payment. Pre-requisite(s): ECON 370 and (ECON 382 or STAT 310) or ECON 400 or STAT 280 or STAT 305 or STAT 385. Limited enrollment. Offered Spring. Instructor(s): Ho.

ECON 482 DISTRIBUTIVE JUSTICE: A MICROECONOMIC APPROACH (3)

The course examines efficiency, fairness, and incentive-compatibility in problems involving trade and production. Topics include: equality, competitive trade; the No Envy test; Stand Alone test; the Shapley value; theories of the social contract such as utilitarianism and egalitarianism; including impossibility results of Arrow and Gibbard-Satterthwaite. Pre-requisite(s): ECON 211 and ECON 370. Offered Fall. Instructor(s): de Clippel.

ECON 483 PUBLIC FINANCE: TAX POLICY (3)

Economic analysis of tax policy, focusing on the current national debate regarding the relative merits of income and consumption-based taxes in terms of equity, efficiency, efficiency and simplicity. Tax effects on individual and business behavior and general equilibrium modeling of the economic and distributional effects of alternative tax reforms are analyzed. Special topics include optimal taxation of the family, estate taxation, taxation of electronic commerce, and state and local public finance. Pre-requisite(s): ECON 211 and ECON 370. Offered Fall. Instructor(s): Zodrow.

ECON 484 PUBLIC EXPENDITURE THEORY AND SOCIAL INSURANCE (3)

Public goods theory including non-rival and congestible public facilities, theory of local public goods including the economics of education. The problem of preference revelation and the fundamentals of benefit-cost analysis. Analysis of the effects of social security, old age retirement, and the role of government in financing healthcare - Medicare and Medicaid. Pre-requisite(s): ECON 211.

ECON 485 CONTEMPORARY ECONOMIC ISSUES (3)

Analysis of urgent and significant economic problems, with emphasis on the evaluation of policy remedies. Content will vary from year to year. Offered Fall. Instructor(s): Brito.

ECON 486 CONTEMPORARY ECONOMIC ISSUES (3)

Analysis of urgent and significant economic problems, with emphasis on the evaluation of policy remedies. Content varies from year to year.

ECON 495 SENIOR SEMINAR (3)

Comprehensive analysis of economic issues related to a specific topic. Content will vary year to year.

ECON 496 SENIOR SEMINAR (3)

Comprehensive analysis of economic issues related to a specific topic. Content will vary year to year.

ECON 501 MICROECONOMIC THEORY I (5)

Theory of the firm, the theory of consumer behavior, and partial equilibrium analysis. Offered Fall. Instructor(s): Grant.

ECON 502 MACROECONOMIC/MONETARY THEORY I (5)

Macroeconomic theory of output, consumption, investment, interest rates, inflation and employment. Offered Fall. Instructor(s): Hartley.

ECON 504 ADVANCED ECONOMIC STATISTICS (5)

Statistical inference and the testing of hypotheses multiple and partial correlation analysis; analysis of variance and regression. Cross-listed with STAT 604. Offered Fall. Instructor(s): Chang.

ECON 505 MACROECONOMIC/MONETARY THEORY II (5)

More detailed discussion of selective Macroeconomic and Monetary topics. Offered Spring. Instructor(s): Cordoba.

ECON 506 TOPICS IN MACROECONOMIC/MONETARY THEORY (5)

Discussion of selected topics of current interest. Repeatable for Credit.

ECON 507 MATHEMATICAL ECONOMICS I (5)

Theory of household, firm; activity analysis; set theory, matrix algebra, vector calculus, metric spaces, separation theory, constrained optimization. Offered Fall. Instructor(s): Bogomolnaia.

ECON 508 MICROECONOMIC THEORY II (5)

Set theoretic approach to general equilibrium; aggregate linear and nonlinear production models; existence, stability, optimality. Pre-requisite(s): ECON 501. Offered Spring. Instructor(s): Bogomolnaia.

ECON 509 MICROECONOMICS III (5)

Social choice and preference aggregation. Cardinal welfarism Bargaining; axiomatic and strategic models. Cooperative games: core stability and coalition formation, Shapley value, cost and surplus sharing. Mechanism design: dominant strategy, strategy-proof voting, fair division, and cost sharing; implementation in Nash, Strong, and Bayesian Equilibrium. Pre-requisite(s): ECON 501 and ECON 508. Offered Fall. Instructor(s): Moulin.

ECON 510 ECONOMETRICS I (5)

Estimation and inference in single equation regression models, multicollinearity, autocorrelated and heteroskedastic disturbances, distributed lags, asymptotic theory, and maximum likelihood techniques. Emphasis is placed on the ability to analyze critically the literature. Cross-listed with STAT 610. Pre-requisite(s): ECON 504. Offered Spring. Instructor(s): El-Gamal.

ECON 511 ECONOMETRICS II (5)

Topics in linear and nonlinear simultaneous equations estimation, including qualitative and categorical dependent variables models and duration analysis. Applied exercises use SAS and the Wharton Quarterly Econometric Model. Cross-listed with STAT 611. Pre-requisite(s): ECON 510. Offered Fall. Instructor(s): Brown, B.

ECON 512 INTERNATIONAL TRADE THEORY (5)

Exploration of classical, neoclassical, and modern trade theory. Includes welfare aspects of trade such as the theory of commercial policy, with emphasis on applications.

ECON 514 INDUSTRIAL ORGANIZATION AND CONTROL (5)

Industrial markets and public policy. Offered Fall. Instructor(s): Dudey.

ECON 515 LABOR ECONOMICS (5)

Exploration of the economics of the labor market and the economic implications of trade unions, with emphasis on major public policy issues.

ECON 518 INTERNATIONAL MACROECONOMICS (5)

Effects of fiscal and monetary policies on exchange rates and the current account and balance of payments. Includes exchange market efficiency, exchange rates and prices, LDC debt, and policy coordination.

ECON 519 ECONOMIC GROWTH AND DEVELOPMENT (5)

Analysis of theory and policy questions relating to the level and rate of economic development.

ECON 521 PUBLIC FINANCE I (5)

Theory of public goods and externalities, political mechanisms and public choice, theory of local public goods, cost-benefit analysis and project evaluation issues of income redistribution. Offered Fall. Instructor(s): Mieszkowski.

ECON 522 PUBLIC FINANCE II (5)

Study of the effects of taxation on individual and firm behavior, general equilibrium tax incidence analysis, optimal taxation theory, optimal implementation of tax reform, analysis of comprehensive income, and consumption taxes. Offered Spring. Instructor(s): Zodrow.

ECON 523 DYNAMIC OPTIMIZATION (5)

Study of dynamic optimization in discrete and continuous time. Offered Spring. Instructor(s): Brito.

ECON 524 BASIC FINANCIAL ENGINEERING (5)

Financial engineers design and analyze products that improve the efficiency of markets and create mechanisms for reducing risk. This course introduces the basics of financial engineering: the notions of arbitrage and risk-neutral probability measure are developed in the case of discrete models; Black-Scholes theory is introduced in continuous-time models, and interest rate derivatives and the term structure of interest rates are discussed. Stochastic processes, Ito calculus and diffusion models are used as basic analytical tools. Statistical methodologies to estimate and test the models commonly used in finance and financial engineering are also introduced. Graduate/Undergraduate version: ECON 449. Offered Fall. Instructor(s): Park.

ECON 565 HEALTH ECONOMICS (5)

Study of economic aspects of health. Includes production, cost, demand and supply factors; methods of payment and effects of regulation. Offered Spring. Instructor(s): Ho.

ECON 577 TOPICS IN ECONOMIC THEORY I (5)

Discussion of topics in advanced economic theory. Repeatable for Credit. Offered Spring. Instructor(s): Bejan; de Clippel.

ECON 578 TOPICS IN ECONOMIC THEORY II (5)

Discussion topics in advanced economic theory. Repeatable for Credit.

ECON 579 TOPICS IN ECONOMETRICS (5)

Discussion of selected topics in advanced econometrics. Pre-requisite(s): ECON 511. Repeatable for Credit. Instructor(s): El-Gamal; Sickles.

ECON 592 TOPICS IN POLICY AND APPLIED ECONOMICS (5)

Discussion of selected topics and applied economics. Repeatable for Credit.

ECON 593 WORKSHOP IN MICROECONOMICS (5)

Seminars on advanced topics in macroeconomics, microeconomics, econometrics and applied microeconomic theory, presented through guest lectures by leading researchers. Includes preparation of a research paper over the course of the year and its presentation in the workshop. Must be in one of the following Classification(s): Graduate. Repeatable for Credit. Offered Fall. Instructor(s): Hartley; Moulin; Park; Mieszkowski.

ECON 594 WORKSHOP IN ECONOMICS I (5)

Continuation of ECON 593. Repeatable for Credit. Offered Spring. Instructor(s): Hartley; Moulin; Park; Mieszkowski.

ECON 595 WORKSHOP IN ECONOMICS II (5)

This is the second year continuation of ECON 593-594. Repeatable for Credit.

ECON 597 READINGS IN ADVANCED TOPICS (5)

Repeatable for Credit.

ECON 598 READINGS IN ADVANCED TOPICS (5)

Repeatable for Credit.

ECON 800 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

EDUC (EDUCATION)**School of Humanities/Education****EDUC 201 CONTEMPORARY ISSUES IN EDUCATION (3)**

Exploration of current issues and controversies in education through research and primary experience. Requires a minimum of 14 hours of service or experience in K-12 schools, to be arranged individually. Directed to all students interested in issues of K-12 education, and recommended for those interested in entering the teacher preparation program. Instructor(s): Radigan.

EDUC 301 PHILOSOPHICAL, HISTORICAL, AND SOCIAL FOUNDATIONS OF EDUCATION (3)

Analysis of events and ideas that have shaped the philosophy and practice of American schools today. Requires at least 15 hours of observation in secondary schools. Appropriate for all students interested in the influences and stresses that have created a unique educational system in our culturally diverse country. Required for certification unless EDUC 330 is substituted. Enrollment limited to students with junior status or higher. Graduate/Undergraduate version: EDUC 501. May not be in any of the following Classification(s): Freshman, Sophomore. Instructor(s): Coppola.

EDUC 305 EDUCATIONAL PSYCHOLOGY (3)

The goal of this course is to introduce students to a psychological understanding of teaching and learning through an overview of principles, issues, and related research in educational psychology. The course will examine theories of learning, complex cognitive processes, cognitive and emotional development, motivation, and the application of these constructs of effective instruction, the design of optimum learning environments, assessment of student learning, and teaching in diverse classrooms. It is a general overview of the field and requires no prior preparation. Required for certification. Enrollment limited to students with junior status and higher. Graduate/Undergraduate version: EDUC 505. May not be in any of the following Classification(s): Freshman, Sophomore. Limited enrollment. Instructor(s): Norcross.

EDUC 310 INTRODUCTION TO SPECIAL EDUCATION (3)

This course will introduce and expose students to the field of Special Education. Students will learn about the various students who receive special education as well as other types of exceptionality, including giftedness. Controversial issues in this field will be examined along with pertinent legislation. This course will familiarize students with educational approaches in special education and social issues impacting the field. Students will visit area schools. Recommended for certification. Offered Spring. Instructor(s): Ashmore.

EDUC 315 ADOLESCENT DEVELOPMENT (3)

The goal of this course is to introduce students to basic theories of adolescent development and cognition. The course will examine principles and concepts in the areas of physical, emotional and psychological development, identity formation, sexuality, and family and peer relations. Other 'hot topics' such as substance abuse, eating disorders, and teenagers and the media will also be examined. Limited enrollment. Instructor(s): Norcross.

EDUC 330 THE AMERICAN HIGH SCHOOL (3)

Survey of the background, purposes, and organization of modern secondary schools and their students and curricula. Includes the policy and administration of secondary schools as well as introductory educational research. 15 hours of observation in schools required. Required for certification unless EDUC 301 is substituted. Enrollment limited to students with junior status or higher. Graduate/Undergraduate version: EDUC 530. Not offered Fall and Spring. Instructor(s): McNeil.

EDUC 335 URBAN EDUCATION: ISSUES, POLICY, AND PRACTICE (3)

Major issues facing urban education, including poverty, the implications of racial and ethnic diversity for educational institutions, and strategies for improving academic achievement in urban schools. We will examine sociological, political, cultural and educational research and theory, as well as explore strategies for improvement of urban education at the classroom, school and policy levels. Recommended for certification. Instructor(s): Radigan.

EDUC 340 COMPUTERS IN EDUCATION (3)

Technology is and will continue to be deeply involved in the education process. In this course, students will investigate and use computer applications to enhance classroom teaching and facilitate administrative tasks. We will explore relevant design alternatives for educational presentations and websites. The internet will be utilized as a teacher and student resource. Other related topics including copyright, networking, and computer systems will be included. Recommended for certification. Offered Spring. Instructor(s): White.

EDUC 410 THEORY AND METHODS: ART (1 TO 6)

Study of methods for putting theory into practice in the classroom. Includes multiple methods for educating students in our diverse society, reflection on, and practice of the skills of teaching applicable to the discipline. Required for certification. Prerequisite(s): Completion of or concurrent enrollment in EDUC 301/501 or EDUC 33/530 and consent of the instructor. Offered Fall. Instructor(s): Heckelman.

EDUC 411 THEORY AND METHODS: ENGLISH (1 TO 6)

Study of methods for putting theory into practice in the classroom. Includes multiple methods for educating students in our diverse society, reflection on, and practice of the skills of teaching applicable to the discipline. Required for certification. Prerequisite(s): Completion of or concurrent enrollment in EDUC 301/501 or EDUC 330/530 and consent of the instructor. Offered Fall. Instructor(s): Heckelman.

EDUC 412 THEORY AND METHODS: FOREIGN LANGUAGE (1 TO 6)

Study of methods for putting theory into practice in the classroom. Includes multiple methods for educating students in our diverse society, reflection on, and practice of the skills of teaching applicable to the discipline. Required for certification. Prerequisite(s): Completion of or concurrent enrollment in EDUC 301/501 or EDUC 330/530 and consent of the instructor. Offered Fall. Instructor(s): Heckelman.

EDUC 413 THEORY AND METHODS: MATHEMATICS (1 TO 6)

Study of methods for putting theory into practice in the classroom. Includes multiple methods for educating students in our diverse society, reflection on, and practice of the skills of teaching applicable to the discipline. Required for certification. Prerequisite(s): Completion of or concurrent enrollment in EDUC 301/501 or EDUC 330/530 and consent of the instructor. Offered Fall. Instructor(s): Heckelman.

EDUC 414 THEORY AND METHODS: PHYSICAL EDUCATION (1 TO 6)

Study of methods for putting theory into practice in the classroom. Includes multiple methods for educating students in our diverse society, reflection on, and practice of the skills of teaching applicable to the discipline. Required for certification. Prerequisite(s): Completion of or concurrent enrollment in EDUC 301/501 or EDUC 330/530 and consent of the instructor. Offered Fall. Instructor(s): Heckelman.

EDUC 415 THEORY AND METHODS: SCIENCE (1 TO 6)

Study of methods for putting theory into practice in the classroom. Includes multiple methods for educating students in our diverse society, reflection on, and practice of the skills of teaching applicable to the discipline. Required for certification. Prerequisite(s): Completion of or concurrent enrollment in EDUC 301/501 or EDUC 330/530 and consent of the instructor. Offered Fall. Instructor(s): Heckelman.

EDUC 416 THEORY AND METHODS: SOCIAL STUDIES (1 TO 6)

Study of methods for putting theory into practice in the classroom. Includes multiple methods for educating students in our diverse society, reflection on, and practice of the skills of teaching applicable to the discipline. Required for certification. Prerequisite(s): Completion of or concurrent enrollment in EDUC 301/501 or EDUC 330/530 and consent of the instructor. Offered Fall. Instructor(s): Heckelman.

EDUC 420 CURRICULUM DEVELOPMENT (3)

Integration of theory with practice as students observe a mentor teacher, identify issues of developing and implementing curriculum with a diverse student body, and create curriculum for the Summer School for Grades 8 through 12. Students must be admitted to the Teacher Preparation Program and committed to student teaching in Summer School. Required for certification. Pre-requisite(s): EDUC 301 or EDUC 501 or EDUC 330 or EDUC 530. Instructor permission required. Repeatable for Credit. Offered Spring. Instructor(s): Heckelman.

EDUC 440 SUPERVISED TEACHING: SUMMER SCHOOL (3)

Field-based practicum for secondary teachers, with accompanying seminar. Required for certification. Prerequisite(s): EDUC 420. Instructor(s): Heckelman.

EDUC 489 ADOLESCENT LITERATURE (3)

Cultural, literary, and developmental issues in literature written to engage middle and high school students. Recommended for certification. Instructor(s): McNeil.

EDUC 490 PORTFOLIO DEVELOPMENT (1)

Development of a portfolio demonstrating teaching strengths which is required for teacher certification during the last summer of student teaching. Recommended for teacher certification. Instructor permission required. Offered Spring. Instructor(s): Heckelman.

EDUC 491 INDEPENDENT STUDY AND RESEARCH (1 TO 6)

Graduate/Undergraduate version: EDUC 591. Instructor permission required. Repeatable for Credit.

EDUC 501 PHILOSOPHICAL, HISTORICAL, AND SOCIAL FOUNDATIONS OF EDUCATION (3)

Graduate/Undergraduate version: EDUC 301. Instructor(s): Coppola.

EDUC 505 EDUCATIONAL PSYCHOLOGY (3)

Graduate/Undergraduate version: EDUC 305. Limited enrollment. Instructor(s): Norcross.

EDUC 530 THE AMERICAN HIGH SCHOOL (3)

Graduate/Undergraduate version: EDUC 330. Instructor(s): McNeil.

EDUC 540 INTERNSHIP (3)

Field practice for secondary teachers, with accompanying seminar. Pre-requisite(s): EDUC 440. Instructor permission required. Offered Fall. Instructor(s): Heckelman.

EDUC 591 INDEPENDENT STUDY AND RESEARCH (1 TO 15)

Graduate/Undergraduate version: EDUC 491. Repeatable for Credit.

EDUC 596 FIELD-BASED STUDIES IN TEACHING AND LEARNING (1 TO 15)

Study of field-based ethnographic research on teaching and learning. Includes seminar, independent research projects, ethnographic research methods, and directed case studies. Open to upperclassmen and graduate students, particularly those in education, sociology, anthropology, and psychology. Offered as needed. Limited enrollment. Instructor(s): McNeil.

ELEC (ELECTRICAL & COMP. ENGINEERING)**School of Engineering/Electrical & Computer Eng.****ELEC 201 INTRODUCTION TO ENGINEERING DESIGN (4)**

This is a hands on introduction to engineering design. Using skills developed in the course, teams of students will design and construct a functional robot, and program this robot to perform simple tasks. The course is completely self-contained, assumes no prerequisites, and is intended for both engineering majors and non-majors. Offered Fall. URL: www.owl.net.rice.edu/legolab. Instructor(s): Young.

ELEC 220 FUNDAMENTALS OF COMPUTER ENGINEERING (4)

An overview of computer engineering, starting with fundamental building blocks including transistors, bits, data representation, logic and state machines, progressing to computer organization, instruction sets, interrupts, input/output, assembly language programming, and linkage conventions, and ending with an introduction to architectural performance enhancements and computing services.

ELEC 226 MICROCONTROLLER AND EMBEDDED SYSTEMS LABORATORY (3)

Basic introduction to microcontroller-based embedded systems development. Includes structured laboratory exercises in: assembly programming, C language programming, peripheral interfacing, interrupt management, structured programming, task scheduling, simple digital signal processing (DSP), and other related topics. This course assumes no prerequisites and is primarily intended for first and second year engineering students. Offered Fall and Spring. URL: wallaby.ece.rice.edu/elec226. Instructor(s): Frantz.

ELEC 241 FUNDAMENTALS OF ELECTRICAL ENGINEERING I (4)

The creation, manipulation, transmission, and reception of information by electronic means, elementary signal theory; time and frequency-domain analysis; sampling theorem. Digital information theory; digital transmission of analog signals; error-correcting codes. Laboratory demonstrating the principles of information management by electronic means. Offered Fall. Instructor(s): Orchard.

ELEC 242 FUNDAMENTALS OF ELECTRICAL ENGINEERING II (4)

Formulation and solution of equations describing electric circuits and electromechanical systems. Behavior of dynamic systems in the time and frequency domains. Basic electronic devices and circuits, including diodes, transistors, optoelectronics, gates, and amplifiers. Introduction to feedback control and digital systems. Pre-requisite(s): ELEC 241. Offered Spring. Instructor(s): Wise.

ELEC 243 INTRODUCTION TO ELECTRONICS (4)

Introduction to analog and digital circuit analysis and design. Basic circuit elements, transistors, OP Amps, digital devices and systems. Intended for non-majors. Pre-requisite(s): MATH 101 and MATH 102. Offered Spring. Instructor(s): Wilson.

ELEC 261 INTRODUCTION TO WAVES AND PHOTONICS (3)

Introduction to the concepts of waves and oscillatory motion with a particular focus on electromagnetic waves and their interaction with dielectric materials, and on the use of these ideas in the fields of optical fiber communications laser design, non-linear optics, and Fourier optics. Offered Fall. URL: www.ece.rice.edu/~daniel/261/261home.html. Instructor(s): Mittleman.

ELEC 301 INTRODUCTION TO SIGNALS (3)

Analytical framework for analyzing signals and systems. Time and frequency domain analysis of continuous and discrete time signals and systems, convolution, and the Laplace and Z transforms. Pre-requisite(s): ELEC 241. Recommended co or prerequisite(s): CAAM 335 or MATH 355. Offered Fall. Instructor(s): Baraniuk.

ELEC 302 INTRODUCTION TO SYSTEMS (3)

A study of linear dynamical systems based on state-space representation. Includes the structural properties of systems such as controllability and observability. About one third of the course is devoted to the study of linear algebraic concepts, like range, null space, eigenvalues diagonalizability. Applications to control problems. Pre-requisite(s): ELEC 301. Offered Spring. Instructor(s): Antoulas.

ELEC 305 INTRODUCTION TO PHYSICAL ELECTRONICS (3)

Study of the basic physical properties of electronics, semiconductors, transistors, integrated circuits, transmission line and signal propagation. Offered Fall. Instructor(s): Wilson.

ELEC 306 ELECTROMAGNETIC FIELDS AND DEVICES (3)

A course to introduce students to various electrical engineering aspects and devices based on electromagnetic field theory. Includes basic concepts of waveguides, resonators, optical fibers, waveguide devices, a survey of antennas, and a discussion of radar, lidar, and remote sensing principles. Pre-requisite(s): ELEC 305. Repeatable for Credit. Offered Spring. Instructor(s): Tittel.

ELEC 322 APPLIED ALGORITHMS AND DATA STRUCTURE (4)

Cross-listed with COMP 314.

ELEC 326 DIGITAL LOGIC DESIGN (3)

Gates, flip-flops, combinational and sequential switching circuits, registers, logical and arithmetic operations, introduction to the Verilog hardware description language. Cross-listed with COMP 326. Offered Fall. Instructor(s): Jump.

ELEC 327 IMPLEMENTATION OF DIGITAL SYSTEMS (3)

This course concerns the implementation of digital systems using the Verilog hardware description language. Lecture topics include Verilog test benches and timing simulations and techniques for implementing control units, data-flow units, pipelining and interrupts. The course also requires the completion of a significant project involving the implementation of a modern instruction set architecture. Pre-requisite(s): ELEC 326. Offered Spring. Instructor(s): Jump; Mohanram.

ELEC 331 APPLIED PROBABILITY (3)

Cross-listed with STAT 331.

ELEC 342 ELECTRONIC CIRCUITS (4)

Models of diodes, bipolar and field effect transistors. Biasing methods, distortion analysis, two-port analysis, single-stage and multistage amplifiers, frequency domain characteristics, feedback, stability, analog and digital power amplifiers. Lab culminates in the design and testing of a low-distortion audio frequency power amplifier. Pre-requisite(s): ELEC 242. Offered Spring. Instructor(s): Massey.

ELEC 361 ELECTRONIC MATERIALS AND QUANTUM DEVICES (3)

This course provides the background in quantum mechanics and solid state physics necessary for further studies in device physics (ELEC 462) and quantum Electronics (ELEC 463). Pre-requisite(s): PHYS 202. Offered Spring. Instructor(s): Kelly.

ELEC 381 FUNDAMENTALS OF ELECTROPHYSIOLOGY (3)

An introduction to the electrophysiology of excitable cells, and the development of mathematical models of their electrochemical activity. Forms the basis for a better understanding of clinical recordings of heart, brain and muscular activity (ECG, EEG, and EMG, respectively). Cross-listed with BIOE 381. Offered Fall. Instructor(s): Clark.

ELEC 391 PROFESSIONAL ISSUES IN ELECTRICAL ENGINEERING (1)

Issues related to engineering professional practice and other career choices for electrical engineering graduates. Topics will include intellectual property rights, engineering ethics, technical presentations, entrepreneurship, venture capitalism, career paths, and graduate study. Offered Spring. URL: www.owl.net.rice.edu/~elec391/. Instructor(s): Sinclair; Wilson.

ELEC 420 DESIGN AND ANALYSIS OF ALGORITHMS (3)

Cross-listed with COMP 482.

ELEC 421 OPERATING SYSTEMS AND CONCURRENT PROGRAMS (4)

Cross-listed with COMP 421.

ELEC 422 VLSI DESIGN I (4)

A study of VLSI technology and design. MOS devices, characteristics and fabrication. Logic design and implementation. VLSI design methodology, circuit simulation and verification. Must complete ELEC 494 to receive design credit for ELEC 422. Course includes group design projects. Corequisite(s): ELEC 493. Offered Fall. Instructor(s): Massoud.

ELEC 424 HIGH-SPEED AND EMBEDDED SYSTEMS DESIGN (4)

The specification, design, and implementation of high-speed DSP and microcontroller-based systems, taking into account cost constraints available technology, and other factors. Includes instruction on high-speed design theory, hardware/software interface, and approaches to designing practical hardware systems. Major hardware/software design project required. Must complete ELEC 494 to receive credit for ELEC 424. Pre-requisite(s): ELEC 226. Limited enrollment. Offered Fall. URL: wallaby.ece.rice.edu/elec424. Instructor(s): Frantz.

ELEC 425 COMPUTER SYSTEMS ARCHITECTURE (4)

Cross-listed with COMP 425. Offered Fall. Instructor(s): Rixner.

ELEC 428 COMPUTER SYSTEMS PERFORMANCE (4)

Analytical models of computer systems. Queueing theory and Markov chains. Queueing networks. Simulation and analysis of simulation results. Operational analysis. Course will include programming projects in C or C++. Pre-requisite(s): ELEC 331, or permission of instructor. Offered Spring. URL: www.owlnet.rice.edu/~elec428/. Instructor(s): Sinclair.

ELEC 429 INTRODUCTION TO COMPUTER NETWORKS (4)

Network architectures and basic protocols. Routing flow control. Access methods. Transmission media. error management. Network performance. The course will cover several types of networks, including CSMA/CD, token ring, and ATM. Cross-listed with COMP 429. Offered Spring. Instructor(s): Ng.

ELEC 430 COMMUNICATION THEORY AND SYSTEMS (3)

Course in digital communications, designed to prepare students for engineering work in high-tech industries and for graduate work in communications, signal processing, and computer systems. Covers basic concepts and useful tools for design and performance analysis of transmitters and receivers in the physical layer of a communication system. Pre-requisite(s): ELEC 331 and ELEC 301. Offered Spring. URL: www.ece.rice.edu/courses/430/. Instructor(s): Aazhang.

ELEC 431 DIGITAL SIGNAL PROCESSING (3)

Analysis of discrete-time signals and systems. Includes filter design and implementation, an introduction to least squares and statistical signal processing, and applications in speech and image processing. Pre-requisite(s): ELEC 301. Offered Spring. Instructor(s): Burrus.

ELEC 432 DIGITAL RADIO SYSTEM DESIGN (4)

Analysis and design of digital radio communication systems including architectures, algorithms, hardware components, and system characterization. Must complete ELEC 494 to receive design credit for ELEC 432. Corequisite(s): ELEC 493. Offered Fall. Instructor(s): Wise.

ELEC 433 ARCHITECTURE FOR WIRELESS COMMUNICATIONS (3)

This is an FPGA laboratory course in which students will embark upon a detailed study and implementation of the software design project will be required. Major functional blocks of end-to-end wireless communication systems. Students will work in groups on a specific functional element. A major group hardware or software design project will be required. Pre-requisite(s): ELEC 430. Limited enrollment. Offered Spring. URL: cmclab.rice.edu/433/. Instructor(s): Frantz.

ELEC 434 DIGITAL SIGNAL PROCESSING LAB (3)

Design and implementation of real-time digital signal processing (DSP) systems using a DSP microprocessor. Includes several structured laboratory exercises, such as sampling, digital filtering, and FFT, using both fixed-point and floating-point DSP processors. Requires an extensive DSP project of the student's choice. Pre-requisite(s): ELEC 321. Offered Fall. Instructor(s): Choi.

ELEC 435 ELECTROMECHANICAL DEVICES AND SYSTEMS (3)

Introduction to the physical and engineering aspects of electromechanical sensors and actuators, including underlying physical phenomena, practical devices, electrical and mechanical interfacing, and control of electromechanical systems. Cross-listed with MECH 435. Pre-requisite(s): ELEC 242 or ELEC 243. Instructor(s): Wise.

ELEC 436 FUNDAMENTALS OF CONTROL SYSTEMS (3)

Cross-listed with MECH 420. Pre-requisite(s): ELEC 302.

ELEC 438 DEPLOYMENT AND MEASUREMENT OF WIRELESS (3)

The Rice Networks Group and the non-profit organization Technology For All have recently deployed a state-of-the-art multi-hop wireless network in one of Houston's most economically disadvantaged neighborhoods. The objective of this network is to empower under-resourced communities with access to technology and educational and work-at-home tools. In this course project teams will perform measurement studies both in the Rice Networks Lab and in the East End neighborhood to characterize the system capacity; optimize placement of wireless nodes; study the effects of traffic and channel characteristics on system-wide performance; and plan deployment of additional nodes to extend the coverage area.

ELEC 439 DIGITAL IMAGE PROCESSING (3)

Modern techniques for image analysis, processing, and enhancement: two dimensional system and transform theory; sampling; linear and non-linear filtering; feature extraction; compression and coding; imaging systems. Pre-requisite(s): ELEC 431, or permission of instructor. Offered Spring. Instructor(s): Orchard.

ELEC 440 ARTIFICIAL INTELLIGENCE (4)

Cross-listed with COMP 440.

ELEC 442 ADVANCED ELECTRONIC CIRCUITS (4)

An in-depth extension of material covered in ELEC 342 such as discrete, de-coupled, multistage op-amps, wideband amplifiers, principles of feedback, feed-forward, automatic gain control, active filtering, the design of data converters and analog multipliers/dividers. Pre-requisite(s): ELEC 342. Offered Fall. Instructor(s): Massey.

ELEC 443 POWER ELECTRONIC CIRCUITS (4)

Minimization of power consumption in electronic circuits with the required system performance. Design of high-efficiency power amplifiers. Electronic circuits used in power systems, including the principles of phase-controlled rectification, high-frequency inversion, and DC-DC conversion, with emphasis on design and lab project. Pre-requisite(s): ELEC 342. Not offered Fall and Spring. Instructor(s): Massey.

ELEC 444 ELECTROMAGNETIC INTERFERENCE/COMPATIBILITY (4)

Fundamental EMI/EMC principles, development of regulations and requirements, non-ideal and nonlinear behavior of components, radiated and conducted emissions and susceptibility, testing techniques to determine compliance, electrical/mechanical techniques to ensure compliance, modeling and electrostatic discharge. Lab is application of principles to analog and/or digital circuits. Not offered Fall and Spring. Instructor(s): Massey.

ELEC 445 WIRELESS ELECTRONICS (4)

Fundamental radio frequency electronic principles; government regulations on noninterference, nonlinear and nonideal behavior of electronic components, positive and negative feedback including ac stability, basic dipole antenna theory, wireless receiver and transmitter architectures and circuits. The lab project is a transceiver design for maximum range while satisfying government regulations. Pre-requisite(s): ELEC 342. Offered Spring. Instructor(s): Massey.

ELEC 446 MOBILE WIRELESS SERVICES PROJECT (3)

Design and implement a wireless mobile information system utilizing PocketPC hardware, Visual Studio .NET and .NET services to run over the Rice 802.11b wireless infrastructure. Students will be provided with PocketPCs, required software and access to a .NET server. Preference given to students who have experience with Visual Studio or have taken COMP 410. Cross-listed with COMP 446. Pre-requisite(s): COMP 410. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Cutler.

ELEC 462 SEMICONDUCTOR DEVICES (4)

Survey of physical principles and operational characteristics of semiconductor devices. Bipolar and MOS transistors. IC circuit fabrication. Offered Fall. Instructor(s): Wilson.

ELEC 463 LASER AND PHOTONICS (3)

Introduction to the physics and technology of lasers and related devices. The course consists of lectures, homework, and student presentations on particular topics. Pre-requisite(s): PHYS 201 or ELEC 261. Offered Spring. URL: www.ece.rice.edu/~young/elec463. Instructor(s): Young.

ELEC 464 PHOTONIC SENSOR SYSTEM DESIGN (4)

Presentation of the parameters and physics of using light to determine physical properties or state; principles and characteristics of photonic sources and detectors; team-based design of a photonic sensor system. Must complete ELEC 494 to receive design credit for ELEC 464. Corequisite(s): ELEC 493. Offered Fall. Instructor(s): Young.

ELEC 465 PHYSICAL ELECTRONICS PRACTICUM (3)

A laboratory course, with lecture, to introduce students to a variety of experimental techniques, methods, and instruments of current interest. The content will generally correspond to the ideas and concepts introduced in the Physical Electronics courses, ELEC 305, 306, 461, and 463, including: general optics; lasers and fiber optics; spectroscopy. Pre-requisite(s): PHYS 201 or ELEC 261. Offered Spring. Instructor(s): Wilson.

ELEC 481 COMPUTATIONAL NEUROSCIENCE (3)

An introduction to anatomy and physiology of the brain. Development of models of neurons and natural neural networks. Cross-listed with BIOE 481. Pre-requisite(s): ELEC 381. Offered Fall. Instructor(s): Clark.

ELEC 482 PHYSIOLOGICAL CONTROL SYSTEMS (4)

Nervous system control of biological systems using simulation methods, as well as techniques common to linear and nonlinear control theory. Examples from cardiovascular, respiratory, and visual systems. Cross-listed with BIOE 482. Pre-requisite(s): ELEC 381. Offered Spring. Instructor(s): Clark.

ELEC 485 FUNDAMENTALS OF MEDICAL IMAGING I (3)

The course will introduce basic medical imaging modalities, such as x-ray, CT, and MRI, used to identify the anatomy of human organs, as well as other modalities, such as PET, SPECT, fMRI, and MEG, specifically developed to localize brain function. The course includes visits to clinical sites. Cross-listed with BIOE 485, COMP 485. Offered Fall. Instructor(s): Mawlawi.

ELEC 486 FUNDAMENTALS OF MEDICAL IMAGING II (3)

Course focuses on Positron Emission Tomography (PET) physical principles, image formation, processing, and clinical applications and lays the foundations for understanding PET tracer kinetic modeling. A trip to MD Anderson's PET facility provides hands-on experience of PET imaging. Cross-listed with BIOE 486, COMP 486. Pre-requisite(s): ELEC 485 or BIOE 485 or COMP 485. Offered Spring. Instructor(s): Mawlawi.

ELEC 490 ELECTRICAL ENGINEERING RESEARCH PROJECTS (1 TO 6)

Theoretical and experimental investigations under staff direction. May be repeated for a total of 6 credit hours. Repeatable for Credit. Offered Fall and Spring.

ELEC 491 INDEPENDENT DESIGN PROJECT (3)

Students who wish to pursue substantial, independent projects or participate in engineering design competitions should enroll in 491 as the first semester of their design sequence. All projects must be approved by the Undergraduate Curriculum Committee. Must complete ELEC 494 to receive design credit for ELEC 491. Offered Fall.

ELEC 493 SENIOR DESIGN SEMINAR (1)

Covers design methodology, project planning, engineering documentation, and other design related topics. Recommended corequisite(s): One of ELEC 422 or ELEC 432 or ELEC 462 or ELEC 463 or ELEC 464 or ELEC 465 or ELEC 491. Offered Fall. Instructor(s): Wise.

ELEC 494 SENIOR DESIGN LABORATORY (3)

Team of students will specify, design, and build a system to meet a prescribed set of requirement. A substantial document and a formal presentation describing the design will be required. Required of all students. Offered Spring. Instructor(s): Wise.

ELEC 498 (3)

Cross-listed with COMP 498, MECH 498.

ELEC 501 APPROXIMATION OF DYNAMICAL SYSTEMS (3)

This course describes projection methods for model reduction that seek to replace scale systems (VLSI circuits, weather prediction models, and MEMS) with systems of computational complexity that the original dynamical system requires while still maintaining model fidelity. Offered Spring. Instructor(s): Antoulas.

ELEC 502 NEURAL NETWORKS AND INFORMATION THEORY I (3)

Review of major Artificial Neural Network paradigms. Analytical discussion of supervised and unsupervised learning. Emphasis on state-of-the-art Hebbian (biologically most plausible) learning paradigms and their relation to information theoretical methods. Applications to data analysis such as pattern recognition, clustering, classification, blind source separation, non-linear PCA. Cross-listed with COMP 502. Pre-requisite(s): ELEC 430 or ELEC 431, or permission of instructor. Offered Spring. URL: www.ece.rice.edu/~erzsebet/ANNcourse.html. Instructor(s): Merenyi.

ELEC 507 NONLINEAR DYNAMIC SYSTEMS ANALYSIS (3)

Analytical methods, including singular point and phase plane analysis, describing functions, stability analysis via Lyapunov functions; digital computer simulation methods; parameter estimation and sensitivity analysis is included. An introduction to the chaotic behavior of nonlinear dynamic systems is included. Cross-listed with MECH 507. Not offered Fall and Spring.

ELEC 508 NONLINEAR SYSTEMS ANALYSIS II (3)

Cross-listed with CAAM 508, MECH 508.

ELEC 519 PARALLEL ALGORITHMS AND ARCHITECTURE (3)

Parallel architectures: shared memory, VLSI, message-passing. Structure and relation between architectures. Parallel time, work, and efficiency. Parallel algorithms for fundamental computational problems and applications. Network routing. Cross-listed with COMP 583. Instructor(s): Varman.

ELEC 520 DISTRIBUTED SYSTEMS (4)

Cross-listed with COMP 520.

ELEC 521 HIGH SPEED INTEGRATED CIRCUITS (3)

This course gives an overview of the critical issues in the design of high performance VLSI circuits. This course focuses on the modeling and design automation of high performance CMOS circuits. The course covers scaling trends in CMOS technologies, interconnect modeling, power modeling, noise in digital CMOS circuits, high-performance CMOS design methodologies, model order reduction techniques, high performance clock distribution design, electro migration effects and power distribution. Pre-requisite(s): ELEC 326. Offered Fall. Instructor(s): Massoud.

ELEC 522 ADVANCED VLSI DESIGN (3)

Design and analysis of algorithm-specific VLSI processor architectures. Topics include the implementation of pipelined and systolic processor arrays. Techniques for mapping numerical algorithms onto custom processor arrays. Course includes design project using high-level VLSI synthesis tools. Pre-requisite(s): ELEC 422 or ELEC 423. Offered Spring. Instructor(s): Cavallaro.

ELEC 523 COMPUTER-AIDED DESIGN FOR VLSI (3)

Fundamental topics in computer-aided design for VLSI-Logic synthesis and formal verification, timing analysis and optimization, technology mapping, logic and fault simulation, testing, and physical design will be covered. Relevant topics in algorithms and data structures, generic programming, and the C++ standard template library will also be covered. Cross-listed with COMP 523. Offered Fall. URL: www.ece.rice.edu/~kmram/elec523. Instructor(s): Mohanram.

ELEC 524 MOBILE AND WIRELESS NETWORKING (3)

Cross-listed with COMP 524.

ELEC 525 ADVANCED MICROPROCESSOR ARCHITECTURE (4)

Cross-listed with COMP 525. Pre-requisite(s): ELEC 425 or COMP 425.

ELEC 526 HIGH-PERFORMANCE COMPUTER ARCHITECTURE (4)

Design of high performance computer systems, including shared-memory and message-passing multiprocessors and vector systems. Hardware and software techniques to tolerate and reduce memory and communication latency. Case studies and performance simulation of high-performance systems. Cross-listed with COMP 526. Pre-requisite(s): ELEC 525 or COMP 525, or permission of instructor. Not offered Fall and Spring.

ELEC 527 ADVANCED HIGH-SPEED AND EMBEDDED SYSTEMS DESIGN (4)

Specification, design, and implementation of complex high-speed DSP and microcontroller-based systems, with an emphasis on mixed-signal and communications hardware. Includes instruction in advanced circuit design and analysis (analog, digital and mixed-signal). Emphasis on good design practices. Major hardware design project required. Limited enrollment. Not offered Fall and Spring. URL: webdb.ece.rice.edu/elec527. Instructor(s): Frantz.

ELEC 529 COMPUTER NETWORK PROTOCOLS AND SYSTEMS (4)

Pre-requisite(s): COMP 429 or ELEC 429.

ELEC 530 DETECTION THEORY (3)

Classic and modern methods of optimal decisions in communications and signal processing. Continuous- and discrete-time methods. Gaussian and non-Gaussian problems. Offered Spring. Instructor(s): Johnson.

ELEC 531 STATISTICAL SIGNAL PROCESSING (3)

Statistical models for single- and multi-channel signals. Optimal detection and estimation solutions for Gaussian and non-Gaussian environments. Pre-requisite(s): ELEC 431. Corequisite(s): ELEC 533. Offered Fall. Instructor(s): Johnson.

ELEC 532 WAVELET AND SPECTRAL ANALYSIS (3)

Classical and modern techniques for characterizing the frequency content of signals. Periodogram; parametric techniques, including autoregressive (AR) and autoregressive moving average (ARMA) modeling; nonparametric techniques, including minimum variance and eigenspace methods, and time-varying spectral analysis. Cross-listed with STAT 586. Offered Spring. Instructor(s): Baraniuk.

ELEC 533 INTRODUCTION TO RANDOM PROCESSES AND APPLICATION (3)

Review of basic probability; Sequence of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems, expansion of random processes; Wiener filtering; Spectral representation of random processes; White-noise integrals. Cross-listed with CAAM 583, STAT 583. Offered Fall. Instructor(s): Merenyi.

ELEC 534 WIRELESS COMMUNICATIONS (3)

This is a graduate course on wireless and mobile communication systems, with an emphasis on understanding the unique characteristics of these systems--their analysis and design. Topics include: cellular principles, mobile radio propagation and path loss, characterization of multipath fading channels, modulation and equalization techniques for mobile radio systems, multiple (media) access, Code Division Multiple Access (CDMA) system design, and cellular system capacity. Pre-requisite(s): ELEC 430. Offered Fall. URL: www.ece.rice.edu/courses/534. Instructor(s): Aazhang.

ELEC 535 INFORMATION AND CODING THEORY (3)

Introduction to information theory concepts; basic theorems of channel coding and source coding with a fidelity criterion. Techniques of channel coding, parity check codes, introduction to algebraic coding theory, introduction to convolutional codes. Variable-length source coding. Pre-requisite(s): ELEC 331. Offered Spring. Instructor(s): Choi.

ELEC 536 SELECTED TOPICS IN CONTROL THEORY (3)

The course objective is to design feedback control systems that meet performance specifications in the presence of uncertainties such as disturbances, measurement noise, and unmodeled plant dynamics. Not offered Fall & Spring.

ELEC 537 DESIGN AND CONTROL OF COMPUTER NETWORKS (3)
Graduate-level introduction to fundamental concepts for the design and control of computer networks. Topics include resource allocation, routing, traffic modeling, congestion control, service disciplines, and multicasting. Concepts are applied to state-of-the-art systems and protocols such as current and future Internet architectures. Cross-listed with MECH 437, MECH 537. Offered Fall. Instructor(s): Knightly.

ELEC 538 ADVANCED TOPICS IN COMPUTER NETWORKING (3)
Advanced topics in protocols, modeling, and analysis of wireless networks. Pre-requisite(s): ELEC 533 and ELEC 534 and ELEC 537. Not offered Fall and Spring. Instructor(s): Knightly.

ELEC 539 DIGITAL IMAGE PROCESSING (3)
Modern techniques for image analysis, processing, and enhancement: Two dimensional system and transform theory; sampling; linear and non-linear filtering; feature extraction; compression and coding; imaging systems. Not offered Fall and Spring. Instructor(s): Orchard.

ELEC 540 SOURCE CODING AND COMPRESSION (3)
Review of information theory, scalar quantization, vector quantization theory, scalar quantization, vector quantization, quantizer Design Algorithms, Entropy coding, transform coding, rate-distortion optimization application to image and video coding, wavelet and multi-resolution compression algorithms. Not offered Fall & Spring. Instructor(s): Orchard.

ELEC 541 ERROR CORRECTING CODES (3)
Introductory course on error correcting codes. Topics covered include linear block codes, convolutional codes, turbo codes and space-time codes. Pre-requisite(s): ELEC 430. Not offered Fall and Spring Instructor(s): Sabharwal.

ELEC 542 DIGITAL AUDIO AND VIDEO SYSTEMS (3)
This course covers practical audio and video system design techniques and DSP architectures for implementing real time video and audio algorithms. Topics: A&V circuit and system design fundamentals, digital audio amplifiers, digital audio algorithms, DSP architectures, NTSC and HDTV video systems, MPEG video algorithms, HDTV receiver design and personal video recorder design. Pre-requisite(s): ELEC 302 or ELEC 431. Offered Spring. Instructor(s): Tran.

ELEC 545 THIN FILMS (3)
Exploration of materials issues relevant to thin films. Includes techniques for vapor phase deposition of thin films (e.g., evaporation, sputtering, and chemical vapor deposition), epitaxy, generation of thin film defects, strain, growth anisotropy, and grain structure, as well as electrical, optical, and magnetic properties of thin film materials and structures. Cross-listed with MSCI 545.

ELEC 560 INTEGRATED AND FIBER OPTICS (3)
A seminar course consisting of lectures, discussions of journal articles, and student presentations on topics in optical fiber propagation, including linear and nonlinear effects. Pre-requisite(s): ELEC 306. Not offered Fall & Spring. Instructor(s): Halas.

ELEC 561 TOPICS IN SEMICONDUCTOR MANUFACTURING (3)
Advanced methods for simulation and control of the fabrication of modern integrated circuits. Quality and reliability assurance. Pre-requisite(s): ELEC 462. Offered Spring. Instructor(s): Wilson.

ELEC 562 SUBMICROMETER AND NANOMETER DEVICE TECHNOLOGY (3)
Surveys techniques to design, fabricate, and analyze submicron and nanometer structures with emphasis on applications in microelectronics, microphotonics, information storage, and nanotechnology. Offered Spring. Instructor(s): Kelly.

ELEC 563 INTRODUCTION TO SOLID STATE PHYSICS I (3)
Introduction to the fundamental concepts of crystalline solids, including the Drude theory of metals, crystal structures, Bloch's theorem, band structure, effective mass approximation, phonons, plasmons, excitons, and polaritons. Cross-listed with PHYS 563. Offered Fall. URL: www.ece.rice.edu/~kono/elec563.html. Instructor(s): Kono.

ELEC 564 SOLID-STATE PHYSICS II (3)
Cross-listed with PHYS 564.

ELEC 565 TOPICS IN SEMICONDUCTOR NANOSTRUCTURES (3)
Lectures/discussions on advanced topics in semiconductor nanostructures. The topics include: the quantum hall effect; excitons and polaritons; Bose-Einstein condensation; mesoscopic phenomena; spectroscopy of wires and dots; Bloch oscillations; ultrafast/nonlinear optics; spintronics; and quantum information processing. Students read original research papers and review articles, and present seminars on assigned topics. Not offered Fall & Spring. Instructor(s): Kono.

ELEC 566 PHYSICAL ELECTRONICS PROJECTS (3)

Includes standard experiments, development of new experiments, and special projects undertaken in collaboration with a faculty member. Instructor permission required. Offered Fall.

ELEC 567 APPLIED QUANTUM MECHANICS (3)

Survey the basic principles and methods of quantum mechanics; investigate real problems of contemporary interest, based on solid-state physics and quantum optics. Specific topics: 'spintropic' phenomena and devices, quantum information processing in quantum engineered structures, physics and applications of carbon nanotubes, non-perturbative nonlinear optics, and Bose-Einstein condensation of excitons. Students will present seminars on assigned topics. Pre-requisite(s): PHYS 202 and PHYS 311 and PHYS 412 and PHYS 425. Offered Spring. URL: www.ece.rice.edu/~kono/elec567.html. Instructor(s): Kono.

ELEC 568 LASER SPECTROSCOPY (3)

Introduction to the theory and practice of laser spectroscopy as applied to atomic and molecular systems. The course covers fundamentals of spectroscopy, lasers and spectroscopic light sources, high resolution and time resolved laser spectroscopy with applications in atmospheric chemistry, environmental science and medicine. Repeatable for Credit. Offered Fall. Instructor(s): Tittel.

ELEC 569 ULTRAFAST OPTICAL PHENOMENA (3)

This course covers the generation, propagation, and measurement of short laser pulses, of duration less than one picosecond. Concepts include mode locking, the effects of dispersion, optical pulse amplification, and time-domain non-linear optical phenomena. Intended as an introduction to ultrafast phenomena for graduate students or advanced undergraduates; a basic understanding of electromagnetic waves and of quantum mechanics is assumed. Cross-listed with PHYS 569. Offered Spring. URL: www.ece.rice.edu/~daniel/569/569files.html. Instructor(s): Mittleman.

ELEC 580 ADVANCED NEURONAL MODELING AND NETWORKS (3)

Emphasis on neuron models exhibiting pacing and bursting activity important in central pattern generation. Introduction to natural and artificial neural networks, as well as neuromorphic systems. Pre-requisite(s): ELEC 381 or ELEC 481, or permission of instructor. Not offered Fall and Spring. Instructor(s): Clark.

ELEC 581 CARDIOPULMONARY DYNAMICS (3)

Mathematical modeling of the cardiovascular and respiratory systems, and their neural control. Integration of these system models into a human cardiopulmonary model capable of simulating measured data from functional tests. Cross-listed with BIOE 581. Pre-requisite(s): ELEC 482, or permission of instructor. Offered Fall. Instructor(s): Clark.

ELEC 590 ELECTRICAL PROJECTS (1 TO 6)

Theoretical and experimental investigations under staff direction. Repeatable for Credit.

ELEC 599 FIRST YEAR GRAD STUDENT PROJECTS (6)

Supervised project required of all first-year graduate students in the Ph.D. program. Offered Spring.

ELEC 602 NEURAL NETWORKS AND INFORMATION THEORY II (3)

Advanced topics in ANN theories, with a focus on Self-Organizing Maps and unsupervised learning. The course will be a mix of lectures and seminar discussions with active student participation, based on most recent research publications. Students will have access to professional software environment to implement theories. Cross-listed with COMP 602. Limited enrollment. Instructor(s): Merenyi.

ELEC 603 NANO-OPTICS (3)

This is a seminar-based course for seniors and graduate students where a variety of currently hot areas in subwavelength optics will be studied. The main topics include: near field optics, microscopy and sensing, single molecule spectroscopy, nanoparticles and their optical properties, and photonic crystals and arrays. Format will include a combination of lectures and student presentations. Offered Fall. Instructor(s): Halas.

ELEC 631 ADVANCED TOPICS IN SIGNAL PROCESSING (3)

Topic vary from semester to semester. Pre-requisite(s): ELEC 531 and ELEC 533. Repeatable for Credit. Offered Spring. Instructor(s): Baraniuk.

ELEC 632 ADVANCED TOPICS IN IMAGE AND VIDEO PROCESSING (3)

Seminar on topics of current research interest in image and video processing. Students participate in selecting and presenting papers from technical literature. Discussions aim at identifying common themes and important trends in the field. Not offered Fall and Spring. Instructor(s): Orchard.

ELEC 693 ADVANCED TOPICS-COMPUTER SYSTEMS (1 TO 15)

Repeatable for Credit. Offered Fall and Spring.

ELEC 694 FUTURE PERSONAL COMPUTER TECHNOLOGIES (3)

Survey of the component and standards trends that are the basis of personal computers and digital appliances with the aim of predicting technologies, solutions, and new products five years into the future. Repeatable for Credit. Offered Spring. URL: www.ece.rice.edu/courses/694.html. Instructor(s): Cutler.

ELEC 695 ADVANCED TOPICS IN COMMUNICATIONS AND STATISTICAL SIGNAL PROCESSING (3)

Advanced topics in digital image processing. Pre-requisite(s): ELEC 534 and ELEC 535. Instructor permission required. Not offered Fall and Spring. Instructor(s): Sabharwal.

ELEC 697 INTRODUCTION TO PRACTICAL PROCESSES (3)

In this course we try to balance an introduction to the mathematical background of fractals and multifractals with applications of theoretical and practical importance, e.g., in Internet traffic modeling and in image processing. Thereby, we will keep things as simple as possible, making the course accessible to a wide audience. Not offered Fall and Spring

ELEC 760 BAYLOR/RICE MD/PHD PROGRAM (3)

Department permission required. Repeatable for Credit. Offered Fall. Instructor(s): Clark.

ELEC 800 RESEARCH AND THESIS (1 TO 15)

Repeatable for Credit. Offered Fall and Spring.

ENGI (ENGINEERING)**School of Engineering/Engineering Division****ENGI 205 TOPICS IN GLOBAL LEADERSHIP AND TECHNOLOGY (2)**

Preparatory course for a 1-week travel symposium, with emphasis on leadership development and how technology has driven globalization and business decision making. Pre-trip activities will include lectures and colloquia on relevant topics specific to the destination countries. Post-trip requirements include documentation of the learning experience and organization of a local event to share the experience with others in the Rice community. Limited enrollment.

ENGI 303 ENGINEERING ECONOMICS AND MANAGEMENT (3)

Introduction to the evaluation of alternative investment opportunities with emphasis on engineering projects and capital infrastructure. Time value of money concepts are developed in the context of detailed project evaluation and presentations. In addition, concepts and applications of risk analysis and investment under uncertainty are developed. Requires oral and written presentations by students. Cross-listed with CEVE 322.

ENGI 307 PREPARING FOR PROFESSIONAL COMMUNICATION IN FIVE COUNTRIES, MANY CULTURES (1)

Prepares students to anticipate the roles, situations, and expected communication practices they would encounter in engineering firms or other businesses in the United Kingdom, Germany, France, United Arab Emirates, and Singapore. Cross-listed with NSCI 307. Limited enrollment.

ENGI 309 LEADERSHIP COMMUNICATION (2)

Leadership communication is a two-credit course that meets for the three hours weekly for ten weeks. The course teaches writers and speakers how to explain ideas in the context of values for audiences with a variety of vested interests. The course covers organization and persuasive strategies as well as stylistic and delivery techniques. In addition to writing and presenting, students will discuss readings and learn to give one another feedback. Students will draw on projects in their coursework or extracurricular activities in selecting topics for major assignments. Cross-listed with NSCI 309. Instructor(s): Drikill; Volz.

ENGL (ENGLISH)**School of Humanities/English****ENGL 100 APPROACHES TO THE STUDY OF LITERATURE (3)**

Approaches to the Study of Literature is a seminar that includes analysis and discussion of literary texts in some combination of mixed media, poetry, drama, prose, and fiction. Limited enrollment. Offered Fall and Spring.

ENGL 103 INTRODUCTION TO ARGUMENTATION AND ACADEMIC WRITING (3)

Prepares students for writing in academic disciplines. Topics: identifying argument patterns, using on-line databases, practicing heuristic techniques, revising and editing papers with the conventions of formal written English, and using MLA and APA documentation systems. Instructor permission required. Offered Fall & Spring. Instructor(s): Driskell; Tobin.

ENGL 121 ADVANCED PLACEMENT CREDIT IN ENGLISH (3)

Course indication credit given for Advanced Placement in English. Offered Fall and Spring.

ENGL 122 ADVANCED PLACEMENT CREDIT IN ENGLISH (3)

Course indicating credit given for Advanced Placement in English. Offered Fall and Spring.

ENGL 200 SEMINAR IN LITERATURE AND LITERARY ANALYSIS (3)

This course is designed for and required of all prospective English majors. It emphasizes close reading, literary interpretation, and critical writing. Attention is paid to the major genres (poetry, drama, and fiction) across a range of historical periods. Intrinsic rather than extrinsic (contextual) approaches to literature are prioritized. Limited enrollment. Offered Fall and Spring.

ENGL 201 INTRODUCTION TO CREATIVE WRITING: PERSONAL ESSAY (3)

According to one book reviewer, nonfictions in the personal essay, the memoir and autobiography--is the reigning genre of our time. This turn of events has been applauded as well as lamented, according to the taste of the writer/ critic/reviewer/person. Nonfiction readers and writers are proliferating. In this course we will join in this lively conversation by reading the works of published and prize-winning essayists and memoirists. Offered Fall. URL: www.english.rice.edu. Instructor(s): Recknagel.

ENGL 209 GREEK AND ROMAN DRAMA (3)

Reading, in translation, and dramatic analysis of representative plays, including works by Aeschylus, Sophocles, Euripides, Plautus, Terence, and Seneca. Cross-listed with CLAS 209. Offered Fall.

ENGL 210 MAJOR BRITISH WRITERS: CHAUCER TO 1800 (3)

Readings in major British authors of the Middle Ages, the Renaissance, and the 18th century. Offered Fall.

ENGL 211 MAJOR BRITISH WRITERS: 1800 TO PRESENT (3)

Readings of major British authors of the 19th & 20th centuries. Please consult www.english.rice.edu for additional course information. Offered Fall and Spring. URL: www.english.rice.edu.

ENGL 215 WORDS IN ENGLISH: STRUCTURE, HISTORY, USE (3)

Introduction to the study of English words, focusing on their internal structure and the nature and history of English vocabulary. Aims are to enhance knowledge of the rich lexical resources of the language, and to facilitate the acquisition of scientific, technical, legal, and humanistic vocabulary. No previous linguistics background required. Cross-listed with LING 215. Offered Fall.

ENGL 250 INTRODUCTION TO THE VICTORIANS (3)

This discussion-based course, designed for sophomores but open to all, explores the world of Victorian Britain 1837-1901. Readings may include fiction, drama, poetry, and non-fiction (essays, diaries, nature and travel writing, etc.) Texts will be considered in the context of social history and visual and material cultures. Not offered Fall and Spring

ENGL 260 INTRODUCTION TO THE STUDY OF AMERICAN LITERATURE (3)

This lecture course will examine the work of American novelists as self-conscious renderings of the nation that could not find reasonable expression in genres like poetry and autobiography. The expansive nature of the novel lent itself early on to capture, represent, and reify the progressive discourses of history that turned New England Puritan theocracy into a secularized form of government, known as democracy. Offered Fall and Spring.

ENGL 266 ETHNIC LITERATURES OF 20TH CENTURY AMERICA (3)

This course will serve as a comparative study of U.S. minority literatures. Discussion and analysis will range from themes such as immigration, citizenship, and nationalism to critical categories such as race, class, and gender. Limited enrollment. Offered Fall.

ENGL 270 ASPECTS OF MODERN LITERATURE (3)

This course is an introduction to modern/postmodern culture and includes reading of novels, plays, short stories, poems, psychoanalytic theory, and art criticism/philosophy. The emphasis is on reading and interpreting different kinds of texts in broad cultural contexts. Please consult www.english.rice.edu for additional course information. Limited enrollment. Not offered Fall and Spring.

ENGL 271 US LATINO/A LITERATURES (3)

This course serves as an introduction to Latino/a Literature. We will study the evolution of this literary tradition from its origins in the colonial period. Special attention will be given to the conflicting processes of ethnicity, race, nationalism, language, gender, and citizenship during the 20th century. Not offered Fall and Spring.

ENGL 275 INTRODUCTION TO FILM: FILM CRITICISM (4)

This writing-intensive course will teach students to view films analytically and write film criticism. Each week, students will view a film, read some criticism of that film, and write their own review of the film. Screenings will be taken from important movements in world cinema history. Cross-listed with HART 285. Not offered Fall & Spring. URL: www.english.rice.edu. Instructor(s): Ostherr.

ENGL 286 CLASSICAL AND CONTEMPORARY FILM THEORY (3)

This course introduces the student to approaches to understanding and interpreting film as film. It traces the attempts to grasp the new medium in theoretical terms from its origins to the present day. Topics include: montage, mise-en-scene, the gaze, history, psychoanalysis, and feminism. Cross-listed with HART 286. Not offered Fall and Spring

ENGL 300 PRACTICES OF LITERARY STUDY: READING METHODS (3)

This course covers the key concepts routinely surfacing in critical writing today. Students read short texts in the development of contemporary theory and discuss, at length, the ways literature practices the ideas which theory articulates. Required for English majors. Limited enrollment. Offered Fall and Spring.

ENGL 301 CREATIVE WRITING: FICTION WRITING (3)

This course teaches the fundamentals of fiction writing, and includes a mixture of reading and writing assignments. The goal is for each student to produce two short stories possessing imaginative ingenuity, structural integrity, and literary merit by the end of the semester. This course typically over-enrolls. Admission is therefore selective and based on a writing sample. Interested students are advised to attend the first class meeting for guidelines for the writing sample submission. Offered Fall and Spring. URL: www.ruf.rice.edu/~jccronin/301/index.html.

ENGL 302 FILM AND TELEVISION SCREENWRITING (3)

This course teaches the fundamentals of screenwriting through a mix of classroom, workshop, research, reading, viewing, and writing assignments. The goal is for each student to build and complete a riveting script for television. Limited enrollment. Not offered Fall and Spring.

ENGL 303 DRAMATIC WRITING (3)

The emphasis, depending on individual students, will be on the writing for drama in one or several of the chief modes of the performing arts: plays, films, musicals, opera- even dance. Instructor permission required. Repeat-able for Credit.

ENGL 304 INTRODUCTION TO POETRY WRITING (3)

Students will be introduced to poetry writing by studying the work of contemporary poets and by writing their own poems. The class will pay extensive attention to such elements of poetry as imagery, figurative language, tone, syntax, and form in order to create a vocabulary for writing and discussing their own poems. Students' poems will be critiqued by the class in a workshop setting. Offered Fall.

ENGL 305 CREATIVE WRITING: PERSONAL ESSAY (3)

Writing and reading personal essay and autobiography. Limited enrollment. Offered Fall. Instructor(s): Recknagel.

ENGL 306 EXPOSITORY PROSE (3)

Students write a sequence of short essays on subjects of their own choosing. In the process, they experience how elements like structure, voice, figurative language, and style contribute to rhetorical effectiveness. Offered Spring. Instructor(s): Tobin.

ENGL 309 MYTHOLOGIES (3)

This course introduces students to world mythologies and mythmakers, from the beginning to the modern period. Included mythologies: Babylonia, Sumerian, Hindu, Egyptian, Greek, Roman, Irish, Welsh, Old Norse, Anglo-Saxon, Finnish, Mayan, Hpoi, modern (Borges, Phillip Glass). Cross-listed with LING 312, MDST 311. Not offered Fall and Spring. URL: www.ruf.rice.edu/~jchance/myth.htm. Instructor(s): Chance.

ENGL 310 DANTE (3)

A reading of Dante's Divine Comedy, with attention to the meaning of words, images, symbols, figures, structures, and the meaning of the book with reference to the political/ religious controversies of the time. Cross-listed with MDST 310. Offered Spring. URL: www.ruf.rice.edu/~jchance/dante.htm. Instructor(s): Chance.

ENGL 311 MEDIEVAL WOMEN WRITERS (3)

This course examines significant medieval European women authors from the 10th-17th centuries, from Italy and Germany to France, England, Austria, and Spain. Using various techniques/media to access works, we will combine close reading with a focus on intertextuality. Cross-listed with MDST 300, WGST 300. Not offered Fall & Spring. URL: www.ruf.rice.edu/~jchance/mewom.htm. Instructor(s): Chance.

ENGL 312 OLD ENGLISH (3)

Reading of poems and prose about Old English women, in translation, including The Wife's Lament, Wulf and Eadwacer, Beowulf, Juliana, Elena, Judith, Genesis B, the Advent Lyrics on the Virgin, and materials from chronicle, myth, and legend. Cross-listed with MDST 312, WGST 312. Not offered Fall and Spring. Instructor(s): Chance.

ENGL 315 INTRODUCTION TO MEDIEVAL CULTURES (3)

An interdisciplinary course exploring the literature, art, philosophy, history, music, and science of the Middle Ages, with films by Pasolini, Bergman, Einstein, Annaud, Vigne, and others, and highlighted by a medieval banquet. Cross-listed with MDST 315. Not offered Fall and Spring. URL: www.ruf.rice.edu/~jchance/med_cult.html. Instructor(s): Chance.

ENGL 316 CHAUCER (3)

Chaucer and his literary and philosophical background. Readings include minor poems, a dream vision, *The Canterbury Tales* and *Le Troilus*. Cross-listed with MDST 316, WGST 305. URL: www.ruf.rice.edu/~jchance/chaucer2.html. Instructor(s): Chance.

ENGL 317 ARTHURIAN LITERATURE (3)

A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-listed with MDST 317, WGST 301. Not offered Fall and Spring. URL: www.ruf.rice.edu/~jchance/arthurian2.htm. Instructor(s): Chance.

ENGL 318 J.R.R. TOLKIEN (3)

This course will trace the tension between the exile (wraecca) and the community; otherness and heroism; identity and marginalization; revenge and forgiveness. Cross-listed with MDST 318. Limited enrollment. Instructor(s): Chance.

ENGL 319 SURVEY OF BRITISH WOMEN WRITERS 1400-1900 (3)

A survey of major British early writers. Poems, memoirs, plays, and novels by significant women, and their film adaptations. Cross-listed with WGST 349. Not offered Fall and Spring. URL: www.ruf.rice.edu/~chance/womsurvey3.htm. Instructor(s): Chance.

ENGL 320 SHAKESPEARE ON FILM (3)

This course will examine both the text of selected Shakespearean plays and films made from them, focusing on the difference between film and drama. Instructor permission required. Limited enrollment.

ENGL 321 SHAKESPEARE (3)

Representative plays, including tragedies, comedies, histories and romances. Specific content varies from year to year. Offered Fall and Spring.

ENGL 323 EARLY MODERN DRAMA (3)

Elizabethan and Jacobean England, the greatest age of English drama, nurtured a theatre more integrated into its society than any known since. How did this happen? What effect did it have? Selected plays read both for literacy significance and the way they were part of the period's social, economic, and political forces. Not offered Fall and Spring.

ENGL 326 EARLY MODERN LITERATURE: READING THE RENAISSANCE (3)

This course examines forms of love poetry, medical treatises, letters, and courtly masques. Since each of these works is a product of England's changing cultural landscape, we'll be able to consider the ways in which they also reflect England's changing social history. Not offered Fall and Spring.

ENGL 328 MILTON (3)

Major poems and prose of John Milton. Graduate/Undergraduate version: ENGL 528. Not offered Fall and Spring.

ENGL 330 ORIGINS OF THE ENGLISH NOVEL (3)

The most important literary innovation of the 18th century was the birth of the novel. We will examine the modern social and cultural forces crucial to and inextricable from this watershed development: the emergence of liberalism, conservatism, feminism, class, secular culture, the sex/gender system, individualism, and the separation of public and private spheres. Offered Spring.

ENGL 331 TOPICS IN 18TH-CENTURY BRITISH LITERATURE (3)

Covers major themes, forms, authors, and genres in 18th-century British literature. Possibilities include studies in the early novel tradition, and literature's connection to Enlightenment innovations in philosophy, politics, social structure, religion, and gender relations. Not offered Fall and Spring.

ENGL 332 LITERATURE OF THE ENGLISH ENLIGHTENMENT (3)

This course will examine a representative range of British prose and poetry from 1660-1790, the period known as the Enlightenment. This was a volatile age of plots, revolution, philosophical and scientific innovation, and literary transformation. Our readings will cover poems of several genres, short prose narratives, essays and philosophical treatises. Offered Fall.

ENGL 333 18TH CENTURY BRITISH FICTION (3)

This course explores the emergence and consolidation of the English novel and its dynamic relationship to many other 18th-century legacies; the modern individual, capitalism, civil society, the middle class, democracy, and colonialism. Offered Spring.

ENGL 334 REASON AND FAITH: PHILOSOPHY OF THE ENLIGHTENMENT (3)

This course will study the core texts from the European Enlightenment traditions (British, French, and German). Our goal will be to investigate the Enlightenment doctrines concerning the nature of reason and rationality, and the varying engagements—from conciliatory to antagonistic—of the defenders of reason with faith and organized religions. Cross-listed with PHIL 322. Offered Spring. Instructor(s): Ellenzweig; Zuckert.

ENGL 339 SURVEY OF BRITISH ROMANTICS: POETRY (3)

The major writings of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats. Offered Fall.

ENGL 341 VICTORIAN PANORAMA (3)

This course ventures into the array of creative works in the nonfiction genres, exploring the riches of Victorian writing and culture through the reading of poems and prose. Offered Spring.

ENGL 342 SURVEY OF VICTORIAN FICTION (3)

A survey of the many genres of the nineteenth-century novel, this course will try to come to terms with some of the insistent questions posed by and through the fiction of the period. Cross-listed with WGST 372. Offered Spring.

ENGL 346 20TH CENTURY BRITISH LITERATURE (3)

This course will cover the British novel from Kipling to Rushdie: the highlights of high modernism, the shift in the center of gravity from England itself to the colonies, and the narrative necessities that arise from different culture and politics will be among the topics we examine. Offered Fall.

ENGL 349 EUROFICTION: CERVANTES TO 1900 (3)

This course will examine the various roots of the European novel in Cervantes, Potocki, and Lafayette, its growth through Romantic writers like Pushkin and Stendahl, and its great finales in Manzoni, Tolstoy, and Flaubert. Offered Fall.

ENGL 350 SURVEY OF EUROPEAN FICTION: 20TH CENTURY (3)

This course will begin with Prout's *Swann's Way* and follow political and formal developments in French, German, Russian, and Eastern European novels by writers such as Hasek, Pasternak, Hrabal, and Boll. Offered Fall.

ENGL 355 MODERN SHORT STORY: TOWARDS AN ETHICS OF FICTION (3)

Study of great works of American and European short fiction of the 19th and 20th centuries, with special attention to the ethical dimensions that this and all fiction articulates. Selected critical essays will complement readings from Melville, Haubert, Mann, Maupassant, Gogol, Wilde, Chekhov, Gilman, Kafka, O'Connor, Carver and Garcia-Marquez. Cross-listed with FREN 355.

ENGL 357 ORIGINS OF THE POSTMODERN (3)

The course examines diverse cultural manifestations of the "postmodern" through the last half of the twentieth century. Popular music, novels, plays, film, art, and fairy-tales may be discussed. Offered Spring.

ENGL 360 AMERICAN LITERATURE, BEFORE 1860 (3)

This course will focus careful attention on a complete reading on a number of the most significant traditionally valued texts of the "American Renaissance." Offered Spring.

ENGL 361 AMERICAN LITERATURE 1860-1910 (3)

Surveys the literature of the major authors of the period, including Mark Twain, Emily Dickinson, Stephen Crane, Henry James, and others. Offered Fall.

ENGL 362 SURVEY OF AMERICAN FICTION 1910-1940 (3)

The first half of the 20th century was one of great social turmoil and intense artistic experimentation. Major writers of the period include Chopin, Hemingway, Fitzgerald, Toomer, Faulkner, Hurston, Barnes, and others. Offered Fall.

ENGL 363 AMERICAN FICTION 1950-PRESENT (3)

Surveys the literature of the major authors of the period, and will include examination of the narrative experiments and trends of the period. Not offered Fall and Spring.

ENGL 364 AMERICAN POETRY 1900-1960 (3)

Major American poets of the period. A representative selection from the major poets of the period, including, but not limited to Gertrude Stein, Amy Lowell, Robert Frost, Wallace Stevens, William Carlos Williams, Ezra Pound, Marianne Moore, T.S. Eliot and so forth. Offered Spring.

ENGL 365 AMERICAN POETRY 1960-PRESENT (3)

Poets studied might include Elizabeth Bishop, Robert Hayden, Randall Jarell, John Berryman, Robert Lowell, Gwendolyn Brooks, Denise Levertov, James Merrill, John Ashbury, Philip Levine, Anne Sexton, and others. Offered Spring.

ENGL 366 TOPICS IN AMERICAN LITERATURE (3)

While topics vary, courses will likely focus on themes, movements, and/or critical re-evaluations that are independent of periods, such as immigration, modernism, postnationalism, etc. Offered Fall.

ENGL 367 AMERICAN ECOFEMINISM (3)

A critical examination of the contemporary intersections of feminism and environmental studies, and/or political activism. History, literature, theory, and film are studied in some combination. Cross-listed with WGST 367. Not offered Fall and Spring

ENGL 368 LITERATURE AND THE ENVIRONMENT (3)

How does literature express or shape environmental values? In this class we will read American fiction and nonfiction exploring the relationship between human and nonhuman nature. Offered Spring.

ENGL 369 LITERATURE AND CULTURE OF THE AMERICAN WEST (3)

Here, the American literary West is examined through the historic context of the U.S. in the 20th century, especially in light of postmodernity, the civil rights movement, Hollywood, and global politics. Cross-listed with WGST 329. Offered Spring.

ENGL 370 SURVEY OF AFRICAN AMERICAN LITERATURE (3)

This course traces, through various genres and themes, African American literary history from the late eighteenth century to the present. Attention is given to theories and critiques of African American literature and culture. Cross-listed with WGST 370. Offered Fall.

ENGL 371 SURVEY OF CHICANO/A LITERATURE (3)

This mixed-genre course will focus on the Chicano movement, the Chicano renaissance, and their alternative literary and mythic traditions. Cross-listed with WGST 354. Not offered Fall and Spring.

ENGL 372 SURVEY OF ASIAN AMERICAN LITERATURE (3)

This course surveys in some combination poetry, fiction, and non-fiction by Asian American writers since the 19th century. Themes include: immigration, "Gold Mountain", citizenship, World War II, model minority mythology, the Vietnam War, etc. Cross-listed with ASIA 372. Not offered Fall and Spring.

ENGL 373 SURVEY OF AMERICAN FILM AND CULTURE (4)

This course will cover the history of cinema in the US from its origins to the present day. Cross-listed with HART 380. Not offered Fall and Spring.

ENGL 377 ART AND LITERATURE (3)

This course explores how artworks in various media become meaningful at the level of detail. This exploration will entail learning how to look, think, and feel at the same time. Key authors studied: Vermeer (painting), Hitchcock (film), Hammett (detective fiction). Offered Spring.

ENGL 378 LITERATURE OF THE AMERICAS IN TRANSLATION (3)

This course is a mixed-genre course that includes in some combination literature from Latin America and/or the Caribbean, translated into English. Not offered Fall and Spring.

ENGL 379 INTRODUCTION TO THIRD WORLD LITERATURE (3)

This course primarily surveys fiction, poetry, drama, film, (in English) from postcolonial contexts, especially those of Africa, the Caribbean and the Indian subcontinent. Authors discussed include Rushdie, Narayan, Roy, Wolcott, Ngugi, Coetzee, and Achebe. Not offered Fall and Spring.

ENGL 380 20TH CENTURY WOMEN WRITERS (3)

Writers might come from Great Britain, the U.S., or elsewhere in translation. Past topics include "sex, gender and modernism". Cross-listed with WGST 327. Offered Spring.

ENGL 382 FEMINIST LITERARY THEORY (3)

An introduction to the core concepts and writings of the field. Cross-listed with WGST 480. Not offered Fall & Spring.

ENGL 387 CULTURAL STUDIES (3 OR 4)

Recent topics have included film, mass culture, "Marx", contemporary ethnic studies and, "The Culture of Love". Not limited in period, scope, or geography, cultural studies is a broad category. Cross-listed with HART 387, WGST 387. Repeatable for Credit. Offered Spring.

ENGL 388 MEDIA STUDIES (3)

Topics vary from year to year but will likely address inter-disciplinary approaches to studying the relationships between film, photography, television, and digital technologies such as the internet and computer-generated imaging. Not offered Fall and Spring.

ENGL 389 GENERATION X IN LITERATURE AND CULTURE (3)

An interdisciplinary survey of Generation X in literature, music, film, and politics. Cross-listed with WGST 389. Not offered Fall and Spring

ENGL 390 INTRODUCTION TO THEATRE (3)

A survey of the art and theory of the theatre through an examination of dramatic literature from the Greeks through the modern era. The course will also explore the craft of the theatre as it is practiced today. Cross-listed with THEA 303. Offered Fall. Instructor(s): Rigdon.

ENGL 394 STRUCTURE OF ENGLISH LANGUAGE (3)

Introduction of modern English grammar, phonology, and semantics. Cross-listed with LING 394. Offered Spring. Instructor(s): Shibitani.

ENGL 397 TOPICS IN LITERATURE (3)

Topics vary from year to year. Recent topics have included Detective Fiction, Electronic Literature, and Freaks in U.S. Culture. Repeatable for Credit. Offered Spring.

ENGL 401 ADVANCED CREATIVE WRITING: FICTION (3)

This course will be conducted mostly as a workshop, although the course will also include some assigned writing exercises and weekly reading of published short stories to deepen students' understanding of narrative technique. Pre-requisite(s): ENGL 301, or permission of instructor. Repeatable for Credit. Offered Fall & Spring. URL: www.ruf.rice.edu/~jcronin/301/indx.html. Instructor(s): Cronin.

ENGL 404 ADVANCED CREATIVE WRITING: POETRY (3)

Students will make a more in-depth study of contemporary poetry by careful analysis of books by six to eight contemporary poets, by reading selected essays on poetic technique, and by continuing to write their own poems with a view toward finding their personal voice. Pre-requisite(s): ENGL 304, or permission of instructor. Repeatable for Credit. Offered Spring.

ENGL 420 16TH CENTURY BRITISH LITERARY STUDY (3)

For more concentrated study of some aspect of the literature and culture of the 16th century. Topics vary. Offered Spring.

ENGL 422 18TH CENTURY BRITISH LITERATURE STUDIES (3)

For more concentrated study of some aspect of the literature and/or culture of the 18th century. Topics vary. Not offered Fall and Spring.

ENGL 423 19TH CENTURY BRITISH LITERATURE STUDIES (3)

For more concentrated study of some aspect of the literature and/or culture of the 19th century. Topics vary. Not offered Fall and Spring.

ENGL 424 20TH CENTURY BRITISH LITERATURE (3)

Courses vary from year to year. Might include authors such as James Joyce, D.H. Lawrence, T.S. Eliot, Virginia Woolf, etc. Not offered Fall and Spring.

ENGL 441 VICTORIAN STUDIES (3)

A course designed to build on student knowledge of the Victorian period gained earlier in the curriculum, "Victorian Studies", which varies by topic from semester to semester, looks in depth at some aspect of nineteenth-century literature and culture. Recent topics have included the novel, visual arts, marriage and sexuality. Not offered Fall and Spring

ENGL 443 AUSTEN ONLY (3)

This course will try to come to terms with Jane Austen as author and icon. Material will include all her fiction as well as portions of her letters and biography. Recent film and television adaptations of her novels will also be critically examined. Cross-listed with WGST 405. Not offered Fall and Spring.

ENGL 461 19TH CENTURY AMERICAN STUDIES (3)

Courses vary from year to year. Authors studied might include: Washington Irving, James Fenimore Cooper, Ralph Waldo Emerson, Harriet Jacobs, Frederick Douglas, Walt Whitman, Mark Twain, Henry James, etc. Not offered Fall and Spring

ENGL 462 20TH-21ST CENTURY AMERICAN LITERATURE AND CULTURE (3)

This course will examine 20th century and contemporary U.S. Literature and culture in context of theories and movements of social justice and individual freedom. These might include: liberal individualism, theories of subjective agency, feminism, antiracism, and so on. The course will examine the role that literature plays in constructing, questioning, and reformulating ideas of freedom and agency. Cross-listed with WGST 462. Not offered Fall and Spring

ENGL 466 STUDIES IN AMERICAN LITERATURE (3)

Because topics might vary wildly, please see the English website and check the undergraduate course listings for that semester. For Fall 2005, this course will be Romanticism, Modernity, and Systems Theory: R.W. Emerson to A.R. Ammons. Offered Fall.

ENGL 468 LITERATURE AND THE ENVIRONMENT (3)

A more advanced exploration of material introduced in ENGL 368, here the study of literature is conjoined with studies in the environment. Topics might include nature writing, the wilderness ideal, social justice, Native America, etc. Not offered Fall and Spring.

ENGL 470 TOPICS IN AFRICAN AMERICAN LITERATURE (3)

Topics vary. For Fall 2005, the topic will be Black Women Writers. Cross-listed with WGST 453. Repeatable for Credit. Offered Fall.

ENGL 471 TOPICS IN CHICANO/A LITERATURE (3)

Periods and topics vary. In the past, this course has been taught from 1848-1960 and 1960-present. Topics include: war, citizenship, immigration, the Civil Rights Movement, Mexico, generational differences, and the Vietnam War. Repeatable for Credit. Offered Fall.

ENGL 472 NATIVE AMERICAN LITERATURE (3)

This course examines the literature of the Native American Renaissance, from N. Scott Momaday's groundbreaking Pulitzer Prize-winning novel, *House Made of Dawn* (1968), to the recent works of some emerging writers. Although our focus will be on the contemporary novel, we will also explore American Indian autobiography and other works of nonfiction. Our literary analysis will be supplemented by an awareness of the cultural and political movements important to American Indian peoples in the late 20th century. To what extent are Native texts both innovative forms of artistic expression within a literary tradition and instruments of social change? How might Native American works be read as "resistance" literature? In exploring such questions, the class will address the issues of sovereignty, land claims, activism, and identity. Offered Fall.

ENGL 475 MODERN DRAMA ON FILM AND IN PERFORMANCE (3)

This course focuses on drama not only as a text but also as performance. Offered Fall.
URL: www.english.rice.edu. Instructor(s): Huston.

ENGL 481 INTRODUCTION TO FEMINIST LITERARY THEORY AND CRITICISM: THIRDWAVE FEMINISM (3)

Courses vary. For Spring 2006 the topic will be Third Wave Feminism. Cross-listed with WGST 407. Offered Spring.

ENGL 484 STUDIES IN LITERARY GENRES (3)

Not offered Fall and Spring

ENGL 485 STUDIES IN MODERN LITERATURE (3)

Intended as a more in-depth investigation of some aspect of literature. Topics vary. Not offered Fall and Spring.
URL: www.english.edu.

ENGL 487 AREA STUDIES: GLOBAL FICTIONS (3)

This course examines narrative fictions that represent various attempts to grasp the global-- as an idea, a cognitive map, a pattern of movement, a series of events, a montage of images, etc. Not offered Fall and Spring.

ENGL 489 STUDIES IN FILM (3)

Courses vary from year to year. Cross-listed with HART 486. Not offered Fall and Spring.

ENGL 490 STUDIES IN MAJOR BRITISH AUTHORS (3)

Studies in Major British Authors is a topics course which offers the opportunity for in-depth investigation of one or more major authors, not possible in the broader survey formats. The topic for Fall 2005 is "Shakespeare". This seminar is conceived as a kind of "anti-survey course" in Shakespeare. We will limit ourselves to just three of his plays: *Othello*, *King Lear*, and *Antony and Cleopatra*, and immerse ourselves in the nuances and the larger questions that have to be rushed through when coverage is a necessity. Repeatable for Credit. Offered Fall.

ENGL 491 STUDIES IN MAJOR AMERICAN AUTHORS (3)

Intended to provide the opportunity for more in-depth study of one or more major American authors. Not offered Fall and Spring.

ENGL 493 DIRECTED READING (1 TO 6)

Students may occasionally arrange a semester-long independent study in a specific area of interest with the professor's approval. Requirements must be discussed with the professor. Repeatable for Credit. Offered Fall & Spring.

ENGL 494 SENIOR SEMINAR (1 TO 3)

See advisor to the English major for information. Offered Fall and Spring

ENGL 495 SENIOR THESIS (3)

See advisor to the English major for information. Offered Fall and Spring

ENGL 498 QUEER THEORY (3)

What is queer theory and why is it important? This course aims to answer these questions by examining key issues in queer theory and situating them in the context of major literary and cultural theories of the past quarter century. As such the course will also serve as an introduction to psychoanalytic theory, postculturalism, deconstruction, postcolonial theory, film studies and recent work on the relationship between science and literature. Cross-listed with WGST 430. Repeatable for Credit. Offered Fall.

ENGL 499 STUDIES IN LITERARY THEORY (3)

Courses vary from year to year. For Spring 2005, "Literary Theory: An Introduction". Offered Spring.

ENGL 509 MASTER'S THESIS (3)**ENGL 510 PEDAGOGY (3)**

For third-year students preparing to teach their own sections of Freshman English. This two-semester course will help students put together syllabi and other teaching materials, address various pedagogical problems, formulate their teaching philosophies and provide classroom assistance in their independent teaching. Offered Spring.

ENGL 511 PEDAGOGY (3)

Continuation of ENGL 510. Offered Fall.

ENGL 514 MIDDLE ENGLISH LITERATURE (3)

Topics vary from year to year. Repeatable for Credit. Not offered Fall and Spring Instructor(s): Chance.

ENGL 516 CHAUCER (3)

Not offered Fall and Spring. Instructor(s): Chance.

ENGL 517 MEDIEVAL WOMEN WRITERS (3)

A survey of major continental European women writers, among them mystics, philosophers, scientists, and court-poets, in translation and in Middle English, from the 5th to the 15th centuries with attention to feminist, gender, and reader-response theory. Cross-listed with WGST 517. Not offered Fall and Spring. Instructor(s): Chance.

ENGL 519 16TH CENTURY BRITISH LITERATURE (3)

Topics vary from year to year. Personal Voice: Renaissance lyric and autobiography for Spring 2006. Offered Spring.

ENGL 520 SHAKESPEARE AND DIFFERENCE (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. Cross-listed with WGST 520. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 521 SHAKESPEARE (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. URL: www.english.rice.edu.

ENGL 522 SHAKESPEARE AND THEORY (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 523 EARLY MODERN DRAMA (3)

Topics vary from year to year. Please consult the English department website for additional information. URL: www.english.rice.edu.

ENGL 526 17TH CENTURY POETRY AND PROSE (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. URL: www.english.rice.edu.

ENGL 528 MILTON (3)

Graduate/Undergraduate version: ENGL 328. Offered Fall.

ENGL 532 18TH CENTURY BRITISH STUDIES (3)

Topics vary from year to year. Please consult the English department website for additional information. Enlightenment Institutions for Spring 2006. Repeatable for Credit. Offered Spring. URL: www.english.rice.edu.

ENGL 534 18TH CENTURY BRITISH FICTION (3)

Topics vary from year to year. Please consult the English department website for additional information. URL: www.english.rice.edu.

ENGL 537 EARLY 19TH CENTURY STUDIES (3)

Not offered Fall and Spring

ENGL 539 BRITISH ROMANTICS (3)

Topics vary from year to year. Please consult the English department website for additional information. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 541 VICTORIAN STUDIES (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. "Victorian Culture" for Fall 2005. For Spring 2006 "On or About 1860". Offered Fall and Spring. URL: www.english.rice.edu.

ENGL 542 VICTORIAN FICTION (3)

Topics vary from year to year. Please consult the English department website for additional information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 543 VICTORIAN POETRY AND PROSE (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 546 20TH CENTURY BRITISH LITERATURE (3)

Topics vary from year to year. Please consult the English department website for additional course information. Cross-listed with WGST 546. Repeatable for Credit. Not offered Fall and Spring URL: www.english.rice.edu.

ENGL 560 19TH CENTURY AMERICAN LITERATURE (3)

Topics vary from year to year as needed. Please consult the English department website for additional course information. URL: www.english.rice.edu.

ENGL 562 MODERN AMERICAN FICTION (3)

Topics vary from year to year as needed. Please consult the English department website for additional course information. URL: www.english.rice.edu.

ENGL 563 20TH CENTURY AMERICAN LITERATURE AND CULTURAL STUDIES (3)

Topics vary from year to year as needed. Please consult the English department website for additional course information. For Fall 2005, U.S. Race and Ethnicity Studies: Contemporary Debates. Repeatable for Credit. Offered Fall. URL: www.english.rice.edu.

ENGL 564 FAULKNER AND CONTEMPORARY THEORY (3)

We will read closely and discuss fully four or five of Faulkner's major novels in the context of a broad range of twentieth-century interpretive strategies. The class will consider issues of narrative form, social context, gender, race, and modern and postmodern aesthetics. Consult the English department website for additional information. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 570 AFRICAN AMERICAN STUDIES (3)

Topics vary from year to year as needed. Please consult the English department website for additional course information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 572 CHICANO/A STUDIES (3)

Topics vary from year to year. Please consult the English department website for additional course information. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 575 FILM AND THEORY (3)

Topics vary from year to year. Please consult the English department website for additional information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 578 LITERATURE AND THE ENVIRONMENT (3)

Topics vary from year to year as needed. Please consult the English department website for additional course information. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 581 CULTURAL STUDIES (3)

Topics vary from year to year as needed. Please consult the English department website for additional course information. Cross-listed with WGST 581. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 582 FEMINIST LITERARY THEORY (3)

Topics vary from year to year. Please consult the English department website for additional course information. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 583 FEMINIST ISSUES (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. Graduate/Undergraduate version: WGST 483. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 585 POSTCOLONIALISM AND AFTER (3)

Course serves both as an introduction to postcolonial theory and as a reevaluation of its political and ethical ends vis-a-vis recent debates around globalization and cosmopolitanism. For additional course information please consult the English dept website. Cross-listed with WGST 585. Offered Spring. URL: www.english.rice.edu.

ENGL 588 MEDIA STUDIES (3)

Topics vary from year to year but will likely address inter-disciplinary approaches to studying the relationships between film, photography, television, and digital technologies such as the internet and computer-generated imaging. Please consult the English dept website for additional course information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 589 FILM STUDIES (3)

Topics vary from year to year but will likely address advanced issues in film theory, history, and methodologies. Please consult the English dept website for additional course information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 591 STUDIES IN LITERATURE AND OTHER DISCIPLINES (3)

Topics vary from year to year as needed. Please consult the English department website for additional information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 592 STUDIES IN MODERNISM (3)

Repeatable for Credit. Not offered Fall and Spring.

ENGL 593 STUDIES IN MODERN LITERATURE (3)

Course content varies. Please consult the English dept website for additional course information. "Faulkner" for Fall 2005. Repeatable for Credit. Offered Fall. URL: www.english.rice.edu.

ENGL 594 STUDIES IN CONTEMPORARY LITERATURE AND CULTURE (3)

This course investigates contemporary trends in cultural theory, especially those that enable a comparative analysis of global transformations in language, literature, culture, and media. Not offered Fall and Spring.

ENGL 596 STUDIES IN MAJOR AMERICAN AUTHORS (3)

Topics vary from year to year as needed. Please consult the English department website for additional course information. Repeatable for Credit. Not offered Fall and Spring.

ENGL 597 ANGLOPHONE FICTION (3)

Topics vary from year to year. Please consult the English dept website for additional course information. Repeatable for Credit. Not offered Fall and Spring. URL: www.english.rice.edu.

ENGL 599 STUDIES IN LITERARY THEORY (3)

Topics vary from year to year. For Fall 2005 "Where We've Been" and for Spring 2006 "Pragmatism". Please consult the English dept website for additional course information. Repeatable for Credit. Offered Fall and Spring. URL: www.english.rice.edu.

ENGL 600 PROFESSIONAL METHODOLOGY (3)

Basic seminar for first year graduate students. An introduction to core concepts in English literary and cultural studies, significant critical and theoretical paradigms, disciplinary trends and various genres of academic writing. Please consult the English dept website for additional course information. Offered Fall. URL: www.english.rice.edu.

ENGL 601 FALL TEACHING PRACTICUM (3)

Open only to those graduate students serving as teaching assistants for courses in English or the humanities. Offered Fall.

ENGL 602 SPRING TEACHING PRACTICUM (3)

Open only to those graduate students serving as teaching assistants for courses in English or the humanities. Repeatable for Credit. Offered Spring.

ENGL 603 FALL TEACHING OF LITERATURE AND COMPOSITION (3)

Open only to graduate students teaching courses in the fall semester. Offered Fall.

ENGL 604 SPRING TEACHING OF LITERATURE AND COMPOSITION (3)

Open only to those graduate students teaching courses in the spring semester. Offered Spring.

ENGL 605 THIRD-YEAR WRITING WORKSHOP (3)

Open to third-year students. Designed to help transform seminar papers into works of publishable quality. Offered Fall.

ENGL 621 FALL DIRECTED READING (3)

Repeatable for Credit. Offered Fall.

ENGL 622 SPRING DIRECTED READING (3)

Continuation of ENGL 621. Repeatable for Credit. Offered Spring.

ENGL 703 FALL RESEARCH LEADING TO CANDIDACY (1 TO 9)

Repeatable for Credit. Offered Fall.

ENGL 704 SPRING RESEARCH LEADING TO CANDIDACY (1 TO 15)

Repeatable for Credit. Offered Spring.

ENGL 800 PHD RESEARCH AND THESIS (1 TO 9)

To be taken after a student has been admitted to candidacy. Repeatable for Credit. Offered Fall and Spring.

ENST (ENVIRONMENT STUDIES)**No College Designated/Environment Studies****ENST 101 THE SUSTAINABLE ENVIRONMENT (3)**

This course is intended as an introduction to environmental studies and the concept of a sustainable environment for students from all divisions of the campus. The course will focus on the scientific basis for our current environmental situation, on social and cultural attitudes and values relating to the environment as represented in literature, history, and public policy, and on the constant interaction among these various approaches. Cross-listed with UNIV 111. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Isle.

ENST 113 ENVIRONMENTAL CRISIS SEMINAR (1)

Water - one of the most basic and important components of the environment. But how is the water cycle changing and what are the current issues? In this semester's course we will discuss water from an interdisciplinary perspective, from reservoirs, and flow, through life and uses, to pollution and rights. Cross-listed with BIOS 113, ESCI 113. Offered Fall. Instructor(s): Dickens; Dugan; Masiello.

ENST 301 INTRODUCTION TO THE ENVIRONMENT: ENVIRONMENTAL HISTORY AND ENVIRONMENTAL LITERATURE (3)

This course is intended as an introduction to environmental studies from all divisions of the campus. The course focuses on attitudes and values relating to the environment as represented in environmental history and environmental literature. Not offered Fall and Spring. Instructor(s): Isle.

ENST 302 ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE (3)

This course addresses science, technology, and policy elements of environmental issues. Students use the campus and local community as a laboratory in which to do projects to reduce environmental impacts, enhance sustainability, or resolve environmental problems. Offered Spring. Instructor(s): Harcombe.

ENST 312 ENVIRONMENTAL BATTLES IN THE 21ST CENTURY: HOUSTON AS MICROCOSM (3)

This course will examine Houston (and neighboring areas) as a vivid case study in a broad array of environmental issues that engage policymakers, business leaders, scientists and other researchers, environmentalists, and citizens, not just in Houston but also across the United States and in other nations. There would be a particularly strong focus on air pollution, given Houston's well-known air quality problems and the especially complicated challenges they present. As with other topics covered in the course, air quality would be addressed in a multi-faceted manner, with discussion of its scientific, political, economic, sociological and historical dimensions. Not offered Fall and Spring. Instructor(s): Dawson.

ENST 400 INDEPENDENT STUDY (3 TO 9)

Instructor permission required. Offered Fall and Spring.

ESCI (EARTH SCIENCE)**School of Natural Sciences/Earth Science****ESCI 101 THE EARTH (3)**

Study of the nature of the Earth and its processes. Course equivalency: ESCI 108. Recommended co-requisite(s): ESCI 105. Offered Fall and Spring. Instructor(s): Lenardic; Gordon; Morgan; Luttgge.

ESCI 102 EVOLUTION OF THE EARTH (3)

History of the Earth including evolution of life, continents, ocean basins, and climate over the past 4.6 billion years. Recommended co-requisite(s): ESCI 105. Offered Fall and Spring. Instructor(s): Dugan; Masiello.

ESCI 103 FIELD TRIPS FOR THE EARTH (1)

Three evening lectures of two hours each; one weekend long field trip. Offered Spring. Instructor(s): Droxler.

ESCI 105 INTRODUCTORY LABORATORY FOR EARTH SCIENCE (1)

Exercises on rocks, minerals, stratigraphy, paleontology, mapping and plate tectonics. This lab is recommended before taking advanced courses in Earth science. Recommended co-requisite(s): ESCI 101, 102, or 108. Offered Fall and Spring

ESCI 107 OCEANS AND GLOBAL CHANGE (3)

Overview of the impact of the ocean and ocean evolution on the Earth's climate. Includes geological, physical, chemical, and biological aspects of change. Offered Fall. Instructor(s): Droxler.

ESCI 108 CRISES OF THE EARTH (3)

How geological and environmental crises have affected Earth throughout history. Includes meteorite impacts, global extinctions, volcanic eruptions, earthquakes, tsunamis effect of humans on the environment, as well as an overview of historical perspectives, scientific background, and development of these processes, the development of predictive scenarios, and society's adaptations to such hazards. Course equivalency: ESCI 101. Recommended co-requisite(s): ESCI 105. Instructor(s): Sawyer.

ESCI 109 OCEANOGRAPHY (3)

Introduction to the oceans, with an emphasis on how the physics, chemistry, geology, and biology of the oceans are linked. Offered Spring. Instructor(s): Dickens.

ESCI 110 ENERGY, THE ENVIRONMENT, AND SOCIETY (3)

Undergraduate seminar on current issues in energy used by industrial society, energy resources and their impact on the environment. Offered on demand. Instructor(s): Levander.

ESCI 113 ENVIRONMENTAL CRISIS SEMINAR: WATER (1)

Water is one of the most basic and important components of the environment. But how is the water cycle changing and what are the current issues? We will discuss water from an interdisciplinary perspective, from reservoirs and flow, through life and uses, to pollution and rights. Cross-listed with BIOS 113, ENST 113. Offered Fall. Instructor(s): Dickens.

ESCI 203 INTRODUCTION TO BIOGEOCHEMISTRY (3)

The interaction between (micro) organisms, minerals, rocks, and aqueous solutions is an important new field of research that requires an interdisciplinary approach between (micro) biology, organic chemistry, and geochemistry. The course provides an introduction and insight into this exciting new field and puts an emphasis on quantitative strategies. Offered on demand or every other Spring. Instructor(s): Luttge.

ESCI 210 PAST AND FUTURE EARTH'S CLIMATE VARIATIONS (3)

Our understanding of past Earth's climate variations at time scales ranging from millions years to decades helps climate predictions for the next decades and centuries. The course is designed for undergraduate students with broad interests in learning about the Earth's modern and past climate, and the impact of mankind on future climate changes.

ESCI 214 THE PLANETS (3)

The physical, chemical, and geological development of the solar system from 4.6 billion years ago until today. All planets, their major satellites, comets, and asteroids will be discussed. Offered Spring. Instructor(s): Lenardic; McGovern.

ESCI 321 EARTH SYSTEM EVOLUTION AND CYCLES (4)

This course introduces the systems and processes that shape Earth's surface including weathering, sediment transport ocean and atmosphere circulation, accumulation of sedimentary material, and organisms, including man. A particular emphasis is placed on how biogeochemical cycles and key interactions link and change systems and processes over space and time. Recommended prerequisite(s): MATH 101, 102, PHYS 101 or 111, CHEM 121 or 151. Limited enrollment. Instructor(s): Anderson; Dickens.

ESCI 322 EARTH CHEMISTRY AND MATERIALS (4)

This course introduces rock-forming processes related to the chemical and physical differentiation of the solid Earth into its main reservoirs: continental crust, oceanic crust, mantle, and core. Beginning with the bulk Earth and an overview of the chemical and petrologic properties of the rocks that make up each of these reservoirs. The basic principles of igneous, metamorphic and sedimentary petrology will be presented in the context of the rock cycle, plate tectonics, as well as the origin of economically and societally important ore deposits. A laboratory and field trip, where students will see petrologic principles applied, will be required. Recommended prerequisite(s): MATH 101 and 102, CHEM 121 or 151. Instructor(s): Lee.

ESCI 323 EARTH STRUCTURE AND DEFORMATION (4)

Introduction to the mechanics and deformation of the Earth's crust and lithosphere, emphasizing rock strength and rheology, earthquakes and faulting, brittle, and ductile deformation mechanisms and processes, and an introduction to tectonic systems. Lab will develop skills for recognition, interpretation, and analysis of deformation structures and processes on maps, cross-sections and seismograms. Course equivalency: ESCI 333. Pre-requisite(s): MATH 101 and MATH 102 and (PHYS 101 or PHYS 111). Offered Fall. Instructor(s): Ave Lallemand; Morgan; Gordon.

ESCI 324 EARTH'S INTERIOR (4)

Formation of Earth and solar system, Earth differentiation and geochronology. Structural seismology and the composition of Earth's interior. Density, Earth's gravity, and the geoid. Heat flow and Earth energetics. Earth's core and magnetic field. Mantle convection and plate tectonics. Oceanic and continental crust. Pre-requisite(s): MATH 101 and MATH 102 and (PHYS 101 or PHYS 111) and (PHYS 102 or PHYS 112). Offered Spring. Instructor(s): Niu; Sawyer.

ESCI 333 EARTH STRUCTURE AND DEFORMATION WITHOUT LAB (3)

Same as ESCI 323 without a lab. Course equivalency: ESCI 323. May not be enrolled in any of the following Major(s): Earth Science. Pre-requisite(s): MATH 101 and (PHYS 101 or PHYS 111). Instructor(s): Ave Lallemand; Morgan; Gordon.

ESCI 334 GEOLOGICAL AND GEOPHYSICAL TECHNIQUES (3)

An introduction to basic methods of description, recording, and interpretation of geologic and geophysical features in the field, including rock and outcrop description, map and cross-section construction, and data acquisition and analysis. A required seven day field excursion will take place during Spring Break. Recommended prerequisite(s): ESCI 322 and 323. Offered Spring.

ESCI 403 SEMINAR: FACULTY RESEARCH (1)

Introduction to current research in Earth science. Each faculty member in the department participates by describing his or her research and some of the techniques involved. Offered Fall.

ESCI 404 SEMINAR: GRADUATE RESEARCH (1)

Seminar: Graduate students present thesis research. Repeatable for Credit. Offered Spring.

ESCI 405 SEMINAR: CURRENT RESEARCH IN EARTH SCIENCE (1)

A series of lectures on current research in various areas of Earth science. Repeatable for Credit. Offered Spring.

ESCI 412 ADVANCED PETROLOGY (4)

Evaluation of the evolution of igneous rocks in the Earth's crust and mantle. Topics will include phase equilibria, experimental studies, and geochemistry. Labs will stress thin section petrography. Pre-requisite(s): ESCI 322. Repeatable for Credit. Offered Spring. Instructor(s): Lee.

ESCI 415 ECONOMIC GEOLOGY-PETROLEUM (3)

A study of the geology of petroleum: origin, migration, and accumulation will be studied. Government regulation and industry economics will be examined. Offered Fall. Instructor(s): Riese.

ESCI 416 ECONOMIC GEOLOGY MINERAL DEPOSITS (3)

An overview of metallic and nonmetallic mineral deposits, theories of their origin, and classification. The impact of government regulation, economics, production practices, and exploration will be considered. Offered Spring. Instructor(s): Riese.

ESCI 417 PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT (3)

Topics covered include resource size determination; geologic risk analysis; establishing minimum economic thresholds; economic chance factors; the concepts of present worth, investment efficiency, rates of return. Price forecasting, cost inflation are discussed. Recommended prerequisite(s): ESCI 415. Offered Spring.

Instructor(s): Riese.

ESCI 420 MODERN EXPLORATION TECHNOLOGY (3)

Modern exploration techniques using geology, geophysics, and information technology methods comprise this dynamic course. As new techniques emerge, the course will change to insure that the course material mirrors the exploration industry. Pre-requisite(s): ESCI 442. Corequisite(s): ESCI 444. Offered Spring. Instructor(s): Danbom.

ESCI 421 PALEOCEANOGRAPHY (3)

The evolution of the ocean, climate and the global carbon cycle over the last 100 million years as recorded by the biology, chemistry and composition of deep-sea sediment. Pre-requisite(s): ESCI 321. Recommended prerequisite(s): ESCI 109. Offered alternate years. Instructor(s): Dickens; Droxler.

ESCI 423 ANTARCTIC MARINE GEOLOGY (3)

The study of marine geologic principles and processes using examples from the Southern Oceans. Recommended prerequisite(s): ESCI 321, 323. Instructor(s): Anderson.

ESCI 424 EARTH SCIENCE AND THE ENVIRONMENT (3)

Interrelations between humans and the geologic environment. This course explores theories and problems of chemical hazards in the environment; topics, e.g., groundwater pollution, soils, CO₂ - sequestration, waste deposits. Instructor(s): Luttge.

ESCI 425 ORGANIC GEOCHEMISTRY (3)

This course covers the organic chemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-listed with CHEM 425. Offered Spring. Instructor(s): Masiello.

ESCI 427 SEQUENCE STRATIGRAPHY (3)

This course will introduce students to the concepts of sequence stratigraphy and the power behind this correlation technique. The course is divided between clastic sequence stratigraphy using cores, well-logs, and outcrop examples and seismic sequence stratigraphy. Instructor(s): Abreu.

ESCI 428 GEOLOGIC INTERPRETATION OF REFLECTION PROFILES (4)

Practical application of the reflection seismic method used in the tectonic analysis of deformed belts and sedimentary basins. The course material includes case studies from around the world, with emphasis on the integration of seismic reflection data with other surface and subsurface geological/geophysical information in a regional context. Instructor(s): Tari.

ESCI 430 TRACE-ELEMENT AND ISOTOPE GEOCHEMISTRY FOR EARTH AND ENVIRONMENTAL SCIENCE (3)

Introduction to the principles of trace-element and isotope geochemistry and their applications to high and low temperature processes in the earth. Topics to be covered are trace-element partitioning, basic quantum physics, radiogenic isotopic systems and stable isotope fractionation. Recommended prerequisite(s): ESCI 322. Offered Fall. Instructor(s): Dickens; Lee.

ESCI 432 MARINE GEOLOGY SYSTEMS (3)

This course examines areas of the seafloor recently targeted by large-scale science projects, such as the ocean drilling program. The purpose is to understand current ocean geoscience problems, the research being conducted to address these problems, and preliminary results. Instructor(s): Dickens.

ESCI 434 PRINCIPLES AND PRACTICES OF INDUCTIVELY-COUPLED PLASMA MASS SPECTROMETRY (2 TO 4)

This course is designed to introduce students to the principles and practices of inductively-coupled plasma mass spectrometry. Emphasis will be placed on geologic applications. Basic concepts of mass spectrometry, data reduction, data analysis, sample preparation, and data presentation will be discussed. Students taking the course for full credit (4) will be expected to develop a small experiment. Recommended prerequisite(s): ESCI 322, ESCI 430. Instructor(s): Lee.

ESCI 440 GEOPHYSICAL DATA ANALYSIS: DIGITAL SIGNAL PROCESSING (3)

Data sampling, aliasing, discrete Fourier transform, digital filter design techniques, z-transform, and discrete Hilbert transform are introduced. Deconvolution, velocity filters, polarization filter, stacking, beam forming and migration techniques will be taught together with their application in geophysical studies. Pre-requisite(s): MATH 101 and MATH 102. URL: terra.rice.edu/department/faculty/niu/ESCI440. Instructor(s): Niu.

ESCI 441 GEOPHYSICAL DATA ANALYSIS: INVERSE THEORY (3)

Review of linear algebra and probability. Data fitting, model parameter estimation, inverse theory, linear and nonlinear methods, and global optimization. Pre-requisite(s): MATH 211. Offered Spring. Instructor(s): Zelt.

ESCI 442 EXPLORATION GEOPHYSICS I (4)

Study of the principles and procedures involved in geophysical exploration. Includes acquisition, processing, and interpretation of gravity, magnetic, and seismic data. Pre-requisite(s): MATH 101 and MATH 102 and (PHYS 101 or PHYS 111) and (PHYS 102 or PHYS 112). Offered Fall. Instructor(s): Zelt; Sawyer.

ESCI 444 EXPLORATION GEOPHYSICS II (3)

Experience with processing reflection seismic data. Includes seismic data organization, velocity analysis, stacking, filtering, deconvolution, migration, and display, using the Center for Computational Geophysics facility's ProMax seismic processing system. Pre-requisite(s): ESCI 442. Offered Spring. Instructor(s): Danbom.

ESCI 450 REMOTE SENSING (3)

Introduction to electromagnetic remote sensing of the earth and other planets using passive and active methods. The course includes a computer lab component involving processing and interpretation of remote sensing imagery, and an individual project. Offered Spring. Instructor(s): Sawyer.

ESCI 451 ANALYSIS OF ENVIRONMENTAL DATA (1)

Introduction to data display, statistical methods, system simulation, and geostatistics for environmental scientists. The course will emphasize the application of these techniques to real and simulated environmental problems. The lab will involve extensive computer use and the completion of a major individual project on a topic selected by the student. Offered Spring. Instructor(s): Jones.

ESCI 454 GEOGRAPHIC INFORMATION SCIENCE (3)

Introduction to geographic information systems (GIS) technology, mapping sciences, and spatial analysis. The course will include extensive computer use and the completion of a major individual project on a topic selected by the student. Offered Fall. Instructor(s): Sawyer.

ESCI 458 THERMODYNAMICS/KINETICS FOR EARTH SCIENTISTS (3)

Thermodynamics and kinetics for the special needs of Earth scientists covering the basic concepts with respect to geochemical applications, e.g., equilibrium - nonequilibrium concepts, steady state, delta G dependence of reactions, rate models, etc. Instructor(s): Lutge.

ESCI 460 GEOLOGICAL AND GEOPHYSICAL FLUID DYNAMICS (3)

Advanced course in the foundations of fluid mechanics and its application to earth science. Aspects of continuum mechanics, heat and mass transfer, and the rheologic behavior of materials will be covered in developing the fundamental laws that describe fluid motion. Applications include atmospheric dynamics, mantle and lithospheric dynamics, and hydrogeology. Pre-requisite(s): MATH 211 and MATH 212. Instructor(s): Lenardic.

ESCI 461 SEISMOLOGY I (3)

Principles of elastic wave propagation, the determination of Earth structure, and the understanding of earthquake physics. Cross-listed with CAAM 441. Pre-requisite(s): ESCI 442. Offered Fall. Instructor(s): Nui; Zelt.

ESCI 462 TECTONOPHYSICS (3)

Applications of continuum physics to the deformation, flexure, heat transfer, and gravity field of the lithosphere. Pre-requisite(s): (MATH 102 or MATH 112) and (PHYS 102 and PHYS 112 or PHYS 126). Recommended prerequisite(s): MATH 212. Instructor(s): Gordon.

ESCI 463 ADVANCED STRUCTURAL GEOLOGY I (4)

Mechanics and deformation of rocks in the brittle regime, i.e., within Earth's shallow crust, with emphasis on large and small scale deformation structures, their origins, and their tectonic settings. Pre-requisite(s): ESCI 323. Offered Spring. Instructor(s): Ave Lallemand; Morgan.

ESCI 464 GLOBAL TECTONICS (3)

Geometrical aspects of plate tectonics, the 3 traditional types of plate boundaries, instantaneous plate motions, earthquakes and faulting, space geodesy, geomagnetic reversals, paleomagnetic poles, hotspots, "absolute" plate motion, true polar wander, driving forces, diffuse plate boundaries, plate nonrigidity, and rheology of the lithosphere. Offered Fall. Instructor(s): Gordon.

ESCI 466 ADVANCED STRUCTURAL GEOLOGY II (4)

Mechanics and deformation of rocks in the ductile regime, i.e., within earth's deep crust, and upper mantle. Pre-requisite(s): ESCI 323. Offered Fall. Instructor(s): Ave Lallemand.

ESCI 467 GEOMECHANICS (3)

An examination of deformation and failure processes within the Earth's shallow crust, with a focus on rock and sediment mechanics, and associated fluid processes. Emphasis will be on geologic applications, including sediment consolidation, slope stability, fault mechanics, and earthquake nucleation and rupture. Offered Fall. Instructor(s): Morgan.

ESCI 468 CLIMATE CHANGE AND HUMAN CIVILIZATION (3)

The course examines Holocene paleo climatic records and their impact on past and present society. It explores the concept of social memory on how information about climate change influences long-term adaptive strategies of societies. Cross-listed with ANTH 468. Instructor(s): Droxler; McIntosh.

ESCI 470 QUANTITATIVE HYDROGEOLOGY (3)

This course investigates problems in hydrogeology by applying fluid mechanics to flow in porous media. Topics to be covered include regional groundwater flow, salt-water intrusion of aquifers, and containment hydrogeology. Instructor(s): Dugan.

ESCI 471 ISOTOPE GEOLOGY (3)

An introduction to the principles, interpretation and techniques of radiogenic isotope systems. The course will focus on geochronologic applications as well as the use of isotopes in the study of petrogenesis of igneous rocks. Pre-requisite(s): ESCI 322. Instructor(s): Lee.

ESCI 475 PLIO-PLEISTOCENE CLIMATE CHANGE AND HOMINID ADAPTATION (3)

Junctures in the evolution of the hominids appear to coincide with shifts in the Earth's climate record. We will explore the current status of our knowledge of global climate in the Plio-Pleistocene and of the hominid record from the end of the Miocene to the appearance of *H. sapiens*. Cross-listed with ANTH 475. Instructor(s): Droxler; McIntosh.

ESCI 481 UNDERGRADUATE RESEARCH IN EARTH SCIENCE (1 TO 6)

Advanced work adapted to the needs of the individual undergraduate student reading. Repeatable for Credit.

ESCI 491 SPECIAL STUDIES FOR UNDERGRADUATES (1 TO 6)

Work in Earth Science adapted to the needs of individual undergraduate research. Repeatable for Credit.

ESCI 501 SPECIAL STUDIES FOR GRADUATE STUDENTS (1 TO 15)

Advanced work in Earth science adapted to the needs of individual graduate students. Repeatable for Credit.

ESCI 504 SILICICLASTIC DEPOSITIONAL SYSTEMS (3)

Study of modern and ancient sedimentary environments with emphasis on field work. Depositional models examined in relation to climatic, oceanographic, and tectonic influences. Pre-requisite(s): ESCI 321. Offered Fall. Instructor(s): Anderson.

ESCI 505 APPLIED SEDIMENTOLOGY I (3)

Field investigation of sedimentary deposits of northwestern New Mexico to provide students in sedimentology with training in field methods, interpretation of sedimentary deposits, and facies mapping. Pre-requisite(s): ESCI 504. Repeatable for Credit. Instructor(s): Anderson.

ESCI 506 CARBONATE DEPOSITIONAL SYSTEMS (3)

Characterization of modern and ancient, shallow and deep sedimentary environments and facies. Includes examination of different depositional models in relation both to climate and to hydrographic and geographic settings, as well as three field trips. Pre-requisite(s): ESCI 321. Instructor(s): Droxler.

ESCI 507 APPLIED SEDIMENTOLOGY II (3)

Advanced field studies in sedimentary geology. This course is intended to provide graduate students with experience working in sedimentary rocks by working on projects of their own design. Pre-requisite(s): ESCI 505. Offered Fall. Instructor(s): Anderson.

ESCI 508 SEMINAR: GLOBAL SEISMOLOGY (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Niu.

ESCI 509 SEMINAR: DEPARTMENT TYPE-LOCALE FIELD TRIPS (3)

Seminar topics may vary. Repeatable for Credit.

ESCI 511 PUTTING EARTH SCIENCE INTO ACTION (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Henning.

ESCI 512 SEMINAR: CARIBBEAN (1)

Seminar topics may vary. Repeatable for Credit.

ESCI 513 SEMINAR: SOIL SCIENCE AND SUSTAINABILITY (1)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Little.

ESCI 514 SEMINAR: TOPICS MARINE GEOPHYSICS (3)

Seminar topics may vary. Repeatable for Credit.

ESCI 516 SEMINAR: REEFS AND GLOBAL CHANGE: PAST, PRESENT, AND FUTURE. (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Droxler.

ESCI 517 SEMINAR: SPECIAL TOPICS IN HIGH TEMPERATURE GEOCHEMISTRY (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Lee.

ESCI 520 SEMINAR: SEISMOLOGY (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Levander.

ESCI 521 SEMINAR: TECTONICS OF CONTINENTAL MARGINS (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Sawyer.

ESCI 522 SEMINAR: ADVANCED TOPICS IN GEOFLUIDS, GEOTHERMICS, AND PLANETARY EVOLUTION (3)

Seminar topics may vary. Instructor(s): Lenardic.

ESCI 523 SEMINAR: SEISMIC MODELING AND INVERSE METHODS (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Zelt.

ESCI 524 SEMINAR: ADVANCED TOPICS IN EARTH STRUCTURE AND DEFORMATION (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Morgan.

ESCI 525 SEMINAR: VOLCANOTECTONICS (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Morgan.

ESCI 526 SEMINAR: DEVELOPMENTS IN STRUCTURAL GEOLOGY (2)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Ave Lallemand; Morgan.

ESCI 527 PRINCIPLES AND PRACTICES OF PETROLEUM GEOCHEMISTRY IN EXPLORATION AND EXPLOITATION (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Bissada.

ESCI 528 SEMINAR: ADVANCED TOPICS IN HYDROGEOLOGY (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Dugan.

ESCI 531 SEMINAR: ADVANCED GLOBAL TECTONICS (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Gordon.

ESCI 532 SEMINAR: TOPICS IN SEDIMENTOLOGY (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Anderson.

ESCI 533 SEMINAR: GLOBAL BIOGEOCHEMICAL CYCLES (3)

Seminar topics may vary. Repeatable for Credit. Limited enrollment. Instructor(s): Dickens.

ESCI 534 SEMINAR: REGIONAL GEOLOGY (3)

Seminar topics may vary. Repeatable for Credit. Instructor(s): Ave Lallemand.

ESCI 535 ADVANCED TOPICS IN GEOCHEMISTRY (3)

Seminar topics may vary. Instructor(s): Luttge.

ESCI 542 SEISMOLOGY II (3)

Review of elastodynamics. Calculation of synthetic seismograms using asymptotic and finite-difference methods. Wave propagation in layered and random media. Seismic migration and inversion using finite-difference. Kirchoff, and frequency-wavenumber methods. Graduate/Undergraduate version: CAAM 442. Offered alternate years. Instructor(s): Levander; Symes; Zelt.

ESCI 562 ADVANCED TOPICS IN GEOPHYSICS (3)**ESCI 800 THESIS RESEARCH (1 TO 15)**

Recommended prerequisite(s): Students must pass the preliminary exam before taking this course. Repeatable for Credit.

FREN (FRENCH STUDIES)**School of Humanities/Center for Study of Languages****FREN 101 ELEMENTARY FRENCH LANGUAGE AND CULTURE I (5)**

Introductory French. Concentration on all four language skills. Supplemented by work in the Language Resource Center. Limited enrollment.

FREN 102 ELEMENTARY FRENCH LANGUAGE AND CULTURE II (5)

Continuation of FREN 101. Pre-requisite(s): FREN 101, or placement test, or permission of instructor. Limited enrollment.

FREN 127 IN THE MATRIX: ON HUMAN BONDAGE AND LIBERATION (3)

Using the film "The Matrix" as a point of reference, this course presents celebrated explorations of servitude and emancipation -- from religious mysticism to Marxism and artistic modernism. Texts by Lao Tzu, Farid ud-Din Attar, Plato, Freud, Marx, Baudelaire, J.S. Mill, Proust, de Beauvoir, Malcolm X, Marcuse, Baudrillard. Course taught in English. Cross-listed with FSEM 127. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wood.

FREN 131 NO HAPPY ENDINGS: TRAGEDY IN LITERATURE AND FILM (3)

Tragedy stages the sufferings and fall of a hero. It excites pity and fear. Why, then, do we take pleasure in tragedy? This course explores the importance of tragedy in Western culture through a reading of plays by Sophocles, Shakespeare, Racine, and Ibsen. Films include works by Robinson and Schlöndorff. Cross-listed with CLAS 131, FSEM 131. Must be in one of the following Classification(s): Freshman. Offered Fall. Instructor(s): Shea.

FREN 201 INTERMEDIATE FRENCH LANGUAGE AND CULTURE I (4)

Communication based course. Focuses on the functional use of the language through linguistic, sociocultural and situational contexts. Develops all four language skills (listening, speaking, reading, writing). Pre-requisite(s): FREN 102, or placement test, or permission of instructor.

FREN 202 INTERMEDIATE FRENCH LANGUAGE AND CULTURE II (4)

Continuation of FREN 201. Pre-requisite(s): FREN 201, or placement test, or permission of instructor.

FREN 221 PROBLEMS IN CONTEMPORARY FRENCH SOCIETY (3)

This course aims to give students an understanding of French Civilization through exploration of the social, cultural, and political issues that define France today. Course taught in English. Not offered Fall and Spring.

FREN 301 ADVANCED FRENCH FOR WRITTEN AND ORAL COMMUNICATION (3)

Aimed at developing competence in oral and written expression, with the special emphasis on stylistic variations, lexical nuances, and complex grammatical structures. Drawing on literary and journalistic sources, students will practice different styles of writing. Besides working on an individual project, students will create a collaborative story of their own invention. Offered Fall.

FREN 311 MAJOR LITERARY WORKS AND ARTIFACTS OF PRE-REVOLUTIONARY FRANCE (3)

Study of French culture, literature, and artifacts from the Middle Ages until the Revolution. Course conducted entirely in French. Pre-requisite(s): FREN 202, or placement test, or permission of instructor. Offered Spring. Instructor(s): Shea.

FREN 312 MAJOR LITERARY WORKS AND ARTIFACTS OF POST-REVOLUTIONARY FRANCE: THE ROMANTIC LEGACY (3)

Fall Semester: French literature and cinema—from romanticism to postmodernity. The rise of capitalism, imperialism, globalization; romantic love and artistic ecstasy as attempts to deal with the “death of God”; can we distinguish “great works” from mere entertainment or “cultural constructions?” Spring Semester: Study of 19th- and 20th-century fiction through the special lens of Romantic imagination. Readings from Chateaubriand, Desbordes-Valmore, Claire de Duras, Musset, Hugo, Baudelaire, Flaubert, Proust, Prevert, and the new novelists. Emphasis on discussion and close textual analysis, all in French. Pre-requisite(s): FREN 202, or placement test, or permission of instructor. Offered Fall. Instructor(s): Wood; Harter.

FREN 318 STRUCTURE OF FRENCH (3)

The primary objective of this course is to present contemporary French as a dynamic linguistic system shaped by historical, cognitive and sociological developments. Beyond the specific consideration of French, this course is concerned with the historical, psychological, and sociological dimensions that enter into the description of any language. Cross-listed with LING 318. Pre-requisite(s): FREN 202, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Achard.

FREN 332 FRENCH PHONETICS(3)

Contrastive analysis of the French sound system including key areas as diction and articulation of French speech with emphasis on class as well as laboratory practice. Pre-requisite(s): FREN 202, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Achard.

FREN 336 WRITING WORKSHOP (3)

The course will focus on the practice of writing as a discursive discipline. It will also closely examine, from both a stylistic and rhetorical point of view, creative and critical prose by Barthes, Djébar, Sarraute, and others. Required of majors. Open to non-majors if space is available. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Offered Spring. Instructor(s): Shea.

FREN 340 EXOTICISM IN THE ENLIGHTENMENT (3)

This course will focus on French representations of the Orient and the Pacific in the eighteenth century. Readings include novels, travel journals and essays by Montesquieu, Rousseau, Diderot, and Bougainville, among others. We will conclude the course by turning to the nineteenth century and the paintings of Gauguin and Delacroix. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Offered Fall. Instructor(s): Shea.

FREN 350 CULTURE AND COMMUNICATION: PARIS (3)

Overview of the history of Paris both as a city and a capital and as a cultural, intellectual, and economic center through a study of texts, music, and films. Equal emphasis will be placed on language skills and content. Pre-requisite(s): FREN 202, or placement test, or permission of instructor. Offered Spring. Instructor(s): Nelson-Campbell.

FREN 351 CULTURE AND COMMUNICATION: PROVINCES OF FRANCE (3)

Overview of the amazing diversity in the history, languages, economic bases, traditions, and cultures of the original provinces in order to arrive at a better understanding of France as it exists today. Includes texts, music, and films. Equal emphasis will be placed on language skills and content. Pre-requisite(s): FREN 202, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Nelson-Campbell.

FREN 355 MODERN SHORT STORY: TOWARDS AN ETHICS OF FICTION (3)

Study of great works in American and European short fiction of the 19th centuries, with special attention to the ethical dimensions that this (and all) fiction articulates. Selected critical essays will complement readings from Melville, Flaubert, Mann, Maupassant, Gogol, Wilde, Chekhov, Gilman, Kafka, O'Connor, Carver, and Garcia-Marquez. Cross-listed with ENGL 355. Offered Fall. Instructor(s): Harter.

FREN 373 QUEBEC, P.Q., CANADA (3)

A group project, the class will attempt to define Quebec's unique status through student-selected topics such as immigration, plurilingualism, national sovereignty, cultural production, and the like. The course will cover literature and visual texts (fine arts, cinema) as well as historical and political ones, while simultaneously fostering advanced writing in French. Pre-requisite(s): FREN 202, or placement test, or permission of instructor. Recommended prerequisite(s): FREN 301 or 312. Not offered Fall and Spring. Instructor(s): Aresu.

FREN 387 IMAGES OF CONTEMPORARY FRANCE (3)

The course will deal with the sociopolitical and intellectual history of post-war France. We will cover the advent of the Fifth Republic, decolonization, May '68 and political dissent, modernization and the postmodern condition, and France and the construction of Europe. Texts by Borne, Edmiston, and Dumenil. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Goux.

FREN 401 TRANSLATION (3)

Exploration of the theory and practice of translation. Includes translation of modern texts from and into English. Recommended: AP credit or placement exam. Offered Fall. Instructor(s): Achard.

FREN 403 SPECIAL TOPICS (3)

Topics may vary. Please consult with the department for additional information. Repeatable for Credit. Not offered Fall and Spring.

FREN 407 FRENCH CINEMA: PARIS-HOLLYWOOD (3)

Introduction to French cinema. We will study the development of French cinema, with particular attention to the relationship between French film and Hollywood. Films include works by Renoir, Bresson, Cluzot, Truffaut, Godard, Tati, Varda, Kieslowski. Not offered Fall and Spring. Instructor(s): Shea.

FREN 415 COURTLY LOVE IN MEDIEVAL FRANCE (3)

Study of the Occitan and Old French poetry that served as the source of the kind of love that came to be called "Amour courtois" in the nineteenth century. Cross-listed with MDST 415. Graduate/Undergraduate version: FREN 515. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Nelson-Campbell.

FREN 416 LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR (3)

Examination of the origins of the legend of King Arthur and reasons for its popularity, particularly in literature of

the French Middle Ages but also in other medieval literatures of Western Europe. Includes discussion of the legend's influence in diverse areas even in modern times. Cross-listed with MDST 436. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Nelson-Campbell.

FREN 423 MODERN FRENCH PAINTERS AND THEIR WRITERS (3)

Fascinated by painting, modern and contemporary writers have produced significant literary commentaries that reveal affinities with painters whose artistic "questioning" they shared. In this course we will study some of the encounters between these painters and their writers. Among them: Picasso (commented by Apollinaire, Cocteau, Breton, Soller), Braque (commented by Ponge, Paulhan, Malraux, Saint John Perse), and others. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall & Spring. Instructor(s): Goux.

FREN 430 17TH CENTURY (3)

Thematic approach to examining the main political, religious, philosophical, and literary discourses of the golden age of absolutism. Pre-requisite(s): FREN 311, or placement test, or permission of instructor. Not offered Fall & Spring.

FREN 434 FRENCH FEMINIST THEORY (3)

The purpose of this course is to gain a broad understanding of the important problems of contemporary feminist theories in French. We will focus on the interrelated issues of gender, sexuality, race, ethics, language, and power by exploring in depth primary texts in feminist theory. Cross-listed with WGST 434. Not offered Fall & Spring.

FREN 450 TOPICS IN 19TH CENTURY LYRIC (3)

Study of the poetry and prose poetry of the 19th century from the Romantic period to the Symbolist era, through such writers as Desbordes-Valmore, Lamartine, Musset, Vigny, Hugo, Nerval, Baudelaire, Verlaine, Rimbaud, and Mallarme. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Harter.

FREN 453 IMMIGRATION AND CITIZENSHIP IN CONTEMPORARY FRANCE (3)

This course examines the impact of immigration on contemporary French society and analyzes debates over citizenship, integration, and multiculturalism. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall and Spring.

FREN 460 WOMEN AND WOMEN'S VOICES IN FRENCH LITERATURE (3)

Examination of the ways in which women have been represented in fiction, by themselves and by others, since the early modern period. Readings from Mme de Lafayette, Graffigny, Baudelaire, Sand, Villers de l'Isle-Adam, Beauvoir, Duras, and Wittig, with emphasis on the constitution of "the feminine" in literary texts as a cultural, historical, and social artifact. Cross-listed with WGST 412. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall and Spring. Instructor(s): Harter.

FREN 467 POSTMODERN BREAK IN FRENCH PHILOSOPHY (3)

A study of the questioning of philosophical modernity (starting with Descartes and the Enlightenment philosophers) by structuralist and poststructuralist thinkers and theorists of the postmodern condition. Among contemporary authors studied will be Lacan, Derrida, Foucault, Lyotard, and others. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Not offered Fall and Spring Instructor(s): Goux.

FREN 480 COCTEAU: FILMMAKER, NOVELIST, POET (3)

Poet, novelist, playwright, essayist, painter, Jean Cocteau (1889-1963) a protean creator, was also the first French writer to become a famous film-maker. During his career, J. Cocteau was close to most of the avant-garde movements of this time: Cubism, Dadaism, Surrealism. The goal of this course is to discover the various aspects of this multi-faceted work, where cinema and poetry meet under the sign of Orpheus. Pre-requisite(s): FREN 311 or FREN 312, or placement test. Limited enrollment. Offered Spring. Instructor(s): Goux.

FREN 490 UTOPIA AND THE FUTURE (3)

This course will explore utopia and how historical future is anticipated in French literature and philosophy; study of the most important utopists (from Cyrano de Berderac to Fourier and Dejacque): the rise of new expectations and fears in a more technical and globalized world (from Jules Verne to the present). Includes sociological, religious and philosophical interpretations of utopia and of the anticipation of the future. Pre-requisite(s): FREN 311 or FREN 312, or permission of instructor. Limited enrollment. Offered Fall. Instructor(s): Goux.

FREN 494 THE NOVEL IN FRENCH- 18TH CENTURY TO POST-COLONIALISM (3)

Form and themes of the novel as problematic engagements with the evolution of art, capitalism, the family and gender, the sacred, subjectivity and imperialism. Authors include: the Marquis de Sade, Balzac, Flaubert, Proust, Colette, Sartre, Robbe-Grillet, Cheikh Hamidou Kane, Camara Laye. Pre-requisite(s): FREN 311 or FREN 312. Offered Spring. Instructor(s): Wood.

FREN 500 THESIS RESEARCH (M.A.) (1 TO 15)

Repeatable for Credit. Not offered Fall and Spring.

FREN 503 SPECIAL TOPICS (3)

Topics may vary. Please consult department for additional information. Repeatable for Credit. Offered Fall. URL: www.ruf.rice.edu/~fren/faculty/aresu/index.htm. Instructor(s): Aresu.

FREN 504 BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE (3)

This course includes an external history of the French language, an examination of hagiographic literature and the chanson de geste in their cultural and artistic contexts, as well as a bibliographic component to acquaint the students with library tools available for research emphasizing medieval resources, but not excluding those for later periods. Students will acquire a reading knowledge of Old French. Offered Fall. Instructor(s): Nelson-Campbell.

FREN 510 THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN (3)

Comparison and contrast of the presentation of the medieval woman in literature with extant evidence of historical women from contemporary documents and records. Graduate/Undergraduate version: MDST 411. Not offered Fall and Spring. Instructor(s): Nelson-Campbell.

FREN 515 COURTLY LOVE IN MEDIEVAL FRANCE (3)

Study of the Occitan and Old French poetry that served as the source of the kind of love that came to be called "Amour courtois" in the nineteenth century. Cross-listed with MDST 515. Graduate/Undergraduate version: FREN 415. Not offered Fall and Spring. Instructor(s): Nelson-Campbell.

FREN 540 WHY SADE? (3)

Why read Sade today? Has the myth of the divine Marquis run its course? Readings by Sade, Diderot, Rousseau, Laclos, Bataille, Blanchot, Klossowski, and Beauvoir. Films include Quills, Marat/Sade and L'Age d'or. Not offered Fall and Spring. Instructor(s): Shea.

FREN 541 FRENCH ENLIGHTENMENTS (3)

What is Enlightenment? Does it define a period, an idea, a group of writers? Was there one Enlightenment or many? What is specific to the French Enlightenment? Readings include key eighteenth-century texts and major attempts to define Enlightenment (Casirer, Gay, Habermas, Roche, Gordon). Not offered Fall and Spring. Instructor(s): Shea.

FREN 549 NATIONAL IDENTITY AND PUBLIC MEMORY IN FRENCH SOCIETY (3)

This course identifies events, symbols, and shared experiences which constitute collective French memory and examines how public memory has shaped national identity in contemporary France. Not offered Fall and Spring.

FREN 555 FROM NOSTALGIA TO HYSTERIA: BALZAC, STENDHAL, FLAUBERT, ZOLA (3)

Study of 19th-century fiction through its discourses of displacement: its depiction of nostalgia and of "homelessness" in the first half of the century and of the crowd, the flaneur, and hysteria in the second. Readings in lyric, short fiction, the novel, and in critical theory. Offered Spring. Instructor(s): Harter.

FREN 561 MODERN FRENCH SEXUALITIES (3)

This course will explore the representation of sexuality in French novels and films from the early 20th century to the present. Primary readings will be supplemented by medical, philosophical, juridical, and psychoanalytic contributions to debates about sexuality in the modern period. Not offered Fall and Spring.

FREN 564 LITERATURE, ART AND PSYCHOANALYSIS (3)

Study of selected works in literature and art through the lens of psychoanalysis, and of psychoanalysis through the lens of literary and visual art. Not offered Fall and Spring. Instructor(s): Harter.

FREN 565 SURREALIST AND AVANT-GARDE NARRATIVES (3)

The avant-garde and the logic of capitalism. The post-romantic precursors and the rise of a sacred and transgressive Art (Baudelaire, Mallarme, Rimbaud, Lautreamont, de Nerval). Ecstasy beyond the constructed subject: Breton, Artaud, Bataille, Aragon. Not offered Fall and Spring. Instructor(s): Wood.

FREN 566 THE NARRATIVES AND THE OTHER ARTS (3)

The seminar will focus on the aesthetic and ideological interplay between literature and the other arts. Figures and topics will include: neoclassical poetry and painting; Segalen, and Gauguin's Tahiti; Baudelaire's art criticism; Delacroix, Chass-riau, Fromentin, Djébar, and French Orientalism; Cocteau, or the poet as film-maker, Simon and the Baroque; Robbe-Grillet, Duras, and the cinema; Ben Jelloun and Giacometti. Not offered Fall and Spring. Instructor(s): Aresu.

FREN 567 THE POSTMODERN BREAK IN FRENCH PHILOSOPHY (3)

Study of the questioning of philosophical modernity (starting with Descartes and the Enlightenment philosophers) by structuralist and poststructuralist thinkers and theorists of the postmodern condition and the post-history conjecture. Emphasis on the conflict between humanism and anti-humanism, including in its theological and aesthetical ramifications: Foucault, Lyotard, Levinas, Castoriadis, and others. Offered Fall. Instructor(s): Goux.

FREN 568 FRENCH PHILOSOPHY (3)

Survey of moral philosophy from Descartes to today, exploring the relationship between the individual and society, the problem of freedom and values, questions of universality, humanism, the important moments of the constitution and deconstitution of the subject. Includes philosophy of Descartes, Rousseau, Condorcet, Comte, Guyau, Durkheim, Fouillee, Bergson, Sartre, Foucault, and others. Not offered Fall and Spring. Instructor(s): Goux.

FREN 570 VERSIONS OF OEDIPUS (3)

Through the myth, the tragedies, the complex, the Greek figure of king Oedipus has haunted our literary imagination, troubled our philosophical thought, and nourished our psychoanalytical investigation. This seminar explores this well-known figure in French modern playwrights who revisited this tragic character, as well as in the various philosophical and theoretical interpretations of the myth and its ramifications. Not offered Fall & Spring. Instructor(s): Goux.

FREN 571 FRENCH PHILOSOPHERS AND IMAGES (3)

Cinema, psychoanalysis, modern painting opened a new way of looking at images. This seminar, based on references to Bergson, Sartre, Merleau-Ponty, Foucault, Barthes, Lyotard, Derrida, Deleuze, Castoriadis, Dagognet, etc... will explore the philosophical and aesthetical problems related to the role and power of images and to the relationships between the visual and the textual, including through paintings and films. Limited enrollment. Offered Spring. Instructor(s): Goux.

FREN 572 PROUST (3)

Extensive close textual readings and broad-ranging meditations on the meaning of "A la recherche du temps perdu" in terms of the history of artistic modernism and social modernity. Taught alternately in French and English. Not offered Fall and Spring. Instructor(s): Wood.

FREN 574 ESTHETICS AND POLITICS OF FRANCOPHONE (3)

The seminar focuses on various expressions of "francophone" as a both legitimated and contested construct of cultural and political identity. Encompassing a plurality of geo-cultural areas, topics range from "Legitime defense" to negritude, postcolonialism, antilleanity, creoleness, quebecitude, and transnationalism. Not offered Fall and Spring. Instructor(s): Aresu.

FREN 578 CONTEMPORARY FRENCH THOUGHT: TOWARD A SYMBOLIC ECONOMY (3)

Exploration of the idea of a "symbolic economy" that transforms notions of production, exchange, and consumption in anthropology, semiotics, psychoanalysis, and literature. Includes Mauss and Levi-Strauss (on "exchange of goods, words, and women"), later developments of Bataille, Lacan, Baudrillard, Irigaray, and the theory and practice of "economic criticism" (e.g., Balzac, Zola, Gide). Not offered Fall and Spring. Instructor(s): Goux.

FREN 579 MARX, BATAILLE, BAUDRILLARD, POSTMODERNITY (3)
 Taught in English. Exploration of the shift from a Marxist political economy of class struggle, through Bataille's "general economy" (economic activity as a "cosmic phenomenon") to Baudrillard's "indetermination of the code" and "simulation" in postmodernity. Texts by Marx, Mauss, Bataille, Athusser, Ernest Mandel, and Baudrillard. Not offered Fall and Spring. Instructor(s): Wood.

FREN 582 DISCOURSES OF DISSIDENCE (3)
 The seminar reflects on the concept of dissidence—a political, but esthetic and epistemological one as well, through several literary and artistic figures, as well as genres and periods, from Francois Villon to the present (Montaigne, La Rochefoucauld, Rousseau, de Gouges, Rimbaud, Gauguin, Breton, Genet, Magritte, Ducharme, Godard, Jelloun, Arcand). Not offered Fall and Spring. Instructor(s): Aresu.

FREN 584 AESTHETIC THEORIES OF MODERNISM AND POSTMODERNISM (3)
 Exploration of such artistic and literary movements as Cubism, Dada, Surrealism, "Refus Global," "Lettrisme," "Situationnisme," "Oulipo," "Tel Quel," and "Les Perpendiculaires." How does one define the "avant-gardes?" Not offered Fall and Spring. Instructor(s): Goux.

FREN 585 NOVEL FROM BELLE EPOQUE TO 1950 (3)
 Survey of the evolution of the novel and the vicissitudes of the modern subject and identity. Includes Proust, Gide, Malraux, Drieu la Rochelle, de Beauvoir, Sartre, Genet, Camus, and Sarraute. Not offered Fall and Spring. Instructor(s): Wood.

FREN 587 20TH CENTURY NOVEL IN FRENCH (3)
 This course will explore the construction of the modern self in a variety of French and Francophone novels of the twentieth century. Topics include relationship between the self and narrative form; the role of memory; violence and representation; and the construction of gender, sexuality, nationality and race. Not offered Fall and Spring. Instructor(s): Huffer.

FREN 588 CONSCIOUSNESS, CONSTRUCTIONISM, THE SUBJECT AND THE SOUL (3)
 Taught in English. Is the subject a "construction"? Is consciousness a neurological event? Philosophy, religion and aesthetics in the face of cultural critique, cognitive science and poststructuralism. (Mostly) short readings from Parmenides, Plato, Aristotle, Descartes, Hume, Kant, Nietzsche, Husserl, Heidegger, Sartre, Bataille, Lacan, Foucault, Derrida, cognitive science, philosophy of mind. Limited enrollment. Offered Spring. Instructor(s): Wood.

FREN 600 INDEPENDENT STUDY (1 TO 15)
 Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

FREN 700 SUMMER GRADUATE RESEARCH (1 TO 12)
 Repeatable for Credit.

FREN 800 THESIS RESEARCH PH.D. (1 TO 15)
 Repeatable for Credit. Offered Fall and Spring.

FSEM (FRESHMAN SEMINAR)

School of Humanities/Humanities Division

FSEM 101 FRESHMAN SEMINAR: SOCRATES: THE MAN AND HIS PHILOSOPHY (3)
 This discussion-style seminar will consider how Socrates practiced philosophy, how Plato represented Socrates and Socratic philosophy in writing, and what effect Socrates had on Athens and his fellow Athenians. Readings will consist mainly of Plato's Socratic dialogues, with emphasis on the Apology and Gorgias. In addition to papers, each participant will make one presentation and lead one discussion. Cross-listed with CLAS 101. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Yunis.

FSEM 105 LANGUAGE, GENDER AND SEXUALITY (3)
 This course examines the role that gender, biological sex, and sexuality play in the language varieties that people use. We will see that although all cultures have specified gender roles, and all cultures mark gender through language varieties, those differences are not, I promise, what you think they are. Cross-listed with WGST 105, LING 105. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): Niedzielski.

FSEM 110 LITERATURE AND DEMOCRACY (3)
 Course examines how writers respond to the developments and problems of democratic societies. Topics include: civil disobedience and just dissent; the civil war and the extension of the franchise; cruel and unusual punishment exercised by governments; and the relationship between privacy and individuality. Requirements: two essays and one class presentation. Cross-listed with HUMA 110. Must be in one of the following Classification(s): Freshman. Limited enrollment. Instructor(s): Wihl.

FSEM 111 MUSICAL LIVES (3)

Musical biography tends to follow stereotypical patterns that depict composers as heroes who rebel against authority and live on the margins of society. This seminar will focus on the life stories and music of selected 18th and 19th century composers. No musical background necessary. Cross-listed with MUSI 111. Instructor(s): Ferris.

FSEM 121 FROM KAFKA TO THE HOLOCAUST: DISCOURSE IN ALIENATION (3)

The beginnings of modernity have to be seen in the context of the sociopolitical and intellectual upheavals at the end of the 19th century. Whereas extreme reactionism eventually led to fascism, progressive literature advocated artistic experimentation as manifested in a discourse of alienation (expressionism, dada, Kafka). Holocaust literature reflects the ultimate clash between progressiveness and reactionism. The primary readings will be from Wedekind, Trakl, Kaiser, Hesse, Remarque, Brecht, Celan, Werfel. Taught in English. Cross-listed with GERM 121. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall & Spring. Instructor(s): Weissenberger.

FSEM 122 HISTORY THROUGH GERMAN CINEMA (3)

The course presents an overview of German history via contemporary German feature films from World War I, through the Weimar and Nazi periods, the postwar years as a Divided Germany into East and West and finally a look at the new generation in Post-unification Germany. Taught in English. All films are subtitled in English. Cross-listed with GERM 122. Must be in one of the following Classification(s): Freshman. Limited enrollment. Instructor(s): Eifler.

FSEM 123 THROUGH TIME AND SPACE: EUROPEAN TRAVEL STORIES (3)

A travel story stands at the beginning of European Literature: Homer's Odyssey. Since ancient times, literary travel accounts of all sorts, to all destinations, by all means and undertaken with a wide range of different purposes have kept Europeans on the move. First attracted by the exotic and the unknown in the far distance, the interest moved ever closer to the self, and the exploration of the human mind became the most exotic and intriguing journey. Readings include Homer, Swift, Voltaire, Goethe, Heine, Twain, and Verne. Taught in English. Cross-listed with GERM 123. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): Steiner.

FSEM 124 LAW, MORALITY, AND SOCIETY (3)

A historical introduction to central themes of legal and political thought in the Western tradition from Immanuel Kant to John Rawls, this freshman seminar provides an overview of trends and controversies in modern political thought and society. Topics discussed include "civil rights", "morality", "liberalism", "natural law", "political theology", and "freedom". Taught in English. Cross-listed with GERM 124. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Emden.

FSEM 125 BETWEEN RESISTANCE AND COLLABORATION: INDIVIDUALS RESPONDING TO NATIONAL SOCIALISM (3)

Focus on individuals' behavior in Nazi Germany/Austria. Issues of ideology and ethics as Germans and Austrians faced them between 1933-1945. Reflection on values such as courage, civil disobedience, and human rights in today's global society. Taught in English. Cross-listed with GERM 125. Must be in one of the following Classification(s): Freshman, Sophomore. Limited enrollment. Not offered Fall and Spring. Instructor(s): Kecht.

FSEM 126 THE LEGEND OF KING ARTHUR IN THE MIDDLE AGES (3)

In the 1100's people began writing down stories of Arthur, Guinevere, Merlin, and the Knights of the round table using sophisticated techniques of literary composition. Today, these stories count among the great writings of Europe. This course examines the spectrum of medieval stories and histories of Arthur that arose in England, France, and Germany from the beginning to the age of printing, plus some recent revivals. Cross-listed with GERM 126, MDST 126. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Westphal.

FSEM 127 IN THE MATRIX: ON HUMAN BONDAGE AND LIBERATION (3)

Using the film "The Matrix" as a point of reference, this course presents celebrated explorations of servitude and emancipation -- from religious mysticism to Marxism and artistic modernism. Texts by Lao Tzu, Farid ud-Din Attar, Plato, Freud, Marx, Baudelaire, J.S. Mill, Proust, de Beauvoir, Malcolm X, Marcuse, Baudrillard. Course taught in English. Cross-listed with FREN 127. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wood.

FSEM 128 THE CULTURE OF WAR (3)

Focusing on the experience and representation of war in German and European literature, theory, and visual arts. Covers the period from 17th-20th century. Special emphasis on the First World War. Not for the faint-hearted, topics included: destruction, ruins, refugees, massacres, terrorism, victims, spaces of battle, the logic of war. Taught in English. Cross-listed with GERM 128. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Emden.

FSEM 129 LITERARY LOVE AFFAIRS, LOVE AND PASSION IN EUROPEAN LITERATURE (3)

Love-stories are usually about a young man who seeks the ideal girl, finally gets her, and becomes as good a Philistine as others. Students examine this philosophical wisdom by reading stories and theoretical texts about love and passion by European authors from the time of Shakespeare to the present. Cross-listed with GERM 129. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Steiner.

FSEM 130 WOMEN AND NATIONAL SOCIALISM (3)

Introduction to the Nazi idea of "womanhood" and the actual roles women played during National Socialism. Female perpetrators, Mitlauffer, a multiplicity of victims, and to resistance fighters. The course will be taught in English. Cross-listed with GERM 130, WGST 130. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Kecht.

FSEM 131 NO HAPPY ENDINGS: TRAGEDY IN LITERATURE AND FILM (3)

Tragedy stages the sufferings and fall of a hero. It excites pity and fear. Why, then, do we take pleasure in tragedy? This course explores the importance of tragedy in Western culture through a reading of plays by Sophocles, Shakespeare, Racine, and Ibsen. Films include works by Robinson and Schlöndorff. Cross-listed with CLAS 131, FREN 131. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Shea.

FSEM 144 THE ARAB-ISRAELI CONFLICT (3)

Seminar traces the history and politics of the Arab-Israeli conflict, delving into both Palestinian and Israeli understandings of the past and present using books, documentaries, and films. The course seeks to understand how and at what costs Israeli and Palestinian nationalism's have been constructed and analyzes U.S. involvement in the conflict. Cross-listed with HIST 144. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Makdisi.

FSEM 150 LATIN AMERICAN SHORT FICTION (EMPHASIS ON BORGES AND CORTAZAR) (3)

Readings of classic works of short fiction by modern Latin American masters, with special emphasis on the stories of Jorge Luis Borges and Julio Cortazar. Close reading, interpretive essays. Taught in English. Open to first-year students only. Cross-listed with SPAN 150. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Kauffman.

FSEM 151 FRESHMAN SEMINAR: THE HERO AND HIS COMPANION FROM GILGAMESH TO SAM SPADE (3)

How does presentation of heroic action illustrate the basic values of society? Historical sources including ancient texts, modern mystery stories, and two "western" movies, show the development of a style of community service linking heroism with alienation. The extent to which women participate will be traced. Cross-listed with HIST 151. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall & Spring. Instructor(s): Maas.

FSEM 152 THE HISPANIC ESSAY (3)

Readings (in English translation) from major modern Spanish and Spanish-American essayists, including Miguel de Unamuno, Jose Ortega y Gasset, Maria Zambrano, Jose Marti, Jose Enrique Rodo, Alfonso Reyes, Victoria Ocampos, Gabriela Mistral, Jorge Luis Borges, and Octavio Paz. Close reading and appreciation of essays will be the focus of discussion, presentations, and short interpretive papers. Taught in English. Open to first-year students only. Cross-listed with SPAN 152. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Kauffman.

FSEM 160 FRESHMAN SEMINAR: THOMAS JEFFERSON, THE AMERICAN REVOLUTION, AND THE USES OF THE PAST (3)

Seminar will focus on three dimensions of Thomas Jefferson's life and legacy: first, what he said and did in the American Revolution; second, how he has been understood by historians; and third, how his words, ideas, and actions have been used by successive generations of Americans. Cross-listed with HIST 160. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): Gruber.

FSEM 161 THE USES OF THE PAST (3)

Seminar analyzes how selected historical events are interpreted at different times and contexts. Sources include history books, novels, movies, court cases and political debates. Specific events studied will vary according to student interest from ancient times to the present. Cross-listed with HIST 161. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Quillen.

FSEM 163 FRESHMAN SEMINAR: BROWN V. BOARD (3)

A first year seminar examining the origins and legacies of the civil rights case that all but defined the parameters of modern American society and race relations. Where did the case come from? How was it argued and decided? What have been its consequences? Cross-listed with HIST 163. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Byrd.

FSEM 168 THE WORLD OF THE ARABIAN KNIGHTS (3)

Seminar on the social and cultural world of the stories of the 1001 nights. Readings and discussions reveal how they became famous in Europe and a source for western images of the Islamic World. Source materials range from translations and similar stories from different traditions to modern movies and TV shows. Cross-listed with HIST 168, MDST 168. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Sanders.

FSEM 176 FRESHMAN SEMINAR: TERROR AND AFRICAN AMERICAN HISTORY (3)

From the Murder of James Byrd. From the early 1880's to 1978, lynch mobs murdered nearly 5,000 African-Americans. Terror and black responses to it have shaped nearly every aspect of African American history. Seminar examines black society, politics, gender, and culture in the 20th century America against the backdrop of racial violence. Cross-listed with HIST 176. Limited enrollment. Not offered Fall and Spring. Instructor(s): Byrd.

GERM (GERMAN)**School of Humanities/Center for Study of Languages****GERM 101 BEGINNING GERMAN I (5)**

The first in a series of courses, the principal objective of which is to engage students in purposeful communicative tasks designed to develop proficiency and literacy in the languages and cultures of Germany, Austria and Switzerland. Recommended prerequisite(s): No prior knowledge of German. Limited enrollment. URL: lang.rice.edu/German.

GERM 102 BEGINNING GERMAN II (5)

The second in a series of courses, the principal objective of which is to engage students in purposeful communicative tasks designed to develop proficiency and literacy in the languages and cultures of Germany, Austria and Switzerland. Pre-requisite(s): GERM 101, or placement test, or permission of instructor. Limited enrollment. URL: lang.rice.edu/German.

GERM 121 FROM KAFKA TO THE HOLOCAUST: DISCOURSE IN ALIENATION (FRESHMAN SEMINAR) (3)

The beginnings of modernity have to be seen in the context of the sociopolitical and intellectual upheavals at the end of the 19th century. Whereas extreme reactionism eventually led to fascism, progressive literature advocated artistic experimentation as manifested in a discourse of alienation (expressionism, dada, Kafka). Holocaust literature reflects the ultimate clash between progressiveness and reactionism. The primary readings will be from Wedekind, Trakl, Kaiser, Kafka, Hesse, Remarque, Brecht, Celan, Werfel. Taught in English. Cross-listed with FSEM 121. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Weissenberger.

GERM 122 HISTORY THROUGH GERMAN CINEMA (FRESHMAN SEMINAR) (3)

The course presents an overview of German history via contemporary German feature films from World War I, through the Weimar and Nazi periods, the postwar years as a Divided Germany into East and West and finally a look at the new generation in Post-unification Germany. Taught in English. All films are subtitled in English. Cross-listed with FSEM 122. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): Eifler.

GERM 123 THROUGH TIME AND SPACE: EUROPEAN TRAVEL STORIES (FRESHMAN SEMINAR) (3)

A travel story stands at the beginning of European Literature: Homer's Odyssey. Since ancient times, literary travel accounts of all sorts, to all destinations, by all means and undertaken with a wide range of different purposes have kept Europeans on the move. First attracted by the exotic and the unknown in the far distance, the interest moved ever closer to the self, and the exploration of the human mind became the most exotic and intriguing journey. Readings include Homer, Swift, Voltaire, Goethe, Heine, Twain, and Verne. Taught in English. Cross-listed with FSEM 123. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): Steiner.

GERM 124 LAW, MORALITY, AND SOCIETY (FRESHMAN SEMINAR) (3)

A historical introduction to central themes of legal and political thought in the Western tradition from Immanuel Kant to John Rawls, this freshman seminar provides an overview of trends and controversies in modern political thought and society. Topics discussed include "civil rights," "morality," "liberalism," "natural law," "political theology," and "freedom." Taught in English. Cross-listed with FSEM 124. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Emden.

GERM 125 BETWEEN RESISTANCE AND COLLABORATION: INDIVIDUALS RESPONDING TO NATIONAL SOCIALISM (3)

Focus on individuals' behavior in Nazi Germany/Austria. Issues of ideology and ethics as Germans and Austrians faced them between 1933-1945. Reflection on values such as courage, civil disobedience, and human rights in today's global society. Taught in English. Cross-listed with FSEM 125. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Kecht.

GERM 126 THE LEGEND OF KING ARTHUR IN THE MIDDLE AGES (FRESHMAN SEMINAR) (3)

In the 1100s people began writing down stories of Arthur, Guinevere, Merlin, and the Knights of the round table using sophisticated techniques of literary composition. Today, these stories count among the great writings of Europe. This course examines the spectrum of medieval stories and histories of Arthur that arose in England, France, and Germany from the beginning to the age of printing, plus some recent revivals. Taught in English. Cross-listed with FSEM 126, MDST 126. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Westphal.

GERM 128 THE CULTURE OF WAR: VIOLENCE, CONFLICT AND REPRESENTATION (FRESHMAN SEMINAR) (3)

Focusing on the experience and representation of war in German and European literature, theory, and visual arts. Covers the period from 17th-20th century. Special emphasis on First World War. Not for the faint-hearted, topics include: destruction, ruins, refugees, massacres, terrorism, victims, spaces of battle, the logic of war. Taught in English. Cross-listed with FSEM 128. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Emden.

GERM 129 LITERARY LOVE AFFAIRS: LOVE AND PASSION IN EUROPEAN LITERATURE (FRESHMAN SEMINAR) (3)

According to the German philosopher Hegel, love-stories are usually about a young man who seeks the ideal girl, finally gets her, and becomes as good a Philistine as others. The course invites students to examine this philosophical wisdom by reading select stories and theoretical texts about love and passion by European authors from the time of Shakespeare to the present. Taught in English. Cross-listed with FSEM 129. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Steiner.

GERM 130 WOMEN AND NATIONAL SOCIALISM (3)

Introduction to the Nazi idea of "womanhood" and the actual roles women played during National Socialism. Female perpetrators, Mitlaufer, a multiplicity of victims, and to resistance fighters. The course will be taught in English. Cross-listed with FSEM 130, WGST 130. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Kecht.

GERM 201 INTERMEDIATE GERMAN I (4)

The third in a series of courses, the principal objective of which is to engage students in purposeful communicative tasks designed to develop proficiency and literacy in the languages and cultures of Germany, Austria and Switzerland. Pre-requisite(s): GERM 102, or placement test, or permission of instructor. Limited enrollment. URL: lang.rice.edu/German.

GERM 202 INTERMEDIATE GERMAN II (4)

The fourth in a series of courses, the principal objective of which is to engage students in purposeful communicative tasks designed to develop proficiency and literacy in the languages and cultures of Germany, Austria and Switzerland. Pre-requisite(s): GERM 201, or placement test, or permission of instructor. Limited enrollment. URL: lang.rice.edu/German.

GERM 301 ADVANCED GERMAN I (3)

The fifth in a series of courses, the principal objective of which is to engage students in purposeful communicative tasks designed to develop proficiency and literacy in the languages and cultures of Germany, Austria and Switzerland. Pre-requisite(s): GERM 202, or placement test, or permission of instructor. Limited enrollment. URL: lang.rice.edu/German.

GERM 302 ADVANCED GERMAN II (3)

The sixth in a series of courses, the principal objective of which is to engage students in purposeful communicative tasks designed to develop proficiency and literacy in the languages and cultures of Germany, Austria and Switzerland. Pre-requisite(s): GERM 301, or placement test, or permission of instructor. Limited enrollment. URL: lang.rice.edu/German.

GERM 303 COMPOSITION AND CONVERSATION I: LANGUAGE AND STYLE IN CULTURAL TEXTS (3)

Discussion and composition based on a variety of reading materials (videos, current German newspapers, websites, short literary texts) and interactional contexts (e.g. partner works, reports, interviews, dialogues). Focus on cultural awareness and topics relating to contemporary German literature, culture, and politics, then and now. Special emphasis on developing writing skills and oral fluency. Taught in German. Pre-requisite(s): GERM 202, or permission of instructor. Offered Fall. Instructor(s): Eifer.

GERM 304 COMPOSITION AND CONVERSATION II: LANGUAGE AND STYLE IN CULTURAL TEXTS (3)

This course will work with cultural texts, on-line information and film materials in order to prepare for a deeper understanding of German literary and intellectual sources. We will assess language and styles of literary genres (prose, lyric, drama), nonfictional writings and philosophical materials. Student performance is aimed to move from paraphrasing summary to analytic commentary in oral presentation and written expression. Taught in German. Offered Spring. Instructor(s): Kecht.

GERM 321 EUROPEAN WOMEN FILMMAKERS (MAPPING GERMAN CULTURE) (3)

Filmmaking has celebrated its first hundred years. Women's contributions were significant and deserve to widen the film canon for all filmgoers. The course will concentrate on films by European women directors, taking into account aesthetic particularities, gender commitment, and post-feminist attempts. Importance will also be given to the contexts and conditions of women's film production. All films are subtitled in English. Taught in English with possible FLAC section. Cross-listed with HART 385, WGST 358, HUMA 321. Not offered Fall and Spring. Instructor(s): Eifler.

GERM 322 MARX, FREUD, EINSTEIN: FOREBEARERS OF MODERNITY (MAPPING GERMAN CULTURE) (3)

Like no others, these three thinkers of the 19th and 20th centuries have influenced the intellectual, historical, social, and cultural development not only of Germany, but of the entire world. The course examines the works of these authors in the context of their own time as well as their continued importance in the present. Works by Brecht, Christa Wolf, Schnitzler, Kafka will also be considered. Taught in English with possible FLAC section. Cross-listed with HUMA 322. Offered Spring. Instructor(s): Weissenberger.

GERM 324 BERLIN: RESIDENCE, METROPOLIS, CAPITAL (MAPPING GERMAN CULTURE) (3)

The course offers an introduction to German history, politics, and culture as mirrored in the history of the old and new German capital. Berlin has always been a city of contradictions: from imperial glamour to proletarian slums, from the Roaring Twenties to Hitler's seizure of power. Emerging from the ruins of WWII Berlin became both the capital of Socialism and the display window of the Free World after the fall of the wall, Berlin is still looking for its role in the center of a reshaped Europe. Readings and discussions encompass fine arts and literature from the 18th century to the present, including film. Taught in English with possible FLAC section. Cross-listed with HUMA 324. Offered Fall. Instructor(s): Steiner.

GERM 325 GERMAN NOBEL PRIZE LAUREATES (MAPPING GERMAN CULTURE) (3)

The course will introduce the biography of Alfred Nobel and the reasons for establishing his famous Nobel Prize in his will of 1895. Most famous among German recipients were Thomas Mann (1929), Hermann Hesse (1946), Heinrich Boll (1972), and Guenter Grass (1999). Their novel work will be analyzed as an artistic reflection of their socio-critical thoughts on the history of Germany. Taught in English with a possible FLAC section. Cross-listed with HUMA 325. Limited enrollment. Not offered Fall and Spring. Instructor(s): Eifler.

GERM 326 THE GERMAN FAIRY TALE: OLD AND NEW (MAPPING GERMAN CULTURE) (3)

Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the "literary" fairy tale from Goethe and the Romantics to the 20th century. Taught in English with a possible FLAC section. Cross-listed with HUMA 372. Offered Fall. Instructor(s): Weissenberger.

GERM 328 GERMAN ADAPTATIONS: TEXT TO FILM (MAPPING GERMAN CULTURE) (3)

Prominent novels of the 20th century will be studied for their possibilities or impossibilities of rendition from print medium to cinematic medium. From the myriad of adaptations we will concentrate on Thomas Mann: *Tod in Venedig*; Franz Kafka: *Das Schloss*; Klaus Mann: *Mephisto*; Gunter Grass: *Die Blechtrommel*; H. Boll: *Katharina Blum*; Jurek Becker: *Jacob der Lugner*. All films are subtitled in English. Course taught in English with a possible FLAC section. Cross-listed with HUMA 328. Limited enrollment. Offered Spring. Instructor(s): Eifler.

GERM 329 LITERATURE OF THE HOLOCAUST AND EXILE (MAPPING GERMAN CULTURE) (3)

Most of the authors from Germany and Austria, who were persecuted and fled into exile, used literature to search for meaning in life that apparently had been stripped of all meaning. Among these authors are the most distinguished writers of the time, i.e., Th. and H. Mann, Brecht, Benjamin, Werfel, Doblin, J. Roth, S. Zweig, N. Sachs, Celan, Auslander. Taught in English with a possible FLAC section. Cross-listed with HUMA 329. Limited enrollment. Not offered Fall and Spring. Instructor(s): Weissenberger.

GERM 330 COURTSHIP, LOVE AND MARRIAGE IN THE AGE OF CHIVALRY (MAPPING GERMAN CULTURE) (3)

The literature of the High Middle Ages is the first since antiquity to probe the hazards and potentials of romance between men and women, as well as single-sex friendship and love. This course will show how the literary ideal of love emerged in a society that was torn apart by war and rivalry. The poems and stories we will read belong to the treasures of medieval literature from the German lands. Taught in English with a possible FLAC section. Cross-listed with HUMA 330, WGST 330, MDST 335. Limited enrollment. Offered Spring. Instructor(s): Westphal.

GERM 331 SOCIETY AND CRISIS: POLITICAL CULTURE IN THE WEIMAR REPUBLIC (MAPPING GERMAN CULTURE) (3)

Born in political and social crisis, the Weimar Republic exemplifies the possibilities and limits of modern democracy. This seminar focuses on original documents of political thought, literature, the visual arts, society, and law to explore the political culture of Germany's first, ill-fated democracy. Taught in English with possible FLAC section. Cross-listed with HIST 431. Limited enrollment. Not offered Fall and Spring. Instructor(s): Emden; Caldwell.

GERM 332 TOPICS IN MODERN GERMAN HISTORY (MAPPING GERMAN CULTURE) (3)

Seminar on selected topics in the history of modern Germany. Taught in English with possible FLAC section. Cross-listed with HIST 459. Limited enrollment. Not offered Fall and Spring. Instructor(s): Caldwell.

GERM 333 NIETZSCHE'S ANTHROPOLOGY: LANGUAGE, HISTORY, AND THE BODY (MAPPING GERMAN CULTURE) (3)

Situates Nietzsche's thought on language, history, and the body within its historical context, and examines the validity of his arguments in a world increasingly challenged by scientific knowledge. Focuses on Nietzsche's views on truth, genealogy, nihilism, morality, and science, which continue to be relevant for current debates within the humanities. Taught in English with a possible FLAC section. Cross-listed with PHIL 390. Limited enrollment. Not offered Fall and Spring. Instructor(s): Crowell; Emden.

GERM 334 NATION AND MEMORY (MAPPING GERMAN CULTURE) (3)

Providing a critical review of modern concepts of nationhood and nationalism in the light of recent research on cultural memory, this course traces the history of political foundation myths in Germany and Europe since the eighteenth century. The course provides links between literature, visual culture, historical anthropology, and public policy. Taught in English with a possible FLAC section. Limited enrollment. Offered Spring. Instructor(s): Emden.

GERM 335 AMERICANIZATION AND NON-AMERICANISM (MAPPING GERMAN CULTURE) (3)

Discussion about globalization, American hegemony, and the aftermath of September 11 have increased debates in the German-speaking countries regarding the export and acceptance of American culture and values. In this course we will examine the German/Austrian encounter with American culture since 1945 and discuss relevant readings from the arts, history, and politics. Taught in English with possible FLAC section. Offered Fall. Instructor(s): Kecht.

GERM 338 NEW GERMAN CINEMA (MAPPING GERMAN CULTURE) (3)

From the 1960 to 2000, Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trota, Sander, Brueckner, Doerrle, Garnier, Tykwer, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film critical readings and class discussion in English. All films are subtitled in English and will be assessed with podium technology. Taught in English with a possible FLAC section. Cross-listed with HUMA 373, WGST 361. Limited enrollment. Offered Fall. Instructor(s): Eitler.

GERM 340 WALTER BENJAMIN: AESTHETICS, HISTORY AND POLITICS (MAPPING GERMAN CULTURE) (3)

Benjamin has been celebrated as a revolutionary Marxist, a theologian of Jewish Messianism, and as an essayist and literary critic. The course offers an introduction to his writings by way situating them in the historical background of the Weimar Republic and the crises of European society on the eve of WWII. Taught in English with a possible FLAC section. Cross-listed with HUMA 340. Not offered Fall and Spring. Instructor(s): Steiner.

GERM 344 GERMAN HISTORY, 1648-1890 (MAPPING GERMAN CULTURE) (3)

Survey of "Germanies" from the rise of absolutist state following the Thirty Years' War to the unification of Germany in 1871. Includes the development of the bureaucratic and military institutions of the modern state, changing conceptions of state and society, and the major social and economic changes of the period. Taught in English with possible FLAC section. Cross-listed with HIST 354. Not offered Fall and Spring. Instructor(s): Caldwell.

GERM 345 FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY, 1890-1945 (MAPPING GERMAN CULTURE) (3)

From 1890-1945, Germans experienced dramatic changes in their political environment. This lecture class will examine these changes, taking into account not only political history, but also attempts to come to terms with the challenges posed by organized capitalism, the rise and fall of socialism, the development of an interventionist state, cultural critique, and political culture, the Nazi social revolution, and the Holocaust. Taught in English with possible FLAC section. Cross-listed with HIST 355. Pre-requisite(s): GERM 303 or GERM 304. Offered Fall. Instructor(s): Caldwell.

GERM 351 INTELLECTUALS, ARTISTS, AND THE STATE (3)

Focus on the multiple relationships 20th century artists/intellectuals have displayed towards the German/Austrian state in which they have lived and worked. Do artists/intellectuals carry public responsibility? Are artists/intellectuals supposed to act as a "public conscience"? Is art always political? Taught in German. Recommended prerequisite(s): Intermediate to high proficiency (speaking and writing); successful completion of GERM 303 (or equivalent). Not offered Fall and Spring. Instructor(s): Kecht.

GERM 352 GERMAN PLAY PRODUCTION (3)

Students will apply/improve their German in preparation for a public play production; become familiar with literary and socio-historical context of the play; assume responsibility for various aspects of the production; demonstrate their performing abilities Choice of a modern playwright from any of the German-speaking countries. All readings, assignments, and discussions in German. Recommended prerequisite(s): A minimum proficiency of intermediate-mid in speaking and writing; satisfactory completion of GERM 202 or equivalent; or permission of the instructor. Not offered Fall and Spring. Instructor(s): Kecht.

GERM 353 LITERATURE AND DEATH (3)

The understanding of death and dying, and the culture of mourning, have undergone radical changes since the 17th century. This seminar will examine these changes from the perspective of literary anthropology in German literature and thought from the early modern to the postmodern period. Taught in German. Recommended: Prerequisite(s): Successful completion of German 303, or 304 or equivalent. Offered Fall. Instructor(s): Emden.

GERM 401 INDEPENDENT WORK IN GERMAN LITERATURE (1 TO 3)

Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate advisor. Repeatable for Credit. Offered Fall.

GERM 402 INDEPENDENT WORK IN GERMAN LITERATURE (1 TO 3)

Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate advisor. Repeatable for Credit. Offered Spring.

GERM 403 HONOR THESIS (3)

Independent research projects by outstanding German majors leading to a substantial honors essay, undertaken in close cooperation with a departmental faculty member. Repeatable for Credit. Offered Fall.

GERM 404 HONOR THESIS (3)

Independent research projects by outstanding German majors leading to a substantial honors essay, undertaken in close cooperation with a departmental faculty member. Offered Spring.

GERM 411 ENLIGHTENMENT TO ROMANTICISM (1700-1850) (3)

An introduction to the major social, political and cultural developments in the period between 1700-1850, which contributed to the emergence of modern German cultural identity within the European context. Covers wide range of theoretical and literary works by Kant, Lessing, Schiller, Goethe, Eichendorff, Hoffmann, Heine, and others. Taught in German. Offered Fall. Instructor(s): Steiner.

GERM 412 GERMAN REALISM TO MODERNISM (1850-PRESENT) (3)

German history and culture during the late 19th and the 20th century have been rather turbulent: From Wilhelminian empire to Weimar democracy to Hitler fascism to socialist division to German reunification to entry into the European Union. All these political changes will be commented on by cultural reflections in textual and filmic forms. Literary texts will include Fontane, Mann, Kafka, Boll, Grass, Wolf and Maron. Taught in German. Limited enrollment. Offered Spring. Instructor(s): Weissenberger.

GERM 425 VIENNA AND ITS PEOPLE (SPECIAL TOPICS SEMINAR) (3)

In this course we will look at the people of Vienna from the turn of the century to the present. Our readings, film viewings and discussions will introduce us to the Viennese as people of all classes and ethnic and national groups. Taught in German. Recommended prerequisite(s): Intermediate high proficiency (speaking and writing); successful completion of GERM 303 (or equivalent). Not offered Fall and Spring. Instructor(s): Kecht.

GREE (GREEK)**School of Humanities/Classical Studies****GREE 101 INTRODUCTION TO ANCIENT GREEK I (3)**

Introduction to ancient Greek, with emphasis on acquisition of reading skills. Offered Fall. Instructor(s): Mackie.

GREE 102 ELEMENTARY GREEK II (3)

Continuation of GREE 101. Limited enrollment. Offered Spring. Instructor(s): Mackie.

GREE 201 INTERMEDIATE GREEK I: PROSE (3)

Review of forms and syntax. Offered Fall.

GREE 202 INTERMEDIATE GREEK II: POETRY (3)

Readings from Homer or Attic tragedy. Offered Spring. Instructor(s): Mackie.

GREE 301 ADVANCED GREEK (3)

Further reading of ancient Greek texts with emphasis on the linguistic development of ancient Greek. Not offered Fall and Spring.

GREE 491 DIRECTED READING (3)

Independent work for qualified juniors and seniors in genres or authors not presented in other courses. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Fall.

GREE 492 DIRECTED READING (3)

Independent work for qualified juniors and seniors in genres or authors not presented in other courses. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Spring.

HART (HISTORY OF ART)**School of Humanities/Art History****HART 101 INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC (3)**

A survey of painting, sculpture, and architecture from the Paleolithic period through the 15th century. Cross-listed with MDST 111. Instructor(s): Neagley.

HART 102 INTRODUCTION TO THE HISTORY OF WESTERN ART II: RENAISSANCE TO PRESENT (3)

A survey of painting, sculpture, and architecture from the Renaissance through the 20th century. Offered Spring. Instructor(s): Manca.

HART 103 INTRODUCTION TO THE HISTORY OF ASIAN ART (3)

Survey of Asian art from the Neolithic period to the present. Not offered Fall and Spring.

HART 104 CASE STUDIES IN ANCIENT AND MEDIEVAL ARCHITECTURE (3)

This course offers an introduction to the history of Western art and architecture through weekly case studies of some of the most important public and private buildings in antiquity and the Middle Ages: from the Parthenon to a Roman house, Carnavan Castle to Chartres Cathedral. Topics explored throughout the course include the construction of imperial authority, ritual and the formation of space, and the relationship between structure and design. Cross-listed with ARCH 104, MDST 104. Instructor(s): Neagley.

HART 105 KEY MONUMENTS AND ARTISTS OF THE WEST MOVEMENT (3)

An in-depth look at important moments in the history of European and American art, from the Renaissance to the 20th century. Rather than being a comprehensive survey, the course will focus on a limited number of works by leading artists in the fields of painting, sculpture, and architecture. Instructor(s): Manca.

HART 170 THE ARTS OF CHINA (3)

Introduction of the history of the visual arts of China from the Bronze Age to the present. We will pay special attention the artworks' physical and social contexts (e.g. tomb, temple, court, literati's garden and studio, city, nation-state). Topics include: funerary art and the imagination of the afterlife, art and imperial cosmology, rise of literati aesthetic, relationship between landscape painting and calligraphy, and the emergence of propaganda avant-garde art in Modern China. Cross-listed with ASIA 170. Not offered Fall and Spring

HART 204 ART AS CIVILIZATION (3)

This seminar will examine the formative role that definitions of civilization have played in shaping the West in the modern period, and it will pay particular attention to the role that art has been assigned as one of civilization's attributes and agents. Topics will include: the museum, the discipline of art history, war spoils, and iconoclasm. Limited enrollment.

HART 207 FOURTEEN ARTWORKS AT THE MFAH (3)

This course is designed to provide students with no previous background in art history with an introduction to the discipline through the "in situ" study of 14 works from the permanent collection of The Museum of Fine Arts, Houston. Some of the topics to be addressed include British aristocratic portraiture, French Impressionist painting, the aesthetic dialogues of Matisse and Picasso, the abstracted sculptures of Brancusi and Calder, and the site-specific installation of Turrell's light tunnel. Limited enrollment. Instructor(s): Brennan.

HART 208 SPECIAL TOPICS IN MUSEUM STUDIES (1 TO 3)

Special topics and new courses, not necessarily to be repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

- HART 209 INDEPENDENT STUDY IN MUSEUM STUDIES (1 TO 3)**
Independent study, reading, or special research in art history at the introductory level. Instructor permission required. Repeatable for Credit.
- HART 218 SPECIAL TOPICS: ANCIENT GREEK SITES (1 TO 4)**
Special topics, independent study, and new courses in ancient art, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Quenemoen.
- HART 219 INDEPENDENT STUDY: ANCIENT ART (1 TO 4)**
Special topics, independent study, and new courses in ancient art, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Quenemoen.
- HART 228 SPECIAL TOPICS IN CHRISTIAN, BYZANTINE AND ISLAMIC ART (1 TO 6)**
Special topics, independent study, and new courses in early Christian, Byzantine, and Islamic art, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.
- HART 229 INDEPENDENT STUDY IN CHRISTIAN, BYZANTINE, AND ISLAMIC ART (1 TO 6)**
Special topics, independent study, and new courses in early Christian, Byzantine, and Islamic art, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.
- HART 230 MEDIEVAL ART AND LITERATURE (3)**
This course will focus on major themes represented in a selected number of works in art and literature from the Middle Ages. Cross-listed with MDST 230. Repeatable for Credit. Offered Spring. Instructor(s): Neagley.
- HART 238 SPECIAL TOPICS IN MEDIEVAL ART (1 TO 6)**
Special topics, independent study, and new courses in Medieval art, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Neagley.
- HART 239 INDEPENDENT STUDY IN MEDIEVAL ART (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit. Instructor(s): Neagley.
- HART 240 ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE (3)**
This course will be concerned with the art, architecture, and history of the late Middle Ages and Renaissance. We will employ historical texts, literature, and illustrations of works of art, showing how historical documents and sources can illuminate the cultural context of art and architecture. Cross-listed with HUMA 108, MDST 108. Instructor(s): Neagley; Manca.
- HART 248 SPECIAL TOPICS IN RENAISSANCE AND BAROQUE ART (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 249 INDEPENDENT STUDY IN RENAISSANCE AND BAROQUE ART (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 258 SPECIAL TOPICS IN 19TH AND 20TH CENTURY ART (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 259 INDEPENDENT STUDY IN 19TH AND 20TH CENTURY ART (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 268 SPECIAL TOPICS IN AMERICAN ART (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 269 INDEPENDENT STUDY IN AMERICAN ART (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 278 SPECIAL TOPICS IN NON-WESTERN ART (1 TO 6)**
Special topics and new courses in non-Western art, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

- HART 279 INDEPENDENT STUDY IN NON-WESTERN ART (1 TO 6)**
Independent study, reading, or special research in non-Western art. Instructor permission required. Repeatable for Credit.
- HART 280 HISTORY AND AESTHETICS OF FILM (4)**
Introduction to the art and aesthetics of film as an artifact produced within certain social contexts. Includes style, narration, mise-en-scene, editing, sound, and ideology in classical Hollywood cinema, as well as in independent, alternative, nonfiction, and Third World cinemas. Limited enrollment. Instructor(s): Dove.
- HART 281 HISTORY AND AESTHETICS OF VIDEO (4)**
Overview of the history of American television and video, with emphasis on milestone genre, programs, and videos in the context of socioeconomic and political events and contemporary discourse. Includes mainstream TV and newer forms such as cable TV, video art, and ethnic TV. Instructor(s): Naficy.
- HART 285 INTRODUCTION TO FILM: FILM CRITICISM (4)**
This writing-intensive course will teach students to view films analytically and write film criticism. Each week, students will view a film, read some criticism of that film, and write their own view of the film. Screenings will be taken from important movements in world cinema history. Special emphasis on influential relationships between criticism and film styles. Cross-listed with ENGL 275. Repeatable for Credit. Limited enrollment. Instructor(s): Ostherr.
- HART 286 CLASSICAL AND CONTEMPORARY FILM THEORY (3)**
This course introduces the student to approaches to understanding and interpreting film as film. It traces the attempts to grasp the new medium in theoretical terms from its origins to the present day. Topics include: montage, mise-en-scene, the gaze, history, psychoanalysis, and feminism. Cross-listed with ENGL 286. Limited enrollment. Instructor(s): Dove.
- HART 288 SPECIAL TOPICS IN FILM AND MEDIA STUDIES (1 TO 6)**
Special topics and new course in film and media studies, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.
- HART 289 INDEPENDENT STUDY IN FILM AND MEDIA STUDIES (1 TO 6)**
Independent study, reading, or special research in film and media studies. Instructor permission required. Repeatable for Credit.
- HART 298 SPECIAL TOPICS IN ART THEORY AND CRITICISM (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 299 INDEPENDENT STUDY IN ART THEORY AND CRITICISM (1 TO 6)**
Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.
- HART 300 MUSEUM INTERN PROGRAM I (1 TO 6)**
The aim of this course is to provide select students a practicum in museum work accompanied by an introduction to a history of museums, including the varieties of museums, their role in society and significant issues in museums today. Instructor permission required. Instructor(s): Manca.
- HART 301 MUSEUM INTERN PROGRAM II (1 TO 6)**
The aim of this course is to provide select students a practicum in museum work accompanied by an introduction to a history of museums, including the varieties of museums, their role in society and significant issues in museums today. Instructor permission required. Instructor(s): Manca.
- HART 312 GREEK ART AND ARCHITECTURE (3)**
This course will present the art and architecture of Greece, Asia Minor, and Southern Italy (Magna Graecia) from the Bronze Age through the Hellenistic period (ca 2000-30 B.C.). It will consider development of the classical orders in architecture, innovations with painting and sculpture, and the cultural and political significance of art in ancient Greek society. Cross-listed with CLAS 312. Instructor(s): Quenemoen.
- HART 315 ROMAN ART AND ARCHITECTURE (3)**
A chronological survey of Roman sculpture, painting, and architecture from its Etruscan beginnings to the late-Empire. Art and architecture of Rome and the provinces considered within their larger social, political, and urban contexts. Particular attention given to patronage, the relation between Roman and Greek art, and Rome's position as an artistic center. Cross-listed with AMCI 315, CLAS 315. Limited enrollment. Instructor(s): Quenemoen.

HART 320 THE AGE OF AUGUSTUS (3)

This course will consider the period in Roman history between 31 BC and 14 AD, when the emperor Augustus restored stability to the Roman world, oversaw the expansion of the empire, and rebuilt Rome as a capital city. The Age of Augustus witnessed an unparalleled flowering in the literary arts and a revolution in art and architecture whose legacy persists to this day. We will examine in detail the political events and cultural life of this vital time, paying particular attention to the continuity between the late Republic and the Augustan period, Augustus' construction of his public identity, imperial and non-imperial patronage in poetry and the visual arts, and the role of literature, art, and architecture in the formation of Augustan ideology in Rome and in the provinces. The course offers a thorough picture of one of the most significant, yet in some ways most elusive, periods in antiquity. Cross-listed with CLAS 320. Instructor(s): Quenemoen.

HART 321 VISUAL CULTURE OF THE ISLAMIC WORLD I (3)

An introduction to the arts of architecture of the Islamic world from the rise of Islam to the Mongol invasions. Explores the development of a visual tradition through its continuities, regional variations, exchanges, and intertextualities. Examines key religious and secular institutions and art forms through their aesthetic and historical contexts. Cross-listed with ARCH 331. Instructor(s): Hamadeh.

HART 322 VISUAL CULTURE OF THE ISLAMIC WORLD II (3)

An introduction to the architecture, ceramics, textiles, and arts of the book of the Islamic world, from Egypt to India and Central Asia, beginning in the wake of the Mongol conquests and ending with the demise of the Ottoman empire. Focusing on court patronage and production, the course examines key buildings and objects through their aesthetic, cultural, religious, and political contexts. Methodological concerns of the field are addressed through an exploration of such themes as iconoclasm, word and image, and cross-cultural influences. Cross-listed with ARCH 332. Instructor(s): Hamadeh.

HART 323 TEN MONUMENTS OF THE ISLAMIC WORLD (3)

This seminar examines ten key religious and secular buildings of the Islamic world, including some of the most celebrated monuments such as the Taj Mahal, in India, and the Alhambra Palace, in Spain. It covers a wide geographical area that stretches from modern Turkey, Egypt, and Syria, to Iran and India. Each session will alternate lecture and discussion and will focus on one building, exploring it in depth in relation to its aesthetic, cultural, religious, and political contexts. We will examine the formation of a visual vocabulary, its continuities and variations, the complex layers of meanings embedded in these monuments, and will consider questions of patronage, imperial ideology, and cross-cultural encounters and influences. Cross-listed with ARCH 328. Instructor(s): Hamadeh.

HART 325 WHAT IS ISLAMIC ART ? (3)

This seminar is a critical examination of key themes and issues in Islamic art. Based on readings that focus on specific examples of artistic and architectural production of major landmarks from the 7th to the 18th centuries our discussions will evolve around such questions as: What is Islamic about Islamic art? How and where did art, religion, and politics intersect? To what extent were art and architecture informed by religious principles, practices, and rituals? Can we speak of a distinctive visual language across the Muslim world? We will also experience the role of myth in the construction of cultural heritage, the development of writing into a major form of art called calligraphy, and questions of patronage and imperial ideology. We will revisit long-held assumptions about the nature of Islamic art as iconoclastic and aniconic, and about the nature and aspect of artistic exchange between the Muslim world and the Latin Christian West, Byzantium, and China. Cross-listed with ARCH 325. Instructor(s): Hamadeh.

HART 327 ART AND EMPIRE: THE OTTOMAN WORLD (3)

This course looks at the art and architecture of the Ottoman empire, the longest surviving Muslim empire, from its inception in 1453 until its demise in the 1920s. Based on in-depth studies of religious and secular monuments, objects, and paintings, it examines the roots of Ottoman visual culture, the formation of a canonic style, relations with eastern and western artistic traditions, issues of power and identity in art, systems of patronage, concepts of westernization and Ottoman modernism. Cross-listed with ARCH 357. Limited enrollment. Offered Fall. Instructor(s): Hamdeh.

HART 330 EARLY MEDIEVAL ART (3)

Early Medieval Art from the 5th Century to the Romanesque period. This course begins with a study of the art and architecture of the Ostrogoths, Visigoths, Lombards, Celts, Anglo-Saxons, Franks, and Merovingians, and the transformation of the Roman World through new Germanic, Barbarian, and Christian forces. The second part of the course considers the cultural Renaissance of the Carolingian and Ottonian Periods under rulers such as Charlemagne and Otto III. The last third of the course focuses on themes of pilgrimage, relics, crusades and the emergence of new monumental tradition in art and architecture during the Romanesque Period. Cross-listed with MDST 330. Instructor(s): Neagley.

HART 331 GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1140-1300: THE AGE OF CATHEDRALS (3)

Examination of the full array of sacred art and architecture produced in the early and high gothic periods in northern Europe. Includes cathedral architecture, sculpture, stained glass, manuscripts, and metalwork studies in relationship to the expansion of royal and Episcopal power. Cross-listed with MDST 331. Instructor(s): Neagley.

HART 332 LATE GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1300-1500 (3)

Examination of art and architecture produced in the late gothic period within three distinct settings--the court, the city, and the church. Includes private, public, and religious life as expressed in the objects, architecture, and decoration of the castle and palace, the house, the city hall and hospital, and the chapel and parish church. Cross-listed with MDST 332. Instructor(s): Neagley.

HART 340 NORTHERN RENAISSANCE ART (3)

Study of art in northern Europe from Jan van Eyck to Peter Bruegel. Instructor(s): Manca.

HART 341 EARLY RENAISSANCE ART IN ITALY (3)

Study of Italian art and architecture from Giotto to Botticelli, with emphasis on painting and sculpture in the 15th century. Instructor(s): Manca.

HART 342 THE HIGH RENAISSANCE AND MANNERISM IN ITALY (3)

Study of the High Renaissance, with emphasis on its leading masters (e.g., Leonardo, Raphael, Bramante, Michelangelo, and Titian). Includes a study of mannerism, the stylish art produced after the first quarter of the 16th century. Instructor(s): Manca.

HART 343 MASTERS OF THE BAROQUE ERA (3)

Study of the works of the greatest painters and sculptors in Europe during the Baroque period. Includes Rembrandt, Rubens, Caravaggio, Poussin Claude, and Velazquez. Instructor(s): Manca.

HART 345 ARCHITECTURE AND THE CITY I (3)

This course provides a chronological survey of European architecture, urbanism, and landscape design from the Renaissance to the nineteenth century. Through focused attention to selected buildings, plans, designs, and theories, the course considers key works and their relationships to differing aesthetic, cultural, and political contexts. Cross-listed with ARCH 345.

HART 350 VISUAL CULTURES OF THE ENLIGHTENMENT (3)

This course explores the visual cultures of the European Enlightenment (1650-1800), focusing on developments in architecture, painting, prints, urbanism, and landscape design and their intellectual and historical contexts. Topics include: intimacy and self; prisons, hospitals, and academies; luxury and sensual pleasures; the Grand Tour and the search for origins; urban spectacles and the public sphere.

HART 351 NINETEENTH CENTURY ART IN EUROPE (3)

Exploration of the major developments in painting and sculpture from late 18th century neoclassicism and romanticism through realism, impressionism, and post-impressionism. Include architecture, photography, and decorative arts.

HART 352 TWENTIETH CENTURY ART IN EUROPE (3)

Exploration of major developments in painting and sculpture from the 1880s to the 1940s. Includes impressionism and post-impressionism, expressionism, cubism, abstraction. Dada, and surrealism, with a brief consideration of architecture and photography.

HART 353 ART AND ARCHITECTURE IN THE AGE OF REVOLUTIONS (1725-1875) (3)

This course will consider the key artistic and architectural movements and styles in Europe from Rocco to Impressionism. We will also look at major theoretical development in those years in art, architecture, and city planning. Finally, we will take into account momentous political developments, especially revolution, and the threat of revolution, which affected and were in turn affected by, cultural production. Limited enrollment.

HART 355 MODERN TO POSTMODERN ART CRITICISM (4)

The study of the history, function, and philosophical foundations of modern and postmodern art criticism. The relationship of artists to critic, the place of the artist/critic, and the institutional role of critics will be examined. Limited enrollment. Not offered Fall and Spring.

HART 356 ART IN THE VANGUARD: VISUAL CULTURE AND RADICAL POLITICS, 1800-2005 (3)

This seminar will consider the relationship between visual culture, history and radical politics, looking closely at art as a means of political and ideological resistance and persuasion. Ranging from the 19th to the 21st century, we will consider various strategies of creating politically radical art, looking at the work of Daumier, Courbet, John Heartfield and others. We will also look at the impact of Marxism on art historians, critics and philosophers, including Benjamin, Adorno and Althusser. Finally, we will examine divergent governmental views of art, including the Nazi conception of "Degenerate Art", the fate of modern art in the Soviet Union and the influence of anti-communism on the visual culture of the United States. Limited enrollment. Offered Spring. Instructor(s): Costello.

HART 357 CONSTABLE AND TURNER (3)

This seminar will explore critical issues surrounding the careers of John Constable and J.M.W. Turner, arguably the greatest landscape painters of the early 19th century. We will look at both similarities and differences in the work of these two rivals, while considering their work in the context of great historical change in England. Offered Fall. Instructor(s): Costello.

HART 358 IMPRESSIONISM AND POST-IMPRESSIONISM (3)

This class will explore painting in France from approximately 1865 to 1900. Mixing lectures and classroom discussion, we will focus on individual artists including Claude Monet, Edgar Degas, Mary Cassatt, Georges Seurat, Vincent van Gogh, and Paul Czanne. We will also consider and discuss a set of critical issues surrounding these painters, including the politics of gender and class within the changing urban setting of Paris. Offered Fall. Instructor(s): Costello.

HART 360 AMERICAN ARCHITECTURE AND DECORATIVE ARTS BEFORE 1900 (3)

Major topics will include the furniture styles of early America, the architecture of colonial cities, the life, thought, and architectural ideas of Thomas Jefferson, urban design and building projects in Washington, D.C., and other U.S. cities, and domestic life and interior design in 19th century America. Instructor(s): Manca.

HART 361 AMERICAN PAINTING AND SCULPTURE BEFORE 1900 (3)

The course will cover such topics as portraiture in colonial America, the neoclassical movements in American sculpture, the landscape painting of the Hudson River School, and the art of Winslow Homer and John Singer Sergeant. We will study the relationship between American philosophy (especially transcendentalism) and painting. Includes European and Latin American art as relevant. Instructor(s): Manca.

HART 364 STUDIES IN AMERICAN ART FROM THE COLONIAL ERA TO 1920 (3)

This course will examine a range of topics in U.S. art from the colonial era to circa 1920. Some themes to be addressed will include representations of landscape and their relation to American culture nationalism; social realism vs. modernist abstract images; and representations of general subjectivity in American visual culture. Limited enrollment. Instructor(s): Brennan.

HART 365 GENDER, SUBJECTIVITY, AND THE HISTORY OF PHOTOGRAPHY (3)

This course will examine a range of subjects within the history, theory, and criticism of photography, including the relationship between commodification, eroticism, and the objectification of the body; and the intersecting issues of mechanical reproduction, authorship, and authenticity in modern and postmodern discourses. Cross-listed with WGST 365. Limited enrollment. Instructor(s): Brennan.

HART 366 STUDIES IN AMERICAN ART FROM THE 1920S TO THE 1960S (3)

This course will examine a range of topics in American and European art from the 1920s to the 1960s. Our subjects will include the machine aesthetic, cultural nationalism, social realist and regionalist practice, the New York School, and Pop art. Intense methodological reading will accompany visual analysis. Limited enrollment. Instructor(s): Brennan.

HART 367 STUDIES IN MODERN ART FROM THE 1960S TO THE PRESENT (3)

This course will examine a range of topics in American and European art from the 1960s to the present. Our subjects will include Pop art, Brutalism, deconstruction, postmodernism, minimalism, and art in the digital age. Limited enrollment. Instructor(s): Brennan.

HART 368 SUBJECTIVITY IN MODERN/POSTMODERN ART (3)

Subjects of Desire: Subjectivity in Modern and Postmodern Art and Thought. This course examines the intellectual history of subjectivity and its various representations in modernist and postmodernist aesthetics. In particular, we will consider the intersection of subjectivity and desire by examining the ongoing project of human self-creation through aesthetics, ornament, framing devices, technological apparatuses, and other supplementary objects of desire within traditional humanist discourses to recent "posthumanist" narratives. Cross-listed with WGST 348. Limited enrollment. Instructor(s): Brennan.

HART 369 SEMINAR ON BEAUTY AND FRAGMENTATION IN MODERN ART (3)

This course will examine literal and symbolic representations of the body in modern American and European art. Topics addressed will include conceptions of beauty versus subjective fragmentation; the performance nature of social identity; and art history's longstanding preoccupation with the sensuous equivalency of flesh and paint. Cross-listed with WGST 369. Limited enrollment. Instructor(s): Brennan.

HART 371 THE BRUSH AND THE STROKE IN TRADITIONAL CHINESE PAINTING (3)

Traditional Chinese painting was the art of the movements of the brush. This course examines the brushwork from several perspectives; as performance; as expression of the artist's moral character; and as a system of codes and gestures borrowed from the art of calligraphy. We consider how historically shifting understanding of the brushwork served to express diverse aesthetic, social, and cultural concerns: the cosmological and political significance of writing; the function of pictorial expression; the distinction between professional and literati painters; and the notion of the pictorial canon. Cross-listed with ASIA 371. Not offered Fall and Spring.

HART 373 METHODOLOGY SEMINAR: WORD AND IMAGE (3)

Art history is the craft of putting images into words. This course explores the question of how words and images intersect in the visual arts. Readings of some key texts on the subject will be followed by a series of case studies concerning specific artistic genres and issues. Topics include: narrative in painting; the frame and the caption; character and face in portraiture; the word as image in calligraphy; and sound and image in film. Through its readings and cases, the course will provide students a focused introduction to art historical theories and methods. Not offered Fall and Spring.

HART 375 LATIN AMERICAN ART: INDEPENDENCE TO THE PRESENT (3)

This course studies the work of leading visual artists working in Latin America during the 19th and 20th centuries. The range and diversity of Latin American art will be emphasized and work in a variety of media will be explored, including mural painting, easel painting, architecture, prints, sculpture, photography, film, installations, and conceptual art. The work will be discussed in terms of contextual historical, political, social, and cultural developments. Not offered Fall and Spring.

HART 376 MODERN MEXICAN ART (3)

This course studies the art of Mexico from Independence (1821) to the present. Primary emphasis will be on twentieth-century art, especially on images created after the Mexican Revolution of 1910-20. A variety of media will be explored, including murals, easel painting, architecture, prints, photography, film, and conceptual art. We will examine the construction of national identity, the debate between national and international currents in art, and the role of public art. Limited enrollment. Not offered Fall and Spring.

HART 380 SURVEY OF AMERICAN FILM AND CULTURE (3)

This course will cover the history of cinema in the U.S. from its origins to the present day. We will examine the development of narrative, the transition to synchronized sound, the classical Hollywood form and style (with detailed analysis of cinematography, editing, mise-en-scene, sound), the rise and fall of the Production Code, film genres and the star system, the emergence of television, the influence of postwar "art cinemas," the origins of the blockbuster, and the status of Hollywood as "global cinema." The relationship between film and culture will be explored through the economics of filmmaking, the role of regulatory institutions, and the controversies surrounding the notorious Birth of a Nation, McCarthyism and the Blacklist, and representations of sex and violence on film. Cross-listed with ENGL 373. Instructor(s): Ostherr.

HART 381 GRAPHING, COUNTING, FILMING: REPRESENTATION IN SCIENCE AND ANTHROPOLOGY (3)

Cinema originated in the inscription of physiology on film; this was quickly followed by biology and ethnology done by cinematography. This course examines the historical, critical and methodological relations between film as a medium or method of visual investigation and cinema as a site of cultural analysis. Cross-listed with ANTH 318. Instructor(s): Landecker.

HART 383 GLOBAL CINEMA (4)

This course introduces students to cinema as a global enterprise. It explores the relationship between nations, identities, races, concepts, and genres. It inquires into the question of globalization as it relates to the motion picture audience, corporations, and the commerce of ideas. Cross-listed with ENGL 385. Instructor(s): Dove.

HART 385 MAPPING GERMAN CULTURE: EUROPEAN WOMEN FILMMAKERS (3)

Filmmaking has celebrated its first hundred years. Women's contributions were significant and deserve to widen the film canon for all filmgoers. This course will concentrate on films by European women directors, taking into account historical pioneering, cultural identities, aesthetics particularities, gender commitment, subject orientations and post-feminist attempts. Importance will also be given to the contexts and conditions of women's film production. All films subtitled in English. Taught in English with possible FLAC section. Cross-listed with GERM 321, WGST 358, HUMA 321. Instructor(s): Eifler.

HART 387 GLOBAL MEDIA STUDIES (3 OR 4)
Examines the relationship between globalization and mass-mediated images and sounds. Looks at global distribution of Hollywood entertainment from early twentieth century onward; reception of Hollywood cinema and television in different national contexts; production of alternative/oppositional film and television by indigenous populations. Case studies of Hollywood, Bollywood, and Hong Kong. Cross-listed with ENGL 387, WGST 387. Repeatable for Credit. Instructor(s): Ostherr.

HART 390 THEORETICAL PERSPECTIVES ON THE VISUAL ARTS (3)
Exploration of overlapping themes central in the history of art, using texts from Plato to post-modernism. Includes the use of biography, style, connoisseurship, quality, the social basis of art, theories of change in the arts, psychology, iconography, and the modernist canon and post-modern challenges to that canon, as well as race, gender, class, authorship, and audience.

HART 391 PRODUCING FEMINIST KNOWLEDGE: METHODOLOGY AND VISUAL CULTURE (3)

In this course we will examine various methodologies used by feminist scholars in the Social Sciences and the Humanities. Particular attention will be devoted to the practical application of feminist methodologies in visual culture and the history of art, as well as to the interdisciplinary feminist inquiries in science, ethnography, and epistemology. Cross-listed with WGST 391. Limited enrollment. Instructor(s): Brennan; Shehabuddin.

HART 392 CONCEPTUAL ART AND ARCHITECTURE (3)

The first part of the course will examine the conceptual art practices that began in the 1960s, including Bochner, Kosuth, art and language, LeWitt, Hacke, Kelly, and Smithson. The second part of the course will focus on the question of what constitutes a conceptual architecture by interrogating a series of potential practices including: Super Studio, Anchiram, Eisenman, Libesking, Shinohara, Hejduf, Tschumi, and others. Cross-listed with ARCH 384. Course equivalency: HART 492. Instructor(s): Last.

HART 393 AESTHETICS AND HERMENEUTICS (3)

Sacred texts and the visual arts have contributed immeasurably to shaping individual and collective conceptions of the spiritual in modern and postmodern culture. This course will examine a range of aesthetic and hermeneutic traditions, including mystical texts, modernist artworks and related museum exhibitions, in order to consider the ways in which the experiences of reading, writing, and viewing can serve as powerful acts of self-creation. Cross-listed with RELI 362. Limited enrollment. Offered Spring. Instructor(s): Brennan; Kripal.

HART 395 SPECIAL PROBLEMS IN ART HISTORY (1 TO 6)

Special topics in art history. Independent study, reading, or special research in art history.

HART 400 BAYOU BEND INTERNSHIP I (1 TO 6)

Internship at Bayou Bend, the American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor(s): Manca.

HART 401 BAYOU BEND INTERNSHIP II (1 TO 6)

Internship at Bayou Bend and The American Decorative Arts Center of the Museum of Fine Arts, Houston. Must be a Jameson Fellowship recipient to enroll. Instructor(s): Manca.

HART 408 SPECIAL TOPICS IN MUSEUM STUDIES (1 TO 6)

Special topics and new courses in art history, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

HART 409 INDEPENDENT STUDY IN MUSEUM STUDIES (1 TO 6)

Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.

HART 417 BURIED CITIES: THE ART AND ARCHITECTURE OF AKROTIRI, POMPEII, AND HERCULANEUM (3)

An examination of classical antiquity's best preserved cities thanks to volcanic eruptions: the Bronze Age site of Akrotiri and the Roman towns of Pompeii and Herculaneum. Art and architecture will be examined within their larger social and urban contexts. Methodological and ethical issues surrounding the excavation and preservation of these sites will also be considered. Instructor(s): Quenemoen.

HART 418 SPECIAL TOPICS IN ANCIENT ART (1 TO 6)

Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.

HART 419 INDEPENDENT STUDY IN ANCIENT ART (1 TO 6)

Independent study, reading, or special work in ancient art history. Instructor permission required. Repeatable for Credit.

HART 420 ARTISTIC ENCOUNTERS: EUROPE AND THE ISLAMIC WORLD IN THE EARLY MODERN AND MODERN PERIODS (3)

This seminar aims to assess the mutual impact of the visual cultures of Europe and the Islamic world through history. Focusing on 15th-19th-century material including architecture, painting, photography, textiles, and sartorial fashion, it examines channels of interaction, forms of influence, and modes of representation in aesthetic, cultural, philosophical, and political terms, and in light of concurrent theoretical debates. Limited enrollment. Instructor(s): Hamadeh.

HART 422 THE MAKING OF THE ORIENT (3)

The Making of the Orient in the 18th-20th Century Europe focuses on the construction of the image of the Orient in the age of European colonial expansion. Through critical analysis of texts, images, and cultural practices (painting, photography, architecture, city planning, music, fiction, and travel literature) and key theoretical works, this course examines issues of production and codification of knowledge, politics of representation, and identity construction in and beyond the colonial period. Cross-listed with ARGH 422. Limited enrollment. Instructor(s): Hamadeh.

HART 428 SPECIAL TOPICS IN EARLY CHRISTIAN, BYZANTINE, AND ISLAMIC ART (1 TO 6)

Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.

HART 429 INDEPENDENT STUDY IN EARLY CHRISTIAN, BYZANTINE, AND ISLAMIC ART (1 TO 6)

Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.

HART 430 THE GOTHIC PORTAL (3)

Seminar on the form and meaning of sculptural programs attached to French gothic cathedrals such as Chartres, Reims, and Amiens. Includes issues of iconography, style, and production, as well as more recent concerns of narrative, reception, and audience, all within the context of Medieval church doctrine and political and social life. Cross-listed with MDST 430. Instructor(s): Neagley.

HART 431 ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY (3)

This course will focus on one of the most important contributions to the history of western architecture-- the Gothic cathedral. The course will approach the material from a number of different perspectives--the formal and technical development of Gothic architecture; the Medieval architect and the design of Gothic buildings, the social, economic, and political history of "big church" building in the Middle Ages; Gothic architecture as experience and metaphor; and the afterlife of the Gothic cathedral from Vasari to the National Cathedral in Washington, D.C. Cross-listed with MDST 431. Instructor(s): Neagley.

HART 438 SPECIAL TOPICS IN MEDIEVAL ART (1 TO 6)

Independent study, reading, or special research in Medieval art history. Instructor permission required. Repeatable for Credit.

HART 439 INDEPENDENT STUDY: MEDIEVAL ART (1 TO 6)

Independent study, reading, or special research in Medieval art. Cross-listed with MDST 439. Instructor permission required. Repeatable for Credit.

HART 440 JAN VAN EYCK: PROBLEMS OF INTERPRETATION (3)

Seminar and in-depth research on the art and historiography of the early Netherlandish painter Jan van Eyck. Cross-listed with MDST 440. Instructor(s): Neagley.

HART 441 BOSCH AND BRUEGEL: A SEMINAR ON THE REPRESENTATION OF THE SACRED AND PROFANE (3)

The obscene, the grotesque, the humorous, and the bizarre were frequently depicted alongside sacred religious scenes, in the margins of Medieval manuscripts, beneath the seats of church canons, or in the periphery of Gothic cathedral facade sculpture. This fantastic world, along with the personifications of the Seven Deadly Sins, were often imagined as the "other" in representations of race, class, and gender. By the sixteenth century, these images had migrated into the center of paintings, especially in the work of Hieronymus Bosch and Pieter Bruegel the Elder. This course will examine the juxtapositions and complex meanings of sacred and profane imagery within the context of late Medieval and post reformation religious and social life. Cross-listed with MDST 451. Instructor(s): Neagley.

HART 444 LEONARDO AND MICHELANGELO (3)

This course will offer a look at two of the greatest and most influential artists of all time. Students in this seminar will study the paintings, drawings, sculpture, and architecture of Leonardo and Michelangelo, as well as the philosophical and religious ideas found in their notebooks, letters, poetry, and other writings. There are no prerequisites for the course. Instructor(s): Manca.

HART 448 SPECIAL TOPICS IN RENAISSANCE AND BAROQUE ART (1 TO 6)

Special topics and new courses in Renaissance and Baroque art, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

HART 449 INDEPENDENT STUDY IN RENAISSANCE AND BAROQUE ART (1 TO 6)

Independent study, reading, or special research in Renaissance and Baroque art. Instructor permission required. Repeatable for Credit.

HART 450 ART, SOCIETY, AND POLITICS BETWEEN WORLD WAR I AND WORLD WAR II (3)

A study of art between World Wars I and II that is produced or used in the service of established governments and cultural values or, to the contrary, stands in protest against them. Emphasis on conditions in France, the Soviet Union, and Germany during the Weimar Republic and the Third Reich. Some consideration of examples in Mexico and the U.S.

HART 451 FOUR MODERN MASTERS (3)

Exploration of the art, life, context, and criticism of Picasso, Duchamp, Ernst, and Mondrian. Pre-requisite(s): HART 351, or permission of instructor.

HART 455 ARCHITECTURE AND SOCIETY I: EUROPEAN ARCHITECTURE AND ARCHITECTURAL THEORY (3)

This seminar examines European architecture and architectural theory from Alberti to Semper. Through the detailed consideration of a number of key buildings and theoretical texts, it investigates relationships between theory, design, and themes such as origins, orders, proportion, structure, sensation, character, type, style, and surface. Cross-listed with ARCH 485.

HART 458 SPECIAL TOPICS IN 19TH AND 20TH CENTURY ART (1 TO 6)

Special topics and new courses in 19th and 20th century art. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

HART 459 INDEPENDENT STUDY IN 19TH AND 20TH CENTURY ART (1 TO 6)

Independent study, reading, or special research in modern Art History. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit.

HART 468 SPECIAL TOPICS IN AMERICAN ART (1 TO 6)

Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit. Instructor(s): Brennan.

HART 469 INDEPENDENT STUDY IN AMERICAN ART (1 TO 6)

Independent study, reading, or special research in American art. Instructor permission required. Repeatable for Credit. Instructor(s): Brennan.

HART 470 VISUAL CULTURE IN REVOLUTIONARY AND POSTREVOLUTIONARY CHINA (CA. 1949-PRESENT) (3)

Exploration of propaganda and avant-garde art in modern Chinese visual culture. The course will cover a wide range of materials (e.g. paintings, installation arts, propaganda posters, comic books, and films). Issues addressed include: art as social movement, the notions of political and artistic avant-garde, the structure of authoritarian art, and the paradox of counter-discourse. The course will maintain a global and comparative frame of analysis, drawing on scholarship on Soviet and Third Reich German visual cultures as well as Euro-American mass culture and avant-garde art. Cross-listed with ASIA 470. Limited enrollment. Not offered Fall and Spring.

HART 472 JAPANESE ANIMATION: NARRATIVE, HISTORY, AND SOCIETY (3)

Since the 1980s, animation has become the major force in Japanese popular culture, serving as a medium to address the diverse concerns of a high-tech media-focused society. This seminar explores the social, historical, and aesthetic significance of Japanese animation. Topics include gender and sexuality, ecological consciousness and religious imagination, folklore and history, viewership and fandom, the centrality of the fantastic and the grotesque, visions of a media- and technology-saturate society, and the prevalence of apocalyptic motifs and conspiracy theory. Cross-listed with ASIA 472. Limited enrollment. Not offered Fall & Spring.

HART 477 RACE, CLASS, AND GENDER IN MEXICAN ART (3)

The seminar will study representations of race, class, and gender in Mexican art from the 16th century to the present. The course will begin with the traumatic encounter of the Spanish and Mesoamerican cultures. Primary emphasis will be on 20th century art, especially on images created after the Mexican Revolution of 1910-20. Cross-listed with WGST 477. Graduate/Undergraduate version: HART 677. Limited enrollment. Not offered Fall and Spring.

HART 478 SPECIAL TOPICS IN NON-WESTERN ART (1 TO 6)

Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.

HART 479 INDEPENDENT STUDY IN NON-WESTERN ART (1 TO 6)

Independent study, reading, or special research in non-Western art. Instructor permission required. Repeatable for Credit.

HART 480 SEMINAR ON FILM AUTHORSHIP: SCORSESE, PENN, KUBRICK (4)

Focuses on issues of authorship in film and television. Presents a structuralist and post-structuralist reading of the films of Stanley Kubrick, Martin Scorsese, and Arthur Penn. Their films will be seen in the context of the social issues of the 1960s through the 1990s. Limited enrollment. Instructor(s): Naficy.

HART 482 SEMINAR ON NON-WESTERN CINEMA: THIRD WORLD CINEMA (4)

Study of significant national cinemas, film movements, and filmmakers of the Third World from Africa to Latin America and from the Middle East to China. Includes colonial and postcolonial discourses. Cross-listed with ANTH 482. Graduate/Undergraduate version: HART 682. Limited enrollment. Instructor(s): Naficy.

HART 483 SEMINAR ON DOCUMENTARY AND ETHNOGRAPHIC FILM (4)

Overview of the history of documentary and ethnographic cinema from a worldwide perspective. Includes both canonical and alternative films and film movements with emphasis on the shifting and overlapping boundaries of fiction and nonfiction genres. Cross-listed with ANTH 483. Limited enrollment. Instructor(s): Naficy.

HART 484 CULTURE, MEDIA, SOCIETY: EXILE AND DIASPORA CINEMA (4)

This course theorizes and analyzes the politics and aesthetics of the films and videos that displaced filmmakers of the world have produced since the 1960s-films that form a new accent in the language of cinema. Cross-listed with ANTH 484. Instructor(s): Naficy.

HART 485 GENDER AND HOLLYWOOD CINEMA IN THE 1950S (3)

This course examines representations of gendered subjectivity in Hollywood cinema during the 1950s. Some of the topics to be addressed include the uneasy relationship between normative domesticity and heterosexual masculinity, and issues of voyeurism, eroticism, the ongoing conflict between liberated individualism and social conformity in corporate culture and bourgeois society. Cross-listed with WGST 485. Limited enrollment. Instructor(s): Brennan.

HART 486 STUDIES IN FILM (3)

Topics will vary from year to year. Cross-listed with ENGL 489. Limited enrollment. Instructor(s): Ostherr.

HART 488 SPECIAL TOPICS IN FILM AND MEDIA STUDIES (1 TO 6)

Special topics and new courses in film and media studies, not necessarily repeated. May be used in awarding transfer credit. Instructor permission required. Repeatable for Credit. Instructor(s): Naficy.

HART 489 INDEPENDENT STUDY IN FILM AND MEDIA STUDIES (1 TO 6)

Independent study, reading, or special research in film and media studies. Instructor permission required. Repeatable for Credit. Instructor(s): Naficy.

HART 492 CONCEPTUAL ART AND ARCHITECTURE (3)

The first part of the course will examine the conceptual art practices that began in the 1960s, including Bochner, Kosuth, art and language, LeWitt, Haacke, Kelly, and Smithson. The second part of the course will focus on the question of what constitutes a conceptual architecture by interrogating a series of potential practices including: Super Studio, Anchigram, Eisenman, Libeskind, Shinohara, Hejduf, Tschumi, and others. Course equivalency: HART 392. Instructor(s): Last.

HART 498 SPECIAL TOPICS IN ART THEORY AND CRITICISM (1 TO 6)

Independent study, reading, or special research in art history. Instructor permission required. Repeatable for Credit.

HART 499 INDEPENDENT STUDY IN ART THEORY AND CRITICISM (1 TO 6)

Independent study, reading, or special research in art history, theory, themes, and criticism. Instructor permission required. Repeatable for Credit.

HART 500 INTERNSHIP PROGRAM I (1 TO 15)

Graduate level course that will provide select students a practicum in museum work accompanied by an introduction to a history of museums, including varieties of museums, their role in society, and significant issues in museums today. Instructor permission required. Not offered Fall and Spring.

HART 501 INTERNSHIP PROGRAM II (1 TO 6)

Graduate level course that will provide select students a practicum in museum work accompanied by an introduction to a history of museums, including the varieties of museums, their role in society, and significant issues in museums today. Instructor permission required. Not offered Fall and Spring.

HART 506 ARCHITECTURE AND THE CITY II (ENLIGHTENMENT THROUGH POSTMODERNITY) (3)

Cross-listed with ARCH 646. Graduate/Undergraduate version: HART 346. Not offered Fall and Spring.

HART 677 RACE, CLASS, AND GENDER IN MEXICAN ART (3)

The seminar will study representations of race, class, and gender in Mexican art from the 16th century to the present. The course will begin with the traumatic encounter of the Spanish and Mesoamerican cultures. Primary emphasis will be on 20th century art, especially on images created after the Mexican Revolution of 1910-20. Graduate/Undergraduate version: HART 477. Limited enrollment. Not offered Fall and Spring

HART 682 SEMINAR ON NON-WESTERN CINEMA: THIRD WORLD CINEMA (4)

Cross-listed with ANTH 682. Graduate/Undergraduate version: HART 482. Instructor permission required. Instructor(s): Naficy.

HART 683 SEMINAR ON DOCUMENTARY AND ETHNOGRAPHIC FILM (4)

Cross-listed with ANTH 683. Instructor permission required. Instructor(s): Naficy.

HART 684 CULTURE, MEDIA, SOCIETY: EXILE AND DIASPORA CINEMA (4)

This course theorizes and analyzes the politics and aesthetics of the films and videos that displaced filmmakers of the world have produced since the 1960s-films that form a new accent in the language of cinema. Cross-listed with ANTH 684. Instructor permission required. Instructor(s): Naficy.

HART 689 INDEPENDENT STUDY IN FILM AND MEDIA STUDIES (1 TO 15)

Independent study, reading, or special research in film & media studies on the graduate level. Repeatable for Credit. Instructor(s): Naficy.

HEAL (HEALTH SCIENCES)**School of Humanities/Kinesiology****HEAL 103 NUTRITION (3)**

Concepts underlying the science of nutrition: food composition, calories and needs for energy, special nutrients, and nutritional deficiencies. Limited enrollment. Offered Fall and Spring. Instructor(s): Anding.

HEAL 119 CONCEPTS IN WELLNESS (3)

Designed to help college students examine their lifestyle, attitudes and behaviors related to personal wellness issues. Limited enrollment. Offered Fall. Instructor(s): Page.

HEAL 132 MEDICAL TERMINOLOGY (1)

This course introduces the student interested in medical and health professions to a large vocabulary of medical language which develops skills in understanding and remembering new words. It describes word origins, basic terms in anatomy and terms pertaining to each body system as well as pharmacology and medical equipment, and many frequently used medical terms, abbreviations and symbols. Offered Spring. Instructor(s): Bordelon.

HEAL 201 INTRO-ENVIRONMENTAL SYSTEMS (4)

The chemical, physical, and biological components of the environment as natural resources and the effects of pollution on their maintenance and utilization. Lecture (TTH 10:50am-12:05pm) and laboratory (W 2-5pm) are required. Cross-listed with CEVE 201. Offered Fall. Instructor(s): Ward.

HEAL 206 FIRST AID/EMERGENCY CARE CPR (1)

American Red Cross certification program for emergency care procedures for illness, traumatic injuries, and cardiopulmonary resuscitation. Advanced permission of department required. Cross-listed with KINE 206. Limited enrollment. Offered Spring.

HEAL 212 CONSUMER HEALTH AND THE MEDIA (3)

Study of factual information and guidelines that enable consumers to act intelligently in selecting health products and services, with emphasis on the economic aspects of health. Not offered Fall and Spring. Instructor(s): Iammarino.

HEAL 222 PRINCIPLES OF PUBLIC AND COMMUNITY HEALTH (3)
Principles of Public & Community Health examines aspects of the community that relate to health including: identification and analysis of community health programs; organizational pattern and functions of voluntary and governmental health agencies; organizing the community for health action; and coordination of community health programs. Offered Fall. Instructor(s): Nesbitt.

HEAL 308 EMT: BASIC INTRODUCTION TO EMERGENCY CARE I (3)
Emergency medical technician course designed to develop the knowledge and skills necessary to recognize the symptoms of various illnesses and injuries as well as the competency in the appropriate treatment for these conditions in the appropriate treatment for these conditions in the pre-hospital environment. Limited enrollment. Offered Spring. Instructor(s): Sunday.

HEAL 310 EMT INTERMEDIATE: INTRODUCTION TO EMERGENCY CARE II (3)
Designed to expand upon the EMT basic introductory course. Limited enrollment. Offered Fall. Instructor(s): Sunday.

HEAL 313 FOUNDATIONS OF HEALTH PROMOTIONAL EDUCATION (3)
Foundations of Health Promotion/Health Education is designed to introduce students to the discipline of health education and the practice of health promotion. The course explores critical issues in the field of health promotion, accountability and professional preparation, professional ethics, credentialing and the changing technology in the field. Recommended for Health Science majors. Offered Fall. Instructor(s): Iammarino.

HEAL 350 UNDERSTANDING CANCER (3)
Examination of cancer from a biological, psychological and sociological perspective with emphasis on cancer epidemiology, prevention, and early detection. Not offered Fall and Spring.

HEAL 360 INTERNATIONAL HEALTH PROBLEMS (3)
Section 001: VIOLENCE IN AMERICA: A PUBLIC HEALTH PERSPECTIVE: Disparities in Health in America is a speaker's series seminar that examines the social and societal factors that are fundamental in creating disparities in health. The course will focus on the formulation of public policy objectives to reduce and ultimately eliminate health disparities. Not offered Fall and Spring.

HEAL 379 INTERNSHIP IN HEALTH SCIENCES (3)
Internship experience for upper-level students in health sciences track. Offered Fall and Spring. Instructor(s): Iammarino.

HEAL 407 EPIDEMIOLOGY (3)
Study of communicable, noncommunicable, and behavioral diseases with emphasis on the disease process and basic epidemiologic methods. Limited enrollment. Offered Fall. Instructor(s): Iammarino.

HEAL 410 PROGRAM DEVELOPMENT IN HEALTH EDUCATION (3)
Content and methods in teaching health education; program materials and curriculum construction in secondary school health education programs. Required for Teaching Certification in Health. Not offered Fall and Spring. Instructor(s): Iammarino.

HEAL 422 THEORIES AND MODELS OF HEALTH BEHAVIOR (3)
Theories & Models of Health Behavior is designed for the student interested in public and community health or health psychology. This course examines the current theories and models of health behavior and their application to the field of health promotion/education. Open only to junior and senior students. Must be in one of the following Classification(s): Junior, Senior. Offered Spring. Instructor(s): Nesbitt.

HEAL 460 PLANNING AND EVALUATION OF HEALTH PROMOTION AND EDUCATION (3)
Planning & Evaluation of Health Promotion provides the student with the technical skills for planning and evaluation of health promotion, health education, and disease prevention programs including both qualitative and quantitative methods of evaluation. Offered Fall. Instructor(s): Nesbitt.

HEAL 485 SEMINAR ON INTERNATIONAL HEALTH PROBLEMS (3)
This upper level seminar on International Health is designed to increase student's awareness of the multiple dimensions and complexities involved in understanding the health of people from diverse geographic, political, economic, and cultural backgrounds. The seminar will explore issues and concepts of delivery and acceptance of health care, traditional health belief customs and practices, policy, epidemiology and public health problems, demographic and environmental characteristics among selected worldwide populations. Instructor permission required. Not offered Fall and Spring. Instructor(s): Iammarino.

HEAL 495 INDEPENDENT STUDIES (1 TO 6)

Open only to junior and senior students. Permission of advising and Program Development Committee. May not be in any of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Fall. Instructor(s): Iammarino.

HEAL 496 INDEPENDENT STUDY (1 TO 3)

Open only to junior and senior students. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Spring. Instructor(s): Iammarino.

HEAL 498 SPECIAL TOPICS (3)

Topics vary from semester to semester. Repeatable for Credit. Offered Fall and Spring Instructor(s): Iammarino.

HEAL 499 TEACHING PRACTICUM (1 TO 6)

Teaching experience for upper level students who have excelled in one area of health sciences. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Iammarino.

HEBR (HEBREW)**School of Humanities/Center for Study of Languages****HEBR 101 INTRODUCTION TO MODERN HEBREW LANGUAGE AND CULTURE I (5)**

Proficiency based course that employs a variety of instructional techniques including audio-visual materials and Internet based exercises in order to facilitate all communicative skills: listening-comprehension, speaking, reading and writing. Aspects of Israeli culture will be introduced. Recommended prerequisite(s): No prior knowledge of Hebrew. Offered Fall. URL: lang.rice.edu/tbaron.

HEBR 102 INTRODUCTION TO MODERN HEBREW LANGUAGE & CULTURE II (5)

Proficiency based course that employs a variety of instructional techniques including multimedia and Internet based exercises in order to enhance communicative skills. Emphasis will be put on students' presentations skills (written and verbal). Aspects of Israeli culture will be introduced. Pre-requisite(s): HEBR 101, or permission of instructor. Offered Spring. URL: lang.rice.edu/tbaron.

HEBR 201 INTERMEDIATE MODERN HEBREW LANGUAGE AND CULTURE I (4)

This course will continue to build up students' proficiency in understanding, speaking, reading and writing by using traditional methods of instruction and multimedia. Students will interact with authentic material from Israeli culture such as feature films. Emphasis will be put on self-expression in the language. Pre-requisite(s): HEBR 102, or permission of instructor. URL: lang.rice.edu/tbaron.

HEBR 202 INTERMEDIATE MODERN HEBREW LANGUAGE AND CULTURE II (4)

It will to build up students' proficiency in understanding, speaking, reading and writing by using traditional methods of instruction and multimedia as well. Students will interact with authentic material from Israeli culture such as feature films. Emphasis will be put on self-expression in the language. Pre-requisite(s): HEBR 201, or permission of instructor. Offered Spring. URL: lang.rice.edu/tbaron.

HEBR 398 INDEPENDENT STUDIES (3)

Repeatable for Credit.

HIND (HINDI)**School of Humanities/Center for Study of Languages****HIND 101 ELEMENTARY HINDI I (5)**

An in-depth introduction to modern Hindi. In an intellectually challenging environment, through a combination of graded texts, written assignments, audio-visual material and computer-based exercises, this course provides cultural insights and increases proficiency in understanding, speaking, reading and writing Hindi. Emphasis on spontaneous self-expression in the language. No prior background in Hindi assumed. Recommended prerequisite(s): No prior knowledge of Hindi assumed. Limited enrollment. URL: www.ruf.rice.edu/~gshah/elem.html.

HIND 102 ELEMENTARY HINDI II (5)

In an intellectually challenging environment, through a combination of graded texts, written assignments, audio-visual material including contemporary Hindi films and songs, and computer based assignments, this course increases proficiency in understanding, speaking, reading, and writing Hindi. Emphasis is placed on spontaneous self-expression in the language. Pre-requisite(s): HIND 101, or permission of instructor. Limited enrollment. URL: www.ruf.rice.edu/~gshah/elem.html.

HIND 201 INTERMEDIATE HINDI (5)

Through extensive use of cultural documents including films, radio broadcasts, and graded literary and non-literary texts, this course builds students' proficiency in Hindi. Provides space for meaningful interaction with authentic materials and their related cultures. Furthers the student's appreciation of cultural nuances. Emphasis is placed on spontaneous self-expression in Hindi. Pre-requisite(s): HIND 102, or permission of instructor. URL: www.ruf.rice.edu/~gshah/inter.html.

HIND 202 INTERMEDIATE/ADVANCED HINDI (5)

Through use of cultural documents including films, radio broadcasts, and newspaper articles, this course builds students' proficiency in Hindi. Introduction of Hindi Literary traditions, provides space for meaningful interaction with authentic materials and furthers the student's appreciation of cultural nuances. Prepares students for further academic and nonacademic use of Hindi. Pre-requisite(s): HIND 201, or permission of instructor. Limited enrollment. URL: www.ruf.rice.edu/~gshah/inter.html.

HIND 335 SOUTH ASIAN LITERATURE, POETRY, AND POPULAR CULTURE I (3)

Focus will vary each year depending on both, the needs and interests of the students in the class, as well as contemporary issues. Readings range from classical, to modern 20th century literature and poetry. Various art forms, including theater and film, will be thematically related to the readings. Pre-requisite(s): HIND 202, or permission of instructor. URL: www.ruf.rice.edu/~gshah/adv.html.

HIND 336 SEMINAR IN SOUTH ASIAN LITERATURE, POETRY, AND POPULAR CULTURE II (3)

HIND 336 consolidates and builds on the fifth semester Hindi course HIND 335. Continues to build student proficiency in understanding, speaking, writing and thinking in Hindi. Prepares the student for further academic and non-academic use of Hindi. Emphasis is placed on spontaneous self expression in the language. Pre-requisite(s): HIND 335, or permission of instructor. Limited enrollment. URL: www.ruf.rice.edu/~gshah/adv.html.

HIND 398 HINDI TEACHING PRACTICUM (1 TO 6)

Students will work with instructor closely to acquire teaching skills in tutoring in Hindi. Instructor permission required. Repeatable for Credit.

HIND 399 HINDI TEACHING PRACTICUM (1 TO 6)

Students will work with instructor closely to acquire teaching skills in tutoring in Hindi. Instructor permission required. Repeatable for Credit.

HIND 498 INDEPENDENT STUDY (1 TO 6)

Instructor permission required.

HIND 499 INDEPENDENT STUDY (1 TO 3)

Instructor permission required.

HIST (HISTORY)**School of Humanities/History****HIST 101 MODERN EUROPE, 1450-1789 (3)**

Course provides an introduction to European history from 1500 to the French Revolution, tracing Europe's rise to world dominance via capitalism, the nation-state, science and technology, and a secular world view. It asks how conditions in the rest of the world allowed European imperialism and colonialism to triumph. Offered Fall. Instructor(s): Zammito.

HIST 102 MODERN EUROPE, 1789-PRESENT (3)

Course provides an introduction to European history between the French Revolution and the collapse of the Soviet system in 1989-1990. The course examines industrialization, the development of the nation-state, World War One, Fascism and Communism, World War Two, European integration, decolonization and the Velvet Revolutions of 1989. Offered Spring. Instructor(s): Wildenthal.

HIST 108 WORLD HISTORY SINCE 1492 (3)

Class will explore the last 500 years of world history. The focus will be four long-term processes that have shaped the world today: struggles between Europeans and colonized peoples; forms of producing and exchanging goods; formation and spread of the modern state; and the development of 'bourgeois' ways of living. Offered Spring. Instructor(s): Ward.

HIST 117 THE UNITED STATES, 1776-1877 (3)

Survey of American social, political, and economic history from the early republic through the Civil War and Reconstruction, with emphasis on industrialization and the history of labor, women's history, and race relations. Not offered Fall and Spring.

HIST 118 THE UNITED STATES, 1877-PRESENT (3)

A continuation of HIST 117 (though 117 is not a prerequisite) from the Reconstruction to the present. Not offered Fall and Spring.

HIST 144 FRESHMAN SEMINAR: THE ARAB-ISRAELI CONFLICT (3)
Seminar traces the history and politics of the Arab-Israeli conflict, delving into both Palestinian and Israeli understandings of the past and present using books, documentaries, and films. The course seeks to understand how Israeli and Palestinian nationalisms have been constructed and analyzes U.S. involvement in the conflict. Cross-listed with FSEM 144. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Makdisi.

HIST 151 FRESHMAN SEMINAR: THE HERO AND HIS COMPANION FROM GILGAMESH TO SAM SPADE (3)
How does presentation of heroic action illustrate the basic values of society? Historical sources including ancient texts, modern mystery stories, and two "western" movies, show the development of a style of community service linking heroism with alienation. The extent to which women participate will be traced. Cross-listed with FSEM 151. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall & Spring. Instructor(s): Maas.

HIST 160 FRESHMAN SEMINAR: THOMAS JEFFERSON, THE AMERICAN REVOLUTION, AND THE USES OF THE PAST (3)
Seminar will focus on three dimensions of Thomas Jefferson's life and legacy: first, what he said and did in the American Revolution; second, how he has been understood by historians; and third, how his words, ideas, and actions have been used by successive generations of Americans. Cross-listed with FSEM 160. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): Gruber.

HIST 161 FRESHMAN SEMINAR: THE USES OF THE PAST (3)
Seminar analyzes how selected historical events are interpreted at different times and contexts. Sources include history books, novels, movies, court cases, and political debates. Specific events studied will vary according to student interest from ancient times to the present. Cross-listed with FSEM 161. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Quillen.

HIST 163 FRESHMAN SEMINAR: BROWN V. BOARD (3)
A first year seminar examining the origins and legacies of the civil rights case that all but defined the parameters of modern American society and race relations. Where did the case come from? How was it argued and decided? What have been its consequences? Cross-listed with FSEM 163. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Fall. Instructor(s): Byrd.

HIST 168 FRESHMAN SEMINAR: THE WORLD OF THE ARABIAN NIGHTS (3)
Seminar on the social and cultural world of the stories of the 1001 nights. Readings and discussions reveal how they became famous in Europe and a source for western images of the Islamic World. Source materials range from translations and similar stories from different traditions to modern movies and TV shows. Cross-listed with FSEM 168, MDST 168. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Sanders.

HIST 176 FRESHMAN SEMINAR: TERROR AND AFRICAN AMERICAN HISTORY (3)
From the 1880s to 1968, lynch mobs murdered nearly 5,000 African-Americans. Terror and black responses to it have shaped nearly every aspect of African American history. This seminar examines black society, politics, gender, and culture in 20th century America against the backdrop of racial violence. Cross-listed with FSEM 176. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Byrd.

HIST 188 THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION (3)
Survey of social, political, economic, and intellectual ligatures which bound the particular histories of Africa, Europe, and the Americas one to the other, till by the late 18th century the Atlantic basin constituted a world unto itself. Course equivalency: HIST 388. Offered Spring. Instructor(s): Byrd.

HIST 200 ORIGINS OF WESTERN CIVILIZATIONS (3)
Course explores development of imperial systems from the Bronze Age to Roman Empire with attention to subject peoples' participation in multi-ethnic states. Aspects of art, law, economics, religion, and literature of the Hittites, Assyrians, Persians, Greeks, and Romans examined with consideration given to strengths and weaknesses of contributions to the modern world. Offered Fall.

HIST 202 INTRODUCTION TO MEDIEVAL CIVILIZATION: THE EARLY MIDDLE AGES (3)
Introduction to the European culture of the "Dark Ages," from the fall of Rome to the end of the Viking invasions. Includes the use of historical, literary, artistic, and archaeological sources to trace changes in European material, spiritual, and cultural life between 300 and 1000 AD. Cross-listed with MDST 202. Not offered Fall & Spring.

- HIST 203 INTRODUCTION TO MEDIEVAL CIVILIZATION: THE HIGH MIDDLE AGES (3)**
European culture from the year 1000 to the discovery of the Americas, which encompasses the Crusades, the "discovery of the individual", chivalry and chivalric literature, the Black Death, and the beginnings of the Age of Exploration. Cross-listed with MDST 203. Not offered Fall and Spring.
- HIST 206 INTRODUCTION TO ASIAN CIVILIZATIONS (3)**
Introduction to the great cultural traditions of Asia, past and present, with emphasis on evolving religious and philosophical traditions, artistic and literary achievements, and patterns of political, social, and economic change. Cross-listed with ASIA 211. Limited enrollment. Offered Fall. Instructor(s): Ward; Shehabuddia; Smith.
- HIST 211 AMERICAN THOUGHT AND SOCIETY, I (3)**
Survey of 17th and 18th century American history, with emphasis on intellectual and social developments underlying the surface of events. Course equivalency: HIST 311. Offered Fall. Instructor(s): Haskell.
- HIST 212 AMERICAN THOUGHT AND SOCIETY, II (3)**
Continuation of HIST 211. Includes 19th and 20th century American history. May take HIST 211 and HIST 212 separately. Course equivalency: HIST 312. Offered Spring. Instructor(s): Haskell.
- HIST 214 CARIBBEAN NATION BUILDING (3)**
Course will focus on the slow, steady process through which nation states emerged in the Caribbean from the 18th century to the present, as well as the difficulties they face amidst increasing globalization. Course equivalency: HIST 314. Not offered Fall and Spring. Instructor(s): Cox.
- HIST 215 BLACKS IN THE AMERICAS (3)**
Comparative survey of black people in the Americas for 1619 to the present examines the Atlantic slave trade, the movement toward slave emancipation in various countries, and 19th century black self-help efforts. The course also concentrates on economic conditions for blacks at the turn of the 20th century. Course equivalency: HIST 315. Offered Fall. Instructor(s): Cox; Byrd.
- HIST 219 FORTUNE-TELLERS AND PHILOSOPHERS: THE ROLE OF DIVINATION IN CHINESE HISTORY (3)**
Course will examine the way fortune-telling beliefs and practices -- use of "oracle bones", consultation of the "I-ching" (Book of Changes), physiognomy, spirit-writing, fengshui--have evolved over 3000 years in China. Focus will be how these practices have traveled to other countries; and exploring political, social and cultural significances. Course equivalency: HIST 319. Not offered Fall and Spring. Instructor(s): Smith.
- HIST 220 CONTEMPORARY CHINA (3)**
This introductory course is designed to encourage creative ways of thinking about "Cultural China"- a broad-ranging concept that includes the People's Republic of China, the newly established Special Administrative Region (SAR) of Hong Kong, the Republic of China on Taiwan, and overseas Chinese communities throughout the world. Course equivalency: HIST 310. Not offered Fall and Spring. Instructor(s): Smith; Lewis.
- HIST 223 EMPIRES AND COMMUNITIES IN THE MIDDLE AGES (3)**
Course will explore the political, social, and economic conceptions of the Byzantine and Holy Roman Empires. Examining the self-perceptions of the Empire; the role of Roman tradition and languages; notions of (geographical) borders and nations; different constitutions in political representation, administration, and economic organization. Cross-listed with MDST 223. Course equivalency: HIST 323. Not offered Fall & Spring. Instructor(s): Haverkamp.
- HIST 225 EUROPE SINCE 1945 (3)**
Course surveys the history of Europe from the end of World War II to 1989. The course focuses on the impact of the war on European societies as well as on decolonization, European unification, economic reconstruction and immigration and the rise and fall of communism in Eastern Europe. Offered Spring. Instructor(s): Cohen.
- HIST 227 COLONIAL LATIN AMERICA (3)**
Lecture course examining the creation of modern Latin America. Concentrating on the struggles over land and labor, the creation of nation-states, and the conflicts within those states over issues of citizenship and social justice. The course will also address the contentious role the United States has played in the region. Offered Fall.
- HIST 228 MODERN LATIN AMERICA (3)**
Lecture course examining the creation of modern Latin America. Concentrating on the struggles over land and labor, the creation of nation-states, and the conflicts within those states over issues of citizenship and social justice. The course will also address the contentious role the United States has played in the region. Limited enrollment. Offered Spring. Instructor(s): Wolfe.
- HIST 231 AFRICA TO 1884 (3)**
Survey of the changing historiography of Africa. Includes the emergence of the Bantu; early Christianity and Islam; trans-Saharan trade; Medieval Sudanic empires; statelessness and state formation; Portugal in Africa; the slave trade; the Mfecane; the Sudanic jihads; long-distance trade; and African-European relations in the 19th century. Offered Fall. Instructor(s): Odhiambo.

HIST 232 THE MAKING OF MODERN AFRICA (3)

Survey of the transformation of Africa from the late 19th century to the present. Includes the partition of Africa and colonial states; economic and social changes in the 20th century; political developments; and Africa since independence. Offered Spring. Instructor(s): Odhiambo.

HIST 233 HISTORY OF SCIENCE IN THE MODERN PERIOD (3)

Main issues in the history of modern science from the 17th century to the present. Topics might include: the "Scientific Revolution", Newtonianism in the 18th century, Darwinism and evolution, the relativity and quantum revolutions in physics in the early 20th century, and recent developments in the life sciences like molecular biology. Offered Spring. Instructor(s): Pearson.

HIST 235 THE WORLD AND THE WEST (3)

Introduction to the last 500 years of world history, focusing on processes that define the modern period. Topics include industrialization, democratization, colonialism, and emergence of new forms of cultural production with exploration of how and why such processes have come to divide the modern world into "west" and a "non-west". Cross-listed with HUMA 235. Course equivalency: HIST 365. Not offered Fall and Spring. Instructor(s): Quillen; Makdisi.

HIST 241 U.S. WOMEN'S HISTORY: COLONIAL BEGINNINGS TO THE CIVIL WAR (3)

Survey of American women's history examines the lives of elite, working, black, Indian, and white women, and traces changes in women's legal, political, and economic status from the mid-17th century through the Civil War. Topics include slavery, suffrage, sexuality, and feminism. Cross-listed with WGST 234. Not offered Fall & Spring. Instructor(s): Sneider.

HIST 242 U.S. WOMEN'S HISTORY: CIVIL WAR TO THE PRESENT (3)

Survey of American women's history examines the lives of black, Asian American, Chicana, native American, and white women, and traces changes in women's legal, political, and economic status from the Civil War to the present. Topics include suffrage, anti-lynching, welfare, birth control, and the modern civil rights and feminist movements. Cross-listed with WGST 235. Offered Spring. Instructor(s): Sneider.

HIST 250 TRADITIONAL CHINESE CULTURE (3)

Introduction to the language, philosophy, religion, art, literature, and social customs of China. Offered Spring. Instructor(s): Smith.

HIST 254 CULTURE AND SOCIETY IN POST-1945 GERMANY (3)

Course examines German politics and societies under Allied administration (West and East Germany 1949-1989) and the Federal Republic since 1990. Topics include democracy; post-1945 responses to Nazism; political economies; challenges of the "new social movements"; and national identity in context of European unification and global migration. Not offered Fall and Spring. Instructor(s): Wildenthal.

HIST 256 EUROPEAN POLITICS AND SOCIETY, 1890-1945 (3)

Examination of European history in the age of total war. Includes imperialism and the development of the welfare state, institutional responses to the demands of total warfare, the crisis of liberal constitutionalism, the Russian Revolution, and the rise of fascism. Not offered Fall and Spring. Instructor(s): Caldwell.

HIST 257 JEWS AND CHRISTIANS IN MEDIEVAL EUROPE (3)

Course will study relationships between Jewish and Christian communities within the context of Christian Europe. Topics will include settlement and demography; economics; legal status; hostility against Jews; family and the position of women; communal organizations; social diversity; and intellectual and spiritual achievements. Cross-listed with MDST 257. Course equivalency: HIST 357. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 262 ROME: CITY AND EMPIRE (3)

An introduction to the history of Rome from its origins to its collapse in western Europe ca 500 A.D. Emphasis is on the development of the city of Rome as the center of an evolving empire, seen through its monuments, buildings, art, and literature. Not offered Fall and Spring. Instructor(s): Maas.

HIST 268 BONDAGE IN THE MODERN WORLD (3)

Convict transportation existed as a global phenomenon from the early modern era and was embedded in the first wave of European imperialism. This survey course explores penal transportation within the broader context of forced migration, examining the complexities of early colonial settlements in the Americas, Africa, Asia and Australia. Offered Fall. Instructor(s): Ward.

HIST 269 WORLD HISTORY THROUGH GAMES (3)

Survey of world history using computer games from 1300 B.C. to the present, emphasis will be placed upon human interaction with geology, environment and diseases. Limited enrollment. Not offered Fall and Spring. Instructor(s): Seed.

HIST 270 SOUTH AFRICA AND INDONESIA: EMPIRE TO NATION (3)

Survey examines the histories of modern South Africa and Indonesia from the earliest indigenous societies of the present. Focus on the role of the Dutch Indian Ocean Empire; South Africa under British rule; and the rise of nationalism and dramatic transitions to democracy in the 20th century. Not offered Fall and Spring. Instructor(s): Ward.

HIST 274 JEWISH HISTORY, 1500-1948 (3)

History of the Jews' expulsion from Spain to the establishment of the state of Israel. Life in western and eastern Europe as well as in Islamic countries, seen from the perspective of settlement, assimilation, and the particularities of the Jewish historical experience. Course equivalency: HIST 374. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 277 HISTORY OF THE OTTOMAN EMPIRE, 1453-1918 (3)

Course surveys the political, social, economic, and cultural history of the Ottoman Empire. Course equivalency: HIST 377. Not offered Fall and Spring. Instructor(s): Makdisi.

HIST 278 THE ARAB WORLD IN THE 20TH CENTURY, 1918 TO PRESENT (3)

Survey of the history and culture of the Arab world from World War I to the present. Topics include nationalism, colonialism, and Orientalism as understood and discussed in the contemporary Arab world through debates about Palestine, status of women, and rise of modern Islamic politics. Course equivalency: HIST 378. Offered Spring. Instructor(s): Makdisi.

HIST 279 THE CARIBBEAN IN THE AGE OF REVOLUTION, 1770-1820 (3)

An examination and analysis of Caribbean societies as they sought to adjust to forces unleashed by the American and French Revolutions and amidst mounting antislavery sentiment in the western world. Course equivalency: HIST 379. Not offered Fall and Spring. Instructor(s): Cox.

HIST 281 THE MIDDLE EAST FROM THE PROPHET MUHAMMAD TO MUHAMMAD ALI (3)

Introduction to the Middle East from the rise of Islam to the beginning of the 19th century. Topics include conquests and classical Islamic states, Arabization, Jewish and Christian communities, impact of Turkic peoples, and the Ottoman Empire, with emphasis on social, cultural, and political trends which shaped the region's history. Cross-listed with MDST 281. Offered Fall. Instructor(s): Sanders.

HIST 283 WOMEN IN THE MODERN ISLAMIC WORLD (3)

This course introduces students to the history of women in the Islamic world. Topics include women and law, family relations, work, women as political actors in Islamic history, the harem as a social and political institution, women as property owners, veiling, and modern feminist movements throughout the Islamic world. Cross-listed with WGST 283. Not offered Fall and Spring. Instructor(s): Sanders.

HIST 295 THE AMERICAN SOUTH (3)

Survey of the American South from development of Native American cultures to present. Topics include slavery and plantation economy; emergence of southern distinctiveness; Civil War and Reconstruction; political reform and the civil rights movement; rise of the Sunbelt, southern religion, music, and literature; and the future of southern regionalism. Course equivalency: HIST 395. Not offered Fall and Spring. Instructor(s): Boles.

HIST 300 INDEPENDENT STUDY (1 TO 6)

Independent study under the supervision of a history faculty member. Hours are variable. Department permission required. Repeatable for Credit. Offered Fall and Spring.

HIST 307 IMPERIAL ROME FROM CAESAR TO DIOCLETIAN (3)

Examination of how Rome acquired, maintained, and understood her empire. Includes the development of a political, social, and ideological system reaching from Scotland to Mesopotamia during the three centuries of Rome's greatest power. Not offered Fall and Spring. Instructor(s): Maas.

HIST 308 THE WORLD OF LATE ANTIQUITY (3)

Study of the social, religious, and political history of the Roman world from Diocletian to the rise of Islam, with emphasis on the breaking of the unity of the Mediterranean world and the formation of Byzantine society in the Greek East. Cross-listed with MDST 308. Not offered Fall and Spring. Instructor(s): Maas.

HIST 310 CONTEMPORARY CHINA (3)

An enriched version of HIST 220. May not receive credit for both HIST 220 and 310. Course equivalency: HIST 220. Not offered Fall and Spring. Instructor(s): Smith; Lewis.

HIST 311 AMERICAN THOUGHT AND SOCIETY, I (3)

Enriched version of HIST 211. Students may not receive credit for both HIST 211 and 311. Course equivalency: HIST 211. Offered Fall. Instructor(s): Haskell.

HIST 312 AMERICAN THOUGHT AND SOCIETY, II (3)

An enriched version of HIST 212. Students may not receive credit for both HIST 212 and 312. Course equivalency: HIST 212. Offered Spring. Instructor(s): Haskell.

HIST 313 MODERN MEXICO (3)

Lecture and discussion course examining the roots of the Mexican Revolution with the development of the coalitions of peasants, workers, and middle-class politicians that participated in the 1910-1917 revolution and the slow institutionalization that followed. Offered Spring.

HIST 314 CARIBBEAN NATION BUILDING (3)

Enriched version of HIST 214. May not receive credit for both HIST 214 and 314. Course equivalency: HIST 214. Not offered Fall and Spring. Instructor(s): Cox.

HIST 315 BLACKS IN THE AMERICAS (3)

Enriched version of HIST 215. May not receive credit for both HIST 215 and 315. Course equivalency: HIST 215. Offered Fall. Instructor(s): Cox; Byrd.

HIST 316 THE INVENTION OF PAGANISM IN THE ROMAN EMPIRE (3)

Course examines the concept of "paganism" from the first through seventh centuries A.D. Includes examination of the mutually tolerant character of Roman religions, invention of the category, and Christian application to all polytheists of the empire and beyond. Cross-listed with CLAS 318, RELI 316. Not offered Fall and Spring. Instructor(s): Maas; McGill.

HIST 319 FORTUNE-TELLERS AND PHILOSOPHERS: THE ROLE OF DIVINATION IN CHINESE HISTORY (3)

Enriched version of HIST 219. May not receive credit for both HIST 219 and 319. Course equivalency: HIST 219. Not offered Fall and Spring. Instructor(s): Smith.

HIST 323 EMPIRES AND COMMUNITIES IN THE MIDDLE AGES (3)

Enriched version of HIST 223. May not receive credit for both HIST 223 and 323. Cross-listed with MDST 323. Course equivalency: HIST 223. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 324 NAVIGATION AND CARTOGRAPHY (3)

Navigation and cartography changed more rapidly in the period from 1400 to 1600 than in any other period prior to the 20th century. Topics covered include the history of projections, origin of latitude and longitude scales, compass roses, ship design, and related subjects. Not offered Fall and Spring. URL: <www.rice.edu/latitude>. Instructor(s): Seed.

HIST 327 HISTORY OF CARTOGRAPHY (3)

Geography is not destiny, nor is its art of representation, cartography. Map-making sits on the frontier between art and science, a boundary that has shifted across time and cultures. The first part of the course covers different conceptions of mapping; the second, the origin of the science of cartography. Not offered Fall and Spring. Instructor(s): Seed.

HIST 328 LATIN AMERICAN GENDERS (3)

Course examines diversity of Latin American cultures and gender relations from modern urban societies to Indian peasant villages. Cross-listed with WGST 328. Not offered Fall and Spring. Instructor(s): Wolfe.

HIST 330 ORIGINS OF AFRO-AMERICA (3)

Survey of major issues and events in the formation of modern Afro-America from the 15th to late 18th century. Not offered Fall and Spring. Instructor(s): Byrd.

HIST 334 AMERICAN RADICALISM AND DISSENT (3)

This course will explore the political, cultural and intellectual history of radical social movements in the United States. Topics will include abolitionism, feminism, anarchism, socialism, communism, civil rights, black nationalism, gay rights, anti-war protest, and the 1960s New Left. Not offered Fall and Spring. Instructor(s): Lichtenstein.

HIST 335 CARIBBEAN HISTORY TO 1838 (3)

Study of Caribbean history from the arrival of the Europeans to the abolition of slavery in the British West Indies in 1838, with emphasis on the social and economic history of the region. Includes the question of why slavery and the plantation system both emerged and fell. Not offered Fall and Spring. Instructor(s): Cox.

HIST 336 CARIBBEAN HISTORY 1838 TO PRESENT (3)

Study of the social, economic, and political history of the Caribbean people from the abolition of slavery to the emergence of independent nations in the modern era. Offered Spring. Instructor(s): Cox.

HIST 338 HUMANIST TRADITIONS AND ITS CRITICS (3)

Exploration of aspects of Western humanist and anti-humanist traditions from the early modern period to the present, with emphasis on how writers within each tradition understood fundamental terms like human nature, self, community, morality, and freedom. Includes literary, theological, and philosophical texts, as well as contemporary critical theory. Not offered Fall and Spring. Instructor(s): Quillen.

HIST 341 PRE-MODERN CHINA (3)

Survey of Chinese history from antiquity to c.1800, highlighting salient aspects of China's heritage. Not offered Fall and Spring. Instructor(s): Smith.

HIST 342 MODERN CHINA (3)

Continuation of HIST 341. Includes China's revolutionary transformation in the 19th and 20th centuries, from the Ch'ing dynasty to the People's Republic. May take HIST 341 and 342 separately. Offered Spring. Instructor(s): Smith.

HIST 345 RENAISSANCE EUROPE (3)

Exploration of major cultural developments in Western Europe from the rise of Italian humanism in the 14th century to European conquest and expansion in the 16th century. Cross-listed with MDST 345. Offered Spring. Instructor(s): Quillen.

HIST 347 U.S. LABOR HISTORY: 20TH CENTURY REPRESENTATIONS (3)

This lecture/discussion course considers the last century of American labor history through a close analysis of journalism, fiction, and film. Topics will include: industrialization, immigration, gender, industrial unionism, race relations, syndicalist, socialist and communist organizing, agrarian labor, and de-industrialization. Reading will be supplemented by required evening film showings. Limited enrollment. Not offered Fall and Spring. Instructor(s): Lichtenstein.

HIST 348 U.S. HISTORY: THE NEW DEAL AND W.W. II (3)

Topics include political economy of the depression and development of a government response; growth of the labor movement; cultural and political ferment of the era; regionalism; and the wartime home experience of women, racial minorities, and the working class. Limited enrollment. Not offered Fall and Spring. Instructor(s): Lichtenstein.

HIST 349 WOMEN AND GENDER IN 19TH CENTURY EUROPE (3)

Examination of the political and cultural discussions of the "woman question" in 19th century Europe. Includes the role of the public and private legal rights in republicanism and the early feminist movement, gender equality in the context of socialist movements, and challenges to gender identity posed by cultural modernism. Cross-listed with WGST 420. Not offered Fall and Spring. Instructor(s): Wildenthal.

HIST 350 AMERICA, 1900-1940 (3)

Survey of major economic, social, and political developments in the United States from 1900 to 1940. Not offered Fall and Spring. Instructor(s): Matusow.

HIST 351 AMERICA SINCE 1945 (3)

Survey of major economic, social and political developments in the United States since 1945. Limited enrollment. Offered Fall. Instructor(s): Matusow.

HIST 354 GERMAN HISTORY, 1648-1890 (3)

Survey of the "Germanies" from the rise of the absolutist state following the Thirty Years' War to the unification of Germany in 1871. Includes development of modern bureaucratic and military institutions, changing conceptions of state and society, and the major social and economic changes of the period. Cross-listed with GERM 344. Not offered Fall and Spring. Instructor(s): Caldwell.

HIST 355 FROM DEMOCRACY TO DICTATORSHIP: GERMAN HISTORY 1890-1945 (3)

Lecture class examines empire, democracy and dictatorship in Germany, 1890-1945. Includes political history, challenges of organized capitalism, the rise and fall of socialism, development of an interventionist state, cultural critique and political culture, the Nazi social revolution, and the Holocaust. Cross-listed with GERM 345. Offered Fall. Instructor(s): Caldwell.

HIST 357 JEWS AND CHRISTIANS IN MEDIEVAL EUROPE (3)

Enriched version of HIST 257. May not receive credit for both HIST 257 and 357. Cross-listed with MDST 357. Course equivalency: HIST 257. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 358 EUROPEAN INTELLECTUAL HISTORY FROM AUGUSTINE TO DESCARTES (3)

Course will survey key developments in Western thought (political theory, literature, philosophy, theology, and art) from the consolidation and institutionalization of Christian doctrine in the fourth and fifth centuries through the beginnings of the "Scientific Revolution" in the 17th century. Cross-listed with MDST 358. Not offered Fall & Spring. Instructor(s): Quillen.

HIST 359 HUMOR AND ENTERTAINMENT IN ISLAMIC SOCIETY (3)

Course investigates humor and entertainment in Islamic societies from the early Islamic period to the 20th century. Reading and discussion of texts from the Arabic, Persian, and Turkish literary traditions, and analysis of genres and entertainment values. Cross-listed with RELI 358. Offered Spring. Instructor(s): Cook, Sanders.

HIST 360 EMPIRE AND FILM (3)

The British Empire will be explored through a wide range of films from Britain, America, India and China. These films offer a storehouse of images, styles and sentiments reflecting in many ways on "the imperial enterprise". In addition, readings. Recommended prerequisite(s): Some previous work in either history or film. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wiener.

HIST 361 BRITAIN FROM HENRY VII TO THE INDUSTRIAL REVOLUTION, 1509-1815 (3)

Examination of the personalities and forces that changed England from a backwater of Europe into, by 1815, the United Kingdom and the British Empire, the leading nation, and empire, in the world. About equal amounts of lecture and discussion. Not offered Fall and Spring. Instructor(s): Wiener.

HIST 362 BRITAIN FROM THE INDUSTRIAL REVOLUTION TO TONY BLAIR, 1815-PRESENT (3)

Exploration of Britain's take-off into the Industrial Revolution, the flourishing of the Empire, and the adjustment to the end of the Empire and the diminishment of world political and economic stature from the First World War to Tony Blair's "New Britain." Includes the use of novels and films to examine these transformations. Not offered Fall and Spring. Instructor(s): Wiener.

HIST 363 GENDER AND SOCIETY IN EARLY MODERN EUROPE (3)

Exploration of the relationship between ideas about gender and the social, political, and legal institutions in Europe from c. 1350 to 1800. Includes the structure and role of the family, gender roles in religious institutions, and the regulation of sexuality. Cross-listed with WGST 338. Not offered Fall and Spring. Instructor(s): Quillen.

HIST 365 THE WORLD AND THE WEST (3)

Enriched version of HIST 235. Students may not receive credit for both HIST 235 and 365. Course equivalency: HIST 235. Not offered Fall and Spring. Instructor(s): Quillen; Makdisi.

HIST 366 MODERN BRAZIL (3)

Course examines Brazil's history, from its 1822 peaceful independence to present efforts in creating a democratic society following a military dictatorship. Topics include a legacy as the world's largest slave-holding society in the 19th century, struggles to conquer its huge territory, and the interaction of those factors in shaping national identity. Not offered Fall and Spring. Instructor(s): Wolfe.

HIST 370 EUROPEAN INTELLECTUAL HISTORY: BACON TO HEGEL (3)

Survey of major thinkers and intellectual movements from the scientific revolution to the French Revolution. Includes the use of primary and secondary sources to establish the main contours of philosophical, political, and cultural expression and to relate them to their historical context. Offered Spring. Instructor(s): Zammito.

HIST 371 HISTORY OF MODERN FRANCE (3)

Study of transformations in French society, culture, and politics before, during, and after the French Revolution. Taught in English. Not offered Fall and Spring. Instructor(s): Cohen.

HIST 374 JEWISH HISTORY, 1500-1948 (3)

Enriched version of HIST 274. Students may not receive credit for both HIST 274 and 374. Course equivalency: HIST 274. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 375 EUROPEAN ROMANTICISM, 1750-1850 (3)

Investigation of the emergence, triumph and defeat of Romanticism as a major cultural force in European history, with emphasis on national and epochal diversity within Romanticism in Britain, Germany, and France. Includes Rousseau, Goethe, Schiller, Schlegel, Schelling, Wordsworth, Coleridge, Byron, Stendhal, Hugo, and Baudelaire, as well as music and art. Not offered Fall and Spring. Instructor(s): Zammito.

HIST 377 HISTORY OF THE OTTOMAN EMPIRE, 1453-1918 (3)

Enriched version of HIST 277. May not receive credit for both HIST 277 and 377. Course equivalency: HIST 277. Not offered Fall and Spring. Instructor(s): Makdisi.

HIST 378 THE ARAB WORLD IN THE 20TH CENTURY, 1918-PRESENT (3)

Enriched version of HIST 278. May not receive credit for both HIST 278 and 378. Course equivalency: HIST 278. Offered Spring. Instructor(s): Makdisi.

HIST 379 THE CARIBBEAN IN THE AGE OF REVOLUTION, 1770-1820 (3)

An enriched version of HIST 279. Students may not receive credit for both HIST 279 and 379. Course equivalency: HIST 279. Not offered Fall and Spring. Instructor(s): Cox.

HIST 382 CLASSICAL ISLAMIC CULTURES (3)

An introduction to the cultures and religions of the Islamic world from the 9th through the 14th centuries. Topics include Islamic law and theology, philosophy, ritual, Islamic science and medicine, classical Arabic literature, the impact of Arabo-Islamic culture on Jewish and Christian cultures of the Islamic world. Cross-listed with MDST 382. Not offered Fall and Spring. Instructor(s): Sanders.

HIST 384 THE CRUSADES: HOLY WAR IN MEDIEVAL CHRISTENDOM AND ISLAM (3)

Examination of the Crusades (11th to 15th centuries) from the point of view of both Christian Europe and the Islamic Near East. Includes the political and military history of the Crusades, as well as the social, cultural and religious transformations that caused, and were wrought by, these conflicts. Cross-listed with MDST 384. Not offered Fall and Spring. Instructor(s): Sanders.

HIST 386 RECENT U.S. FOREIGN POLICY (3)

Course will examine American policy during the climactic years of the Cold War. Topics will include detente under Nixon and Carter, confrontation under Reagan, the "new thinking" of Gorbachev, regional conflicts, and the fall of the Soviet Union. Limited enrollment. Not offered Fall and Spring. Instructor(s): Matusow.

HIST 387 LIFE ON THE NILE (3)

Egyptian society, culture, and religion from the 18th to 20th centuries. Course will use travel accounts, ethnographies, novels, historical chronicles, and movies, to examine the position of Egypt in the Ottoman and British Empires. Focus will be the long-term Egyptian cultural and social structures and their transformation in different political contexts. Not offered Fall and Spring. Instructor(s): Sanders.

HIST 388 THE ATLANTIC WORLD: ORIGINS TO THE AGE OF REVOLUTION (3)

Enriched version of HIST 188. Students may not receive credit for both HIST 188 and 388. Course equivalency: HIST 188. Offered Spring. Instructor(s): Byrd.

HIST 395 THE AMERICAN SOUTH (3)

An enriched version of HIST 295. May not receive credit for both HIST 295 and 395. Course equivalency: HIST 295. Not offered Fall and Spring. Instructor(s): Boles.

HIST 398 TOPICS IN LEGAL HISTORY (3)

Course on selected topics in legal history. Contents vary. Repeatable for Credit. Limited enrollment. Offered Spring.

HIST 403 HONORS THESIS (3)

Restricted to students who have been admitted to the honors program; consent of the director of the honors program is required. Students must take both HIST 403 and 404 to gain credit. Instructor permission required. Offered Fall. Instructor(s): Smith.

HIST 404 HONORS THESIS (3)

Continuation of HIST 403, which is prerequisite for enrollment. Completion of this course is required to obtain credit for HIST 403. Pre-requisite(s): HIST 403. Offered Spring. Instructor(s): Smith.

HIST 409 HISTORY OF EAST AFRICA (3)

Seminar on East African cultures, societies, economies, and politics from earliest times to the present. Includes the peoples and languages of East Africa; migrations and settlement, state formation; long-distance trade and expansions in scale, imperialisms and colonial conquest; colonial transformations of African societies; nationalism, and independence. Offered Fall. Instructor(s): Odhiambo.

HIST 410 KENYA IN MODERN HISTORY (3)

Study of Kenya's transformation from tribal societies to modern state. Topics include migrations and settlement; emergence of pre-colonial societies, underlying cultural unities, and pre-capitalist socio-economic formations; British conquest; colonial state and economic changes; traditions of resistance and collaboration; invention of tribes; Mau Mau; de-colonization and constitutional changes; and the post-colonial state. Offered Spring. Instructor(s): Odhiambo.

HIST 415 THE RISE AND FALL OF THE BRITISH EMPIRE (3)

Seminar on how the largest empire in world history came into existence, the impact it had on people and states worldwide, and its decline and fall. Course work will consist of reading, viewing, and evaluating films, and preparing and summarizing in class a research paper on a topic of choice. Recommended prerequisite(s): Some background in either British history or one of the areas impacted by the British. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wiener.

HIST 416 SEMINAR IN CONTEMPORARY AFRICAN AMERICAN HISTORY (3)

A reading- and writing-intensive seminar focusing on selected issues in black culture, politics, and community in the United States since the climax of the Civil Rights movement. Contents vary. Limited enrollment. Not offered Fall and Spring. Instructor(s): Byrd.

HIST 418 SEMINAR TOPICS IN THE HISTORY OF SCIENCE, TECHNOLOGY, MEDICINE (3)

Research seminar on selected topics in the history of science, technology, or medicine. Contents vary. Limited enrollment. Offered Spring. Instructor(s): Pearson.

HIST 420 MORALITY AND HISTORY (3)

Exploration of the idea of morality as having a history and therefore being susceptible to change. Includes selected readings, drawn mainly from Anglo-American history and philosophy, that range over a period of several centuries. Limited enrollment. Offered Fall. Instructor(s): Haskell.

HIST 426 COMPARATIVE SLAVERY AND RACE RELATIONS IN THE AMERICAS (3)

Comparative analysis of slavery and race relations in the U.S., the Caribbean, and Latin America, chiefly to the late 19th century. Includes the relative harshness or mildness of the institution of slavery in various systems, opportunities for advancement for former slaves, and the resultant nature of race relations. Limited enrollment. Not offered Fall and Spring. Instructor(s): Cox.

HIST 427 HISTORY OF THE CIVIL RIGHTS MOVEMENT, 1954 TO THE PRESENT (3)

Examination of the modern Civil Rights movement, with emphasis on the goals and strategies of major spokespersons and leaders, as well as the achievements of the campaign. Includes the extent of its success or failure and whether or not an "unfinished" agenda needs to be completed. Limited enrollment. Offered Fall. Instructor(s): Cox.

HIST 428 COMPARATIVE LABOR HISTORY OF THE AMERICAS (3)

Seminar on the history of work and politics among free wage laborers in the Americas in the 19th and 20th centuries. Incorporates studies of workers' experiences during the process of industrialization and urbanization; analyses of the creation of unions and progressive political movements; and study of class, gender, and race. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wolfe.

HIST 429 TECHNOLOGY AND MODERNITY (3)

Seminar examines both modernity and technology in a variety of settings. Topics include the role of technology in European expansionism, the advent of the railroad, new forms of telecommunications, air travel and warfare, the rise of the automobile, space exploration, and the ongoing development of computers. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wolfe.

HIST 431 POLITICS AND CULTURE IN WEIMAR GERMANY (3)

Born in political and social crisis, the Weimar Republic exemplifies the possibilities and limits of modern democracy. This seminar focuses on original documents of political thought, literature, the visual arts, society, and law to explore the political culture of Germany's first, ill-fated democracy. Cross-listed with GERM 331. Limited enrollment. Not offered Fall and Spring. Instructor(s): Caldwell; Emden.

HIST 432 ISLAM IN SOUTH ASIA (3)

Seminar on Islamic history, politics, and culture in the South Asian subcontinent. Topics will include emergence of Indian Muslim society; Muslim responses to colonialism and the movement for Pakistan; and the role of Islam in politics in contemporary India, Pakistan, and Bangladesh. Requires no prior knowledge of Islam or South Asia. Cross-listed with ASIA 432, WGST 432. Not offered Fall and Spring. Instructor(s): Shehabuddin.

HIST 433 THE ARAB-ISRAELI CONFLICT (3)

Seminar traces the history and politics of the Arab-Israeli conflict. Course seeks to understand how and at what costs Israeli and Palestinian nationalisms have been constructed in both Palestinian and Israeli understandings of the past and present using books, documentaries, and films. Limited enrollment. Not offered Fall and Spring. Instructor(s): Makdisi.

HIST 434 ISLAM AND THE WEST (3)

Seminar explores issues of contact and exploration between Western and Islamic worlds, from the Crusades to the modern era. Investigations will explore how identities are formed and reshaped through interaction with other cultures and how traditions "invented" by relationships between civilization and despotism, freedom and tyranny, religious tolerance and holy war. Limited enrollment. Not offered Fall and Spring. Instructor(s): Makdisi.

HIST 435 COLONIALISM AND NATIONALISM IN THE MIDDLE EAST (3)

Seminar focuses on colonialism and nationalism in the modern Middle East. Beginning with Napoleon's invasion of Egypt in 1798, the seminar delves into specific case studies of European and Middle Eastern encounters and their representations that span both the 19th and 20th centuries. Limited enrollment. Not offered Fall and Spring. Instructor(s): Makdisi.

HIST 436 AMERICA AND THE MIDDLE EAST (3)

Exploration of American political, cultural, and religious involvement in the Middle East. Contents vary. Limited enrollment. Offered Fall. Instructor(s): Makdisi.

HIST 437 CHRISTIANS AND JEWS IN THE MEDIEVAL ISLAMIC WORLD (3)

Examination of Christian and Jewish communities in the Islamic world from the rise of Islam to the Ottoman Empire. Topics include the "dhimmis" (protected peoples); social and economic life; communal organization; and interplay of religious laws and political authority. Discussions focus on modern historiography and Muslim communities under Christian rule. Cross-listed with MDST 385. Limited enrollment. Offered Spring. Instructor(s): Sanders.

HIST 438 WOMEN AND GENDER IN THE MEDIEVAL ISLAMIC SOCIETIES (3)

Seminar examines the legal position and social realities of men and women in the Islamic world, with emphasis on how boundaries of gender have traditionally been drawn. Includes family and sexual ethics, the harem, polygyny, divorce, and eunuchs (who played an important role in the military and certain religious institutions). Cross-listed with MDST 438, WGST 455. Limited enrollment. Not offered Fall and Spring. Instructor(s): Sanders.

HIST 439 COMPARATIVE SLAVERY FROM ANTIQUITY TO THE PRESENT: AFRICA, ASIA, AND EUROPE (3)

Seminar introduces the debates on the history of slavery in human society. Examines case studies in Africa, Asia and Europe with comparative analyses of topics: slavery and the state; slavery and gender; slave trades; and slave resistance. Limited enrollment. Not offered Fall and Spring. Instructor(s): Ward.

HIST 440 THE FUTURE OF THE UNIVERSITY (3)

Research seminar will examine and place in historical context current controversies over the future of the modern American research university. Students will prepare papers based on the archival records of Rice University and secondary literature on other universities. May not be in any of the following Classification(s): Freshman, Sophomore. Limited enrollment. Offered Spring. Instructor(s): Haskell.

HIST 442 THE RENAISSANCE IN EUROPEAN HISTORY (3)

Seminar examines major approaches to and interpretations of the European Renaissance (the period from about 1350-1600) and then analyzes the place that this era came to occupy in our understanding of "western civilization" and of European history generally. Graduate/Undergraduate version: HIST 542. Limited enrollment. Not offered Fall and Spring. Instructor(s): Quillen.

HIST 444 MEMORY AND COMMEMORATION IN THE MIDDLE AGES (3)

Memory and commemoration are the intentions, attitudes, acts, and media that should prevent oblivion of individuals and communities (beyond death). Possessing universal dimensions which date from antiquity, in the present they are often driven into individual remembrance, the institutional realm of politics, the secluded world of museums. Cross-listed with MDST 444. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 445 JEWS IN IMAGE AND FILM (3)

Seminar course will trace the perceptions of Jews and of certain themes in Jewish history from the Middle Ages to modern times. Focus will be placed on their representation in medieval and early modern images of Christian and Jewish art and on modern film. Limited enrollment. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 446 MEDIEVAL WOMEN (3)

Many aspects of today's life for women go back to developments in Medieval times. Seminar explores the freedom and restrictions of women from different religions, queens and nobles, merchants to prostitutes, in families and monasteries. Participation includes a trip to Germany. Course fulfills requirements for MDST major. Cross-listed with MDST 446. Limited enrollment. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 447 THE AGE OF THE CRUSADES (3)

Seminar will discuss characteristics of the Crusades against Muslim, Jews, pagans, Mongols, heretics, schismatics, and political enemies and explore to what extent the concepts of "holy war" and new expressions of religious beliefs impacted fundamentalism creating new possibilities for globalization in medieval Europe. Discussions will include primary and secondary sources. Cross-listed with MDST 447. Limited enrollment. Not offered Fall and Spring. Instructor(s): Haverkamp.

HIST 452 COMPARATIVE HISTORY: THE U.S. AND SOUTH AFRICA (3)

Seminar compares and contrasts the history of two modern societies based on the foundation of racial division and exploitation. Examination will include historical evolution of white racism in both nations; comparing systems of segregation and apartheid; and the history of the civil rights and anti-apartheid movements. Limited enrollment. Not offered Fall and Spring. Instructor(s): Lichtenstein.

HIST 455 HISTORY OF HUMAN RIGHTS (3)

Seminar will explore the history of human rights through disciplines of anthropology and legal philosophy as well as historical case studies of individual states and human rights organizations. Students will undertake independent research on an issue, location, and period of their choosing. Limited enrollment. Not offered Fall & Spring. Instructor(s): Wildenthal.

HIST 459 TOPICS IN MODERN GERMAN HISTORY (3)

Seminar on selected topics in the history of Germany. Contents vary. Cross-listed with GERM 332. Limited enrollment. Not offered Fall and Spring. Instructor(s): Caldwell.

HIST 460 ADVANCED SEMINAR IN ANCIENT HISTORY (3)

Seminar on selected topics in ancient history. Contents vary. Cross-listed with MDST 460. Pre-requisite(s): HIST 201 and HIST 307, or permission of instructor. Limited enrollment. Offered Spring.

HIST 462 NEWTON AND THE 18TH CENTURY (3)

Newton was the indispensable starting point for 18th century thought from the physical sciences to medicine and the so-called "human sciences." Seminar will consider Newton himself and the complex legacy of his thought in 18th century thinkers including Leibniz, Boerhaave, Voltaire, Hume, Haller, Kant, Priestley, Blake, and Goethe. Limited enrollment. Not offered Fall and Spring. Instructor(s): Zammito.

HIST 464 SEMINAR TOPICS IN U.S. HISTORY, 1945-1974 (3)

Seminar requiring three short research papers. Limited enrollment. Offered Fall. Instructor(s): Matusow.

HIST 465 COLONIAL AMERICA (3)

Study of the growth of society, thought, and politics in the English colonies of North America. Limited enrollment. Not offered Fall and Spring. Instructor(s): Gruber.

HIST 466 THE AMERICAN REVOLUTION, 1754-1789 (3)

Study of the origins and implications of the American Revolution, with emphasis on constitutional, social, and political developments. Limited enrollment. Not offered Fall and Spring. Instructor(s): Gruber.

HIST 468 WOMEN AND THE WELFARE STATE: SEXUAL POLITICS AND AMERICAN POVERTY (3)

Seminar in the history of women and welfare focuses on women's contributions to the growth of the welfare state and investigates how welfare has been shaped by understandings of gender, race, and class. Compares American programs to similar programs developed in other countries. Cross-listed with WGST 468. Limited enrollment. Offered Spring. Instructor(s): Sneider.

HIST 469 INTER-AMERICAN RELATIONS (3)

Seminar explores the long and contentious relationships between the U.S. and Latin American nations. Focus will be on events from the late 19th and 20th centuries as seen through the lenses of political, economic, social, and cultural history. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wolfe.

HIST 471 SEMINAR TOPICS IN MODERN FRENCH HISTORY (3)

Research seminar on selected topics in modern French history. Contents vary. Not offered Fall and Spring. Instructor(s): Cohen.

HIST 473 SEMINAR TOPICS IN EUROPEAN INTELLECTUAL HISTORY (3)

Research seminar on selected topics in modern European intellectual history. Topics vary. Limited enrollment. Not offered Fall and Spring. Instructor(s): Zammito.

HIST 474 FRENCH INTELLECTUALS (3)

Seminar investigates the history of a prominent French political figure: the "intellectual" born out the Dreyfus Affair (1895), whose prestige culminated in the post-1945 period before vanishing influence of Marxism after 1989. The course explores the world of French intellectuals and their role in the 20th Century. Limited enrollment. Not offered Fall and Spring. Instructor(s): Cohen.

HIST 477 LATIN AMERICAN DEVELOPMENT: ARGENTINA, BRAZIL AND MEXICO IN THE 20TH CENTURY (3)

Seminar explores three nations (Argentina, Brazil, and Mexico) confrontation with issues of industrialization and democracy through programs they referred to as "developmentalism." Beginning with historical roots in the late 19th and early 20th centuries through the introduction of Neoliberalism and the "Washington Consensus" of the late 20th century. Limited enrollment. Offered Fall. Instructor(s): Wolfe.

HIST 488 TOPICS IN MEDIEVAL HISTORY (3)

Research seminar on selected issues, subject or themes in medieval history. Cross-listed with MDST 488. Not offered Fall and Spring.

HIST 489 MIGRATIONS AND DIASPORAS IN THE INDIAN OCEAN WORLD (3)

The Indian Ocean World presents an enormously varied arena of cultural exchange and interaction spanning coastal regions of Africa, the Middle East, South and Southeast Asia and Australia. Seminar introduces the region by examining societies and empires shaped by voyages of exploration, religious pilgrimages, trading diasporas and forced migration. Cross-listed with ASIA 489. Limited enrollment. Not offered Fall and Spring. Instructor(s): Ward.

HIST 490 THE MEXICAN REVOLUTION: INTERPRETATIONS (3)

Seminar will examine the Mexican Revolution from a wide variety of vantage points to address key questions regarding social upheaval, the struggle for popular democracy and state making. All assigned readings available in English. Limited enrollment. Not offered Fall and Spring. Instructor(s): Wolfe.

HIST 496 A TURBULENT TIME: THE WORLD OF THE HAITIAN REVOLUTION (3)

An examination of the impact of the powerful forces unleashed by the Haitian Revolution on societies in the Caribbean, the U.S., and Latin America in the late 18th and early 19th centuries. Limited enrollment. Not offered Fall and Spring. Instructor(s): Cox.

HIST 498 PROJECTS IN AFRO-AMERICAN HISTORY (3)

Seminar in which participants propose and execute a collaborative project in Afro-American history. Work will culminate a substantive piece of public history (a group publication, exhibit, broadcast, or electronic document, for example). For further information, or to suggest a possible project, contact the instructor. Limited enrollment. Not offered Fall and Spring. Instructor(s): Byrd.

HIST 501 MASTER'S THESIS RESEARCH (4)

Research for master's thesis. Must take both HIST 501 and 502 to receive credit. Offered Fall.

HIST 502 MASTER'S THESIS RESEARCH (4)

Continuation of HIST 501. Must compete both HIST 501 and 502 to receive credit. Pre-requisite(s): HIST 501. Offered Spring.

HIST 511 DIRECTED READINGS IN AMERICAN HISTORY, I (4)

Offered Fall.

HIST 512 DIRECTED READINGS IN AMERICAN HISTORY, I (4)

Offered Spring.

HIST 513 DIRECTED READINGS IN AMERICAN HISTORY, II (4)

Offered Fall.

HIST 514 DIRECTED READINGS IN AMERICAN HISTORY, II (4)

Offered Spring.

HIST 517 DIRECTED READINGS IN SCIENCE AND TECHNOLOGY (4)

Offered Fall.

HIST 518 DIRECTED READINGS IN SCIENCE AND TECHNOLOGY (4)

Offered Spring.

HIST 519 DIRECTED READINGS IN AFRICAN-AMERICAN HISTORY, I (4)

Offered Fall.

HIST 520 DIRECTED READINGS IN AFRICAN-AMERICAN HISTORY, II (4)

Graduate reading in African-American history. Offered Spring.

HIST 521 DIRECTED READINGS IN MEDIEVAL HISTORY (4)

Cross-listed with MDST 321. Offered Fall.

HIST 522 DIRECTED READINGS IN MEDIEVAL HISTORY (4)

Offered Spring.

HIST 523 DIRECTED READINGS IN WOMEN'S AND GENDER HISTORY (4)

Cross-listed with WGST 523. Repeatable for Credit. Offered Fall and Spring.

HIST 525 DIRECTED READINGS IN AFRICAN HISTORY (4)

Offered Fall.

HIST 526 DIRECTED READINGS IN AFRICAN HISTORY (4)

Offered Spring.

HIST 527 DIRECTED READINGS IN NON-WESTERN HISTORY, I (4)

Offered Fall.

HIST 528 DIRECTED READINGS IN NON-WESTERN HISTORY, II (4)

Offered Spring.

HIST 529 DIRECTED READINGS IN MODERN EUROPEAN HISTORY, I (4)

Offered Fall.

HIST 530 DIRECTED READINGS IN MODERN EUROPEAN HISTORY, I (4)

Offered Spring.

HIST 531 DIRECTED READINGS IN MODERN EUROPEAN HISTORY, II (4)

Offered Fall.

HIST 532 DIRECTED READINGS IN MODERN EUROPEAN HISTORY, II (4)

Offered Spring.

HIST 534 CIVILIZING MISSIONS (4)

The development of "civilizing missions" legitimized territorial and spiritual conquest and validated the suppression of subject customs, cultures, and religions. Course will explore the idea which became an integral part of imperial, religious, and national ideologies. Readings include (in translation) modern historical, geographical, legal, ethnographic, religious, and literary texts. Offered Spring. Instructor(s): Makdisi.

HIST 537 COMPARATIVE EMPIRES (4)

Graduate seminar examines Roman and Ottoman notions of empire, European and Eastern historiography of empire in the 18-19th centuries, and imperial practice as it was conceived and carried out in both the Ottoman and British contexts (focusing primarily, but not exclusively, on Egypt and India). Not offered Fall and Spring. Instructor(s): Sanders.

HIST 541 HISTORY OF THE MODERN SOUTH (4)

Seminar designed to introduce graduate students to historiographic background, sources, and methods for conducting primary research in post-1865 southern U.S. history. Topics will include, but not be limited to: labor, politics, and civil rights. Research paper required. Not offered Fall and Spring. Instructor(s): Lichtenstein.

HIST 542 THE RENAISSANCE IN EUROPEAN HISTORY (4)

Students may not receive credit for both HIST 442 and HIST 542. Graduate/Undergraduate version: HIST 442. Not offered Fall and Spring. Instructor(s): Quillen.

HIST 543 TOPICS IN MODERN EUROPEAN HISTORY (4)

Graduate research seminar on selected themes in modern European history. Topics vary. Not offered Fall & Spring. Instructor(s): Caldwell.

HIST 544 MAX WEBER (4)

Graduate seminar. Examines sociologist Max Weber in context. Focus on: Weber's methodology and notion of the "ideal type"; modernization theory; the typologies of religious and political understanding; political sociology; the crisis of German liberalism in Weber's own politics. Undergraduates admitted with permission of the instructor. Not offered Fall and Spring. Instructor(s): Caldwell.

HIST 545 WOMEN AND GENDER: EUROPE AND BEYOND (4)

Graduate seminar exploring recent work in key areas of research on women and gender: nationalisms; the modern welfare state; and the challenges which histories of working-class women have posed to definitions of politics, feminism, class, and family. Settings will include colonial and national Britain, India, Africa, Netherlands, Indonesia, France, and Germany. Cross-listed with WGST 545. Not offered Fall and Spring. Instructor(s): Wildenthal.

HIST 550 MAIN ISSUES IN CARIBBEAN HISTORY (4)

Examination of the major local and international forces and ideas that have shaped the course of the history of the Caribbean. Not offered Fall and Spring. Instructor(s): Cox.

HIST 551 U.S. WOMEN'S HISTORY (4)

Graduate reading seminar. Topics vary. Cross-listed with WGST 551. Not offered Fall and Spring. Instructor(s): Sneider.

HIST 553 HUMAN RIGHTS (4)

Graduate seminar will explore the history of human rights through disciplines of anthropology and legal philosophy as well as historical case studies of individual states and human rights organizations. Offered Fall. Instructor(s): Wildenthal.

HIST 558 SOCIAL AND POLITICAL THOUGHT IN POSTWAR GERMANY (4)

Seminar investigates the reconstruction of German social and political thinking between 1945 and 1989. Topics include the "end of history" in functionalist sociology; Bloch's reformulation of Marxism; literary representations of the Nazi past; the state of socialist present; reconsiderations of the public sphere; Wolf's feminist critique; and Luhmann's systems theory. Not offered Fall and Spring. Instructor(s): Caldwell.

HIST 559 MIGRATION AND DISPLACEMENT IN MODERN EUROPEAN HISTORY (4)

Seminar investigates the historiography of migration in European history, from the point of view of labor immigration, forced displacement and political exile. Exploration of how nation-states have invited, categorized, regulated and repelled various types of European migrants since the end of the 19th century. Not offered Fall & Spring. Instructor(s): Cohen.

HIST 561 GRADUATE TOPICS IN EUROPEAN INTELLECTUAL HISTORY (4)

Graduate research seminar on selected themes in European intellectual history. Contents vary. Reading knowledge of French or German is not required, but definitely advantageous. Not offered Fall and Spring. Instructor(s): Zammito.

HIST 564 EARLY AMERICA, 1607-1800 (4)

Study of major works on the English colonies of North America, as well as topics of particular interest to individual students from 1607 - 1800. Offered Fall. Instructor(s): Gruber.

HIST 566 WAR AND REVOLUTION (4)

The emphasis in this graduate seminar will be on the Anglo-American world of the 17th and 18th centuries, but students may choose topics that go beyond the immediate focus of the course. Not offered Fall and Spring. Instructor(s): Gruber.

HIST 568 GRADUATE READING SEMINAR IN POST-1945 U.S. HISTORY (4)

Readings seminar for graduate students on post-1945 United States history. Topics vary. Repeatable for Credit. Offered Spring. Instructor(s): Matusow.

HIST 571 TOPICS IN MODERN FRENCH HISTORY (4)

Readings seminar for graduate students in modern French history. Topics vary. Not offered Fall and Spring. Instructor(s): Cohen.

HIST 575 INTRODUCTION TO DOCTORAL STUDIES (4)

Introduction to a range of methodological and theoretical approaches to historical research, as well as to important current debates about the nature of historical investigation and interpretation. Offered Fall. Instructor(s): Quillen.

HIST 576 RESEARCH IN U.S. WOMEN'S HISTORY (4)

Graduate research seminar. Topics vary. Cross-listed with WGST 576. Offered Fall. Instructor(s): Sneider.

HIST 577 PEDAGOGY SEMINAR (2)

For ABD students who intend to teach. Instructor permission required. Recommended prerequisite(s): ABD graduate status. Offered Fall. Instructor(s): Wildenthal.

HIST 578 GRADUATE TOPICS IN SOUTHERN HISTORY (4)

Graduate reading seminar will entail in-depth examination of the historiography of particular issues in the history of the American South. Topics will vary. Not offered Fall and Spring. Instructor(s): Lichtenstein.

HIST 581 BRITISH AND IMPERIAL HISTORY, I (4)

Reading seminar in British and Imperial History. Open to all graduate students. Required for graduate students in British history. Not offered Fall and Spring. Instructor(s): Weiner.

HIST 582 BRITISH AND IMPERIAL HISTORY, II (4)

Continuation of HIST 581. Not offered Fall and Spring. Instructor(s): Weiner.

HIST 583 SOUTHERN HISTORY (4)

Graduate seminar on religion and slavery in the Old South. Not offered Fall and Spring. Instructor(s): Boles.

HIST 590 INTRODUCTION TO WORLD HISTORY (4)

Graduate reading seminar in world history. Offered Spring. Instructor(s): Ward.

HIST 591 GRADUATE READING (1)

Graduate reading in conjunction with another course. Repeatable for Credit. Offered Fall and Spring

HIST 595 THE AMERICAN SOUTH (4)

Graduate reading seminar on major scholarly literature of southern history. Includes readings, discussions, and a major paper on historiographical topic decided in consultation with the instructor. Offered Spring. Instructor(s): Boles.

HIST 800 PH.D. RESEARCH (9 TO 12)

Research for doctoral dissertation. Repeatable for Credit. Offered Fall and Spring.

HONS (HONORS PROGRAM)

No College Designated/Rice Undergrad Scholar Program

HONS 470 RICE UNDERGRADUATE SCHOLARS PROGRAM (3)

The RUSP program is designed for students in any department who may be considering graduate school and/or careers in research or scholarship. The course centers on individual research projects that are supervised by a faculty member, who is identified by the student. This faculty member meets regularly with the student and serves as a mentor. Modest funds are available to support costs of the research projects. Weekly class meetings feature presentations on topics related to research and scholarship. In addition, each student gives an oral presentation on his/her project's discipline. Enrollment by permission of course faculty, based on applications submitted in the previous Spring term. Instructor permission required. Offered Fall. URL: www.owl.net.rice.edu/~hons470/. Instructor(s): Kinsey; Watkins.

HONS 471 RICE UNDERGRADUATE SCHOLARS PROGRAM (RUSP) (1 TO 6)

Continuation of HONS 470. Credit variable (generally 3-6 hours, depending on the scope of the research project). Participants continue the research projects and interactions with faculty mentors. Weekly class meetings again feature presentations and discussion of research-related topics. At the end of the term, each student gives an oral presentation and submits a final paper in the style of a journal article in his/her research area. Instructor permission required. Offered Spring. URL: www.owl.net.rice.edu/~hons470/. Instructor(s): Kinsey; Watkins.

HUMA (HUMANITIES)

School of Humanities/Humanities Division

HUMA 101 FROM ANCIENT GREECE TO MEDIEVAL ISLAM: INTRODUCTION TO WESTERN LITERATURE, HISTORY, AND PHILOSOPHY (3)

Study of the foundational intellectual and artistic texts of the western tradition from Ancient Greece to Medieval Islam. Consideration of texts and images over time and in their historical development as we reflect on who we are and how we got here. Readings from Homer, Plato, the Hebrew Bible, the New Testament, Thucydides, Vergil, Augustine, and the Qu'ran. Limited enrollment.

HUMA 102 FROM RENAISSANCE TO EINSTEIN: INTRODUCTION TO WESTERN LITERATURE, HISTORY, AND PHILOSOPHY (3)

Study of the foundational intellectual and artistic texts of the Western tradition from the Renaissance to Einstein. Consideration of texts and images over time and in their historical development as we reflect on who are and how we got here. Readings from Machiavelli, Shakespeare, Kant, Flaubert, Nietzsche, Freud, Beauvoir, Einstein, Levi, Kuhn, Borges, and King, and images from such artists as Michelangelo, Goya, and Picasso.

HUMA 107 BIBLE IN WESTERN TRADITION (3)

Explores multiple roles the Bible has played in Western culture. Emphasis will be on the Bible as catalyst in media history, as generator of the artistic imagination, and as catalyst of ideas, and as shaper of religious and political history. Cross-listed with RELI 200.

HUMA 108 ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE (3)

This course will be concerned with Art, Architecture, and History of the late middle-ages and Renaissance. We will employ historical texts, literature, and illustrations of works of art, showing how historical documents and sources can illuminate the culture context of art and architecture. Cross-listed with HART 240, MDST 108.

HUMA 109 GREEK CIVILIZATION AND ITS LEGACY (3)

An examination of the literary, artistic, and intellectual achievements of classical Greek civilization from Homer through the golden age of classical Athens to the spread of Greek culture in the Hellenistic world. The influence of ancient Greece on Western culture will be a focus. Case studies in the later reception of classical Greek literature (e.g. tragedy), philosophy (e.g. Socrates), history (e.g. democracy), and art (e.g. the Parthenon) will be examined. Cross-listed with CLAS 107. Limited enrollment. Instructor(s): Yunis.

HUMA 110 LITERATURE AND DEMOCRACY (3)

Course examines how writers respond to the developments and problems of democratic societies. Topics include: civil disobedience and just dissent; the civil war and the extension of the franchise; cruel and unusual punishment exercised by governments; and the relationship between privacy and individuality. Requirements: two essays and one class presentation. Cross-listed with FSEM 110. Must be in one of the following Classification(s): Freshman. Limited enrollment. Instructor(s): Wihl.

HUMA 115 PHILOSOPHERS LOOK AT RELIGION (3)

Inquiry into the ways which selected Western and Asian philosophers have interpreted God, reality, the moral life and religious experience. Plato, Augustine, Hume and Kant will be compared with thinkers of the Vedic, Jain, Saikhya, and Buddhist traditions.

HUMA 201 PUBLIC SPEAKING (3)

An introduction to the process of public speaking through the presentation of four or more in-class speeches. Limited enrollment.

HUMA 210 FORENSICS PRACTICUM (1)

This course will focus on junior varsity intercollegiate speech and debate competition. Students will be required to prepare speeches and debate material for local, regional and possibly national competitions. Participation in intercollegiate competition is mandatory. Instructor permission required. Repeatable for Credit.

HUMA 212 CAREER AND LIFE OPTIONS (1)

This class is intended for freshmen and sophomores who are exploring careers and academic majors (juniors and seniors are also welcome to enroll). In the class students will learn about career options that match their interests, personality, and values; become more familiar with the world of work and various career options; understand the connections between careers and major choice; learn about services that will enhance their marketability and academic experiences (internships, study abroad programs, scholarships/grants); and develop an action plan to reach their goals. This class is ideally suited for students who have no idea what they want to do after they graduate.

HUMA 235 THE WORLD AND THE WEST (3)

Introduction to the last 500 years of world history, focusing on those processes that define the modern period. Topics including industrialization, democratization, colonialism, and the emergence of new forms of cultural production with exploration of how and why such processes have come to divide the modern world into a west and non-west. Cross-listed with HIST 235. Instructor(s): Quillen.

HUMA 250 WRITING FOR PRINT MEDIA (3)

Introduction to news gathering and writing, and the analytical skills needed to determine what constitutes news. The class will combine in-depth reporting assignments and critiques, lectures covering the breadth of news-gathering (print, broadcast and online), and discussions of the role of decision-making in shaping the news. Limited enrollment. Instructor(s): Crocker.

HUMA 251 PRINCIPLES: TYPOGRAPHY AND DESIGN (3)

Smart use of type communicates its message clearly. The digital age has spawned legions of new designers, but the old rules still apply. Through interactive lectures and hands-on exercises, students will develop sensitivity to the variables in typographic design (face, weight, size, leading, color) and learn to solve problems of visual communication. Limited enrollment. Instructor(s): Cooper.

HUMA 295 CURRENT ISSUES IN THE WORKPLACE (3)

This class is the companion course for the Joint Venture Liberal Arts Internship Program. It is intended to provide liberal arts majors an overview to the various career options available to them and introduce issues that are shaping the world of work. Each week, guest speakers will discuss different career alternatives, including banking, law, writing and journalism, non-profit management, and education. Additionally, students read current business articles to examine trends that are redefining how work is performed. All students enrolled in HUMA 295 must complete an approved internship. For more information, read about the Joint Venture Liberal Arts Internship Program. This class is taught during both the fall and spring semester; Joint Venture Internships are available during fall, spring and summer.

HUMA 301 RHETORICAL CRITICISM (3)

This course will emphasize study of historical and contemporary speech texts and other forms of public communication. Students study and apply traditional methods of rhetorical criticism in order to understand the construction of public communication. Limited enrollment. Instructor(s): Grace.

HUMA 302 THEORIES OF RHETORICAL COMMUNICATION (3)

This course will survey major theorists of speech and public communication ranging from classical to contemporary thinkers. Emphasis will be on understanding speech and public communication from consumer and scholarly perspectives. Limited enrollment. Instructor(s): Worth.

HUMA 303 PERSUASION AND POLITICAL RHETORIC (3)

This course will survey research and writing in the fields of persuasion and political communication. Of particular interest will be explanations of political communication based in rhetorical theory. Students will study historically important political speeches, debates, and advertisements. Emphasis will be on academic exploration of political rhetoric as human expression. Instructor(s): Worth; Grace.

HUMA 305 ADVANCED PUBLIC SPEAKING (3)

Designed for students with at least two prior years of instruction or public speaking experience. Will address the ancient origins of speech theory and will require students to apply contemporary speech theory in the presentation of four in-class speeches. Instructor permission required.

HUMA 306 RHETORIC OF SCIENCE AND TECHNOLOGY (3)

This course will explore the rhetoric of science and technology through examination of historically important speeches, campaigns, and other persuasive expression that has contributed to contemporary scientific and technological culture. Emphasis will be on the communication associated with scientific and technological culture rather than on the science or technology. The primary question for the course is, "How are science and technology expressed and persuasively promoted as human activities? Instructor(s): Worth.

HUMA 308 BUSINESS AND PROFESSIONAL SPEAKING (3)

Practical application of communication theory with emphasis on oral presentations, interviewing and small group dynamics.

HUMA 309 ARGUMENTATION AND DEBATE (3)

Designed to help students develop their research and analytical abilities through the research, analysis and presentation of arguments on questions of fact, value and policy. Debate assignments will explore current issues of the day.

HUMA 310 ADVANCED FORENSICS PRACTICUM (1)

This course will focus on varsity intercollegiate speech and debate competition. Students will be required to prepare speeches and debate material for local, regional, and possibly national competitions. Participation in intercollegiate competition is mandatory. Instructor permission required. Repeatable for Credit.

HUMA 311 LEADERSHIP COMMUNICATION (3)

This course will examine the relationship between leadership and communication within organizations. Historical and contemporary leadership and communication theory will be surveyed. Limited enrollment.

HUMA 321 EUROPEAN WOMEN FILMMAKERS (3)

Course will concentrate on films by European women directors, taking into account aesthetic particularities, gender commitment, and post feminist attempts. Importance will also be given to the contexts and conditions of women's film production. All films are subtitled in English. Taught in English with possible FLAC section. Cross-listed with GERM 321, WGST 358, HART 385. Instructor(s): Eifler.

HUMA 322 MARX, FREUD, EINSTEIN, FOREBEARERS OF MODERNITY (3)

These three thinkers have influenced the intellectual, historical, social, and cultural development not only of Germany, but of the entire world. Course examines their works in the context of their own time as well as their continued importance in the present. Works by Brecht, Christa Wolf, Schnitzler, Kafka will also be introduced. Taught in English with a possible FLAC section. Cross-listed with GERM 322. Instructor(s): Weissenberger.

HUMA 324 BERLIN, RESIDENCE, METROPOLIS, CAPITAL (3)

An introduction to German history, politics, and culture as mirrored in the history of the old and new German capital. Emerging from the ruins of WW II Berlin became both the capital of Socialism and the display window of the Free World. After the fall of the wall, Berlin is still looking for its role in the center of a reshaped Europe. Readings and discussions encompass fine arts and literature from the 18th century to the present, including film. Taught in English with possible FLAC section. Cross-listed with GERM 324. Instructor(s): Steiner.

HUMA 325 GERMAN NOBEL PRIZE LAUREATES (3)

The course will introduce biography of Alfred Nobel and the reasons for establishing his famous Nobel Prize. Most famous among German recipients were Gunter Grass (1999), Heinrich Boll (1972), Herman Hesse (1946) and Thomas Mann (1929). Their novel work will be analyzed as an artistic reflection of their socio-critical thoughts on the history of Germany. Taught in English with possible FLAC section. Cross-listed with GERM 325. Instructor(s): Eifler.

HUMA 328 GERMAN ADAPTATIONS: TEXT TO FILM (3)

Prominent novels of the 20th century will be studied for their possibilities or impossibilities of rendition from print medium to cinematic medium. From the myriad of adaptations we will concentrate on Thomas Mann: *Tod in Venedig*; Franz Kafka: *Das Schloss*; Klaus Mann: *Mehisto*; Gunter Grass: *Die Blechtrommel*; H. Boll: *Katharina Blum*; Jurek Becker: *Jacob der Lugner*. All films are subtitled in English. Course taught in English with a possible FLAC section. Cross-listed with GERM 328. Instructor(s): Eifler.

HUMA 329 LITERATURE OF THE HOLOCAUST AND EXILE (3)

Most of the authors from Germany and Austria, who were persecuted and fled into exile, used literature to search for meaning in life that apparently had been stripped of all meaning. Among these authors are the most distinguished writers of time, i.e. Th. and H. Mann, Brecht, Benjamin, Werfel, Doblin, J. Roth, S. Zweig, N. Sachs, Celan, Auslander. Taught in English with a possible FLAC section. Cross-listed with GERM 329. Limited enrollment. Instructor(s): Weissenberger.

HUMA 330 COURTSHIP, LOVE AND MARRIAGE IN THE AGE OF CHIVALRY (3)

The literature of the High Middle Ages is the first since antiquity to probe the hazards and potentials of romance between men and women, as well as single-sex friendship and love. This course will show how the literary ideal of love emerged in a society that was torn apart by war and rivalry. The poems and stories we will read belong to the treasures of medieval literature from the German lands. Taught in English with a possible FLAC section. Cross-listed with GERM 330, WGST 330, MDST 335. Limited enrollment. Instructor(s): Westphal.

HUMA 331 RUSSIAN LITERATURE AND COLONIALISM (3)

This course includes a broad survey of postcolonial theories starting with Edward Said. This course is based on Ewa M. Thompson Imperial Knowledge: Russian Literature and Colonialism. Readings include Leo Tolstoy, Alexander Pushkin, Valentine Rasputin, Anatoly Rybakov, Alexander Solzhenitsyn, Ludmila Petrushevskaya, Tatiana Tolstaia and Valeiya Novodvorskaya. Cross-listed with RUSS 331. Repeatable for Credit. Instructor(s): Thompson.

HUMA 340 WALTER BENJAMIN: AESTHETICS, HISTORY, AND POLITICS (3)

Benjamin has been celebrated as a revolutionary Marxist, a theologian of Jewish Messianism, and as an essayist and literary critic. The course offers an introduction to his writings by way of situating them in the historical background of the Weimar Republic and the crises of European society on the eve of WWII. Taught in English with a possible FLAC section. Cross-listed with GERM 340. Instructor(s): Steiner.

HUMA 344 KOREAN LITERATURE AND CULTURE (3)

Exploration of selections from modern Korean literature and watching Korean films. Includes background survey of Korean history, philosophy and religion. All texts and films in English translation. No previous knowledge of Korean required. Cross-listed with ASIA 344, KORE 344. Instructor permission required. Instructor(s): Lee.

HUMA 372 MAPPING GERMAN CULTURE: THE GERMAN FAIRY TALE: OLD AND NEW (3)

Discussion of several prototypes from the fairy-tale collection of the Brothers Grimm and the subsequent development of the literary fairy tale from Goethe and the Romantics to the 20th century. Cross-listed with GERM 326.

HUMA 373 NEW GERMAN CINEMA (3)

From the 1960 to 2000. Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta, Sander, Brueckner, Doerrie, Garnier, Tykwer, and others. The first 20 years of German film were oriented on coming to terms with the fascist past; the second 20 years focused on more contemporary issues. Film critical readings and class discussion in English. All films are subtitled in English and will be assessed with podium technology. Taught in English with a possible FLAC section. Cross-listed with GERM 338, WGST 361. Limited enrollment. Instructor(s): Eifler.

HUMA 381 DOSTOEVSKY (3)

Study of the major works of Dostoevsky. No knowledge of Russian required. Novels discussed include The Brothers Karamazov; Crime and Punishment; The Idiot; The Possessed; Notes from the Dead House, Notes from the Underground. Taught in English. Cross-listed with RUSS 352. Instructor(s): Thompson.

HUMA 382 TOLSTOY (3)

Study of major works of Tolstoy. Novels and stories discussed include "War and Peace"; "Anna Karenina"; "The Kreutzer Sonata"; "Family Happiness"; "The Cossacks"; "The Devil"; "The Death of Ivan Llych"; "Father Sergius"; "The Confessions" and "Hadjj Murad." Taught in English. Cross-listed with RUSS 351. Instructor(s): Thompson.

ITAL (ITALIAN LANGUAGE AND CULTURE)**School of Humanities/Center for Study of Languages****ITAL 101 ELEMENTARY ITALIAN I (4)**

This course is designed for students with little or no knowledge of Italian. We will concentrate on all language skills and provide basic elements of Italian civilization. Class work will be supplemented by regular attendance of language laboratory. We'll discover Italy in all its aspects: culture, art, music, cinema, fashion, food. Recommended prerequisite(s): No prior knowledge of Italian. Limited enrollment.

ITAL 102 ELEMENTARY ITALIAN II (4)

Continuation of ITAL 101. We will concentrate on all language skills and provide basic elements of Italian civilization. Pre-requisite(s): ITAL 101, or permission of instructor. Limited enrollment.

ITAL 201 INTERMEDIATE ITALIAN I (4)

A review and consolidation of the structure of contemporary Italian. Literary, cultural readings, and movies serve as a basis for the class discussion and conversation. Oral reports and compositions will help to increase fluency. Pre-requisite(s): ITAL 101 and ITAL 102, or permission of instructor. Limited enrollment.

ITAL 202 INTERMEDIATE ITALIAN II (4)

Continuation of ITAL 201. A review and consolidation of contemporary Italian. Literary readings and cultural materials will serve as a basis for class discussion and conversation. Pre-requisite(s): ITAL 201, or permission of instructor. Limited enrollment.

ITAL 309 ADVANCED ITALIAN REVIEW (3)

This course is an intensive review of advanced structures in Italian language. Emphasis is on improving listening, comprehension, speaking, and writing skills through an in-depth study of various aspects of Italian contemporary literature and culture. Taught in Italian. Pre-requisite(s): ITAL 202, or permission of instructor.

JAPA (JAPANESE)**School of Humanities/Center for Study of Languages****JAPA 101 INTRODUCTION TO JAPANESE LANGUAGE AND CULTURE I (5)**

Elementary Japanese emphasizes the learning of basic grammatical structures and vocabulary of modern Japanese to develop oral competence at the novice level. This goal is achieved primarily through aural-oral activities and task-oriented instruction. Students are expected to achieve the level of proficiency necessary to complete uncomplicated communicative tasks. Weekly tutorial required. Recommended prerequisite(s): No prior knowledge of Japanese. Limited enrollment. Offered Fall. URL: lang.rice.edu/hsato/JapaCourse/JAPA101.html.

JAPA 102 INTRODUCTION TO JAPANESE LANGUAGE AND CULTURE II (5)

Continuation of JAPA 101. More focus on Kanji practice with the Japanese Writing System. Further practice on conversation skills with a task-oriented instruction to language to achieve necessary abilities to handle successfully for uncomplicated communicative tasks in Japanese. Weekly tutorial-session is required. Emphasis on development on cultural competence working on a project in group. Pre-requisite(s): JAPA 101, or placement test, or permission of instructor. Offered Spring. URL: lang.rice.edu/hsato/JapaCourse/JAPA102.html.

JAPA 201 INTERMEDIATE JAPANESE LANGUAGE AND CULTURE I (5)

Further practice in conversation, grammar, reading and composition. Class will be conducted exclusively in Japanese. Students will be able to accomplish a variety of uncomplicated communicative tasks. More emphasis on kanji practice with the Japanese writing system. Participation in weekly tutorial session is required. Pre-requisite(s): JAPA 102, or placement test, or permission of instructor. Limited enrollment. Offered Fall. URL: lang.rice.edu/hsato/JapaCourse/JAPA201.html.

JAPA 202 INTERMEDIATE JAPANESE LANGUAGE AND CULTURE II (5)

Continuation of JAPA 201. Class will be conducted exclusively in Japanese. Proficiency-based instruction to language to achieve necessary abilities to handle successfully a variety of uncomplicated communicative tasks in Japanese. More emphasis on development of cultural competence in discussing in Japanese. Participation in weekly tutorial-session is required. Pre-requisite(s): JAPA 201, or placement test, or permission of instructor. Limited enrollment. Offered Spring. URL: lang.rice.edu/hsato/JapaCourse/JAPA202.html.

JAPA 301 ADVANCED JAPANESE READING AND COMPOSITION I (3)

Classes will be conducted in Japanese. Texts include a variety of subjects and topics including web-based texts created and developed by the instructor to sustain students well-developed abilities and skills in Japanese. Reserved films and videos are included in the course as part of the text. Pre-requisite(s): JAPA 202, or placement test, or permission of instructor. Limited enrollment. Offered Fall. URL: lang.rice.edu/hsato/JapaCourse/JAPA301.html.

JAPA 302 ADVANCED JAPANESE READING AND COMPOSITION II (3)

Continuation of JAPA 301. Classes will be conducted in Japanese. Texts include a variety of subjects and topics including web-based texts created and developed by the instructor to sustain students well-developed abilities and skills in Japanese. Students will work on a project for a presentation using Microsoft PowerPoint in Japanese. Pre-requisite(s): JAPA 301, or placement test, or permission of instructor. Limited enrollment. Offered Spring. URL: www.ruf.rice.edu/~hsato/japa302_04.html/.

JAPA 370 STRUCTURE OF JAPANESE (3)

This course examines current issues in Japanese grammar in the framework of contemporary linguistic theory. Where appropriate, the traditional kokogogaku approach is compared with modern linguistic approaches. Basic knowledge of both Japanese and linguistics is required. Cross-listed with LING 370. Pre-requisite(s): LING 200 and JAPA 202. Repeatable for Credit. Offered Fall.

JAPA 398 JAPANESE TEACHING PRACTICUM (3)

This course gives students with advanced proficiency in Japanese the opportunity to acquire teaching experience in the tutorial format. Includes regular meetings with supervising faculty member. Offered Fall.

JAPA 399 JAPANESE TEACHING PRACTICUM (3)

This course gives students with advanced proficiency in Japanese the opportunity to acquire teaching experience in tutorial format. Includes regular meetings with supervising faculty member. Limited enrollment. Offered Spring.

JAPA 498 INDEPENDENT STUDY (1 TO 6)

Instructor permission required. Offered Fall.

JAPA 499 INDEPENDENT STUDY (1 TO 6)

Instructor permission required. Offered Spring.

KINE (KINESIOLOGY)**School of Humanities/Kinesiology****KINE 100 WRITING FOR PROFESSIONAL COMMUNICATION (3)**

An intensive study of how to write prose for effective and successful professional communication. Limited enrollment. Not offered Fall and Spring.

KINE 120 FOUNDATIONS OF KINESIOLOGY (3)

An introduction to studies in the areas of human movement: anatomy and physiology, physiology of exercise, motor behavior, biomechanics, sport history, sport psychology and sports management. Offered Fall and Spring. Instructor(s): Disch.

KINE 205 SOCIOLOGY OF SPORT AND ETHICS (3)

A study of the development of contemporary sport and its inter-relationships with existing social institutions. Emphasis will be on argument preparation and debate. Limited enrollment. Offered Fall and Spring Instructor(s): Eliot.

KINE 206 FIRST AID/EMERGENCY CARE/CPR (1)

The American Red Cross certification program for emergency care procedures for illness, traumatic injuries, and cardiopulmonary resuscitation. Cross-listed with HEAL 206. Limited enrollment. Offered Spring.

KINE 260 INTRODUCTION TO SPORT MANAGEMENT (3)

Management theory and practice related to the sports industry. Offered Fall and Spring Instructor(s): Zapalac.

KINE 276 SPORT MANAGEMENT PRACTICUM (3)

This class is designed to prepare students for their internship. Students will learn how to construct an effective resume, interviewing skills, business etiquette, etc. Students will also gain real-life experience by working in the sport business industry for 100 hours during the course of the semester. Pre-requisite(s): KINE 260. Offered Fall and Spring. Instructor(s): Haptonstall.

KINE 300 HUMAN ANATOMY (3)

Introduction to human anatomy including concepts of function. Limited enrollment. Offered Fall and Spring. Instructor(s): Sharp.

KINE 301 HUMAN PHYSIOLOGY (3)

This course will address the fundamental principles of human physiology at the cell, tissue, organ, organ system, and organism levels. Emphasis will be placed on mechanisms of function and homeostasis as achieved through the coordinated function of homeostatic control systems. Limited enrollment. Offered Fall. Instructor(s): Gibson.

KINE 302 BIOMECHANICS (3)

An introduction to the discipline of mechanics as it applies to biological systems. Primary emphasis is placed on humans and other vertebrate species. Topics covered include the kinematics and kinetics of movement, material and functional properties of musculoskeletal tissues and the integration of musculoskeletal function from molecules and cells to whole animals. Pre-requisite(s): KINE 300 and PHYS 125. Recommended prerequisite(s): KINE 321. Offered Spring. Instructor(s): Weyand.

KINE 310 PERFORMANCE PSYCHOLOGY (3)

Applied study of how the mind influences performance in sport, medicine, business, music and the arts. Non-Kinesiology majors are strongly encouraged to enroll as excellence will be discussed from the perspective of many disciplines and careers. Offered Spring. Instructor(s): Eliot.

KINE 311 MOTOR LEARNING (3)

Physiological, neurological, and psychological factors affecting skill acquisition and development. Offered Fall. Instructor(s): Etnyre.

KINE 312 INDEPENDENT RESEARCH IN PHYSIOLOGY/BIOMECHANICS (1 TO 4)

Program of independent study for students with previous training in the biosciences and organismic level biomechanics and physiology. Includes a research paper. Students are expected to spend at least three hours per week in the laboratory for each semester hour of credit. If taken for 2 or more hours, counts as one required lab course but not as a Group A or Group B course. If receiving more than 2 credits, students will be required to participate in the university annual undergraduate symposium in the spring semester. Pre-requisite(s): BIOS 211 or BIOS 301 or KINE 302 or KINE 321. Instructor permission required. Limited enrollment. Not offered Fall and Spring. Instructor(s): Weyand.

KINE 319 MEASUREMENT AND STATISTICS (3)

Introduction to basic statistics, and elementary measurement theory with application to kinesiology. Limited enrollment. Offered Fall. Instructor(s): Disch.

KINE 321 EXERCISE PHYSIOLOGY (3)

This course examines the acute and chronic effects of exercise on physiological functions. Topics include nutrition, energy transfer, fatigue, metabolism, disease, aging, preventative medicine, genetics, elite performance, ergogenic aids, exercise testing, and specificity of training. Offered Spring. Instructor(s): Gibson.

KINE 323 EXERCISE PHYSIOLOGY LABORATORY (3)

This course introduces the concepts and assessment techniques used to quantify physiological function. Laboratory experiences will require students to acquire and apply knowledge of systems physiology to make direct functional assessments using themselves as subjects. A major emphasis will be placed on metabolism and energy transfer in the body. Cardiovascular, musculoskeletal, and central nervous system function will also be covered. Individual body composition, musculoskeletal levers, metabolic power and fitness, and neuromuscular control and coordination. Pre-requisite(s): KINE 300 and KINE 301 and KINE 321. Limited enrollment. Offered Spring. Instructor(s): Weyand.

KINE 325 MOTOR LEARNING LAB (1)

Laboratory experiences in the physiological, neurological and psychological factors of human movement. Offered Fall. Instructor(s): Etnyre.

KINE 341 MANAGEMENT OF CHRONIC DISEASES (3)

Topics include the diagnosis, prevention and treatment of chronic disease from cardiac pathologies to obesity. Offered Fall. Instructor(s): Sharp.

KINE 351 HUMAN ANATOMY LAB (1)

Study of the pro-sections and interactive computer instructional methodology are used for learning and understanding human anatomy in a gross anatomy examination laboratory at Texas Women's University in the Texas Medical Center. Hands-on examination of human anatomy in this course provides supplemental practical experience for lectures in KINE 350, Human Anatomy courses. Pre-requisite(s): KINE 350. Limited enrollment. Offered Spring.

KINE 360 SPORT FINANCE (3)

Acquisition and expenditure of financial resources for sports enterprise, from private and public sources. The class will also focus on ways revenue is generated in the sport industry. Offered Spring. Instructor(s): Zapalac.

KINE 362 SPORT MARKETING AND PROMOTION (3)

The role of communication media from print to broadcast in the business of sport, sales, marketing, and promotion will be considered at the amateur, collegiate, and professional sports levels, as well as in fitness, apparel, and commercial sport industry. Offered Fall. Instructor(s): Haptonstall.

KINE 364 SPORTS LAW AND LABOR RELATIONS (3)

Study of legal principles, antitrust regulation, and labor law in the sport industry. Contracts, monopolies, business structure, and negotiation will be included. Offered Fall.

KINE 366 EVENT AND FACILITY MANAGEMENT (3)

Practical application of the principles and theory related to planning, organization, and execution of sport and entertainment events. Fund raising and charity management will be considered, as will the management of small and large scale facilities and event venues. At the conclusion of this course, students will be prepared to design, run, and evaluate events and event management teams. Offered Fall. Instructor(s): Zapalac.

KINE 375 SPORTS MEDICINE INTERNSHIP (3)

Internship experience for senior students in sports medicine track. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Weyand.

KINE 376 SPORT MANAGEMENT INTERNSHIP I (3 TO 6)

Internship experience for upper level students in sport management. Pre-requisite(s): KINE 260. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Haptonstall.

KINE 377 SPORT MANAGEMENT INTERNSHIP II (3 TO 6)

Continued internship experience for senior students in sports management. Pre-requisite(s): KINE 260. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Haptonstall.

KINE 405 QUALITATIVE RESEARCH AND ANALYSIS (4)

An advanced research class focusing on qualitative inquiry and field investigation methodologies. Students will learn how to process human language, behavior, and interaction as research data. Special emphasis will be placed on establishing trustworthiness of interview, observation, and historical data sets, as well as the reliability and validity of qualitative analysis methods. Limited enrollment. Offered Spring. Instructor(s): Disch.

KINE 410 CASE STUDIES IN PERFORMANCE ENHANCEMENT (3)
An advanced, multidisciplinary consideration of how humans pursue excellence. Class work will center around problem solving using a case study methodology. Limited enrollment. Offered Fall. Instructor(s): Eliot.

KINE 412 MOTOR CONTROL (3)
Exploration of the neurophysiological, behavioral, and biomechanical aspects of human movement and development. Offered Spring. Instructor(s): Etnyre.

KINE 421 HUMAN PERFORMANCE FROM DARWIN AND NEWTON TO DRUGS AND GENES (3)
The course explores the ultimate limitations to physical performance co-imposed by the natural laws that govern the physical world and the functional and mechanical properties of the biological tissues involved in movement. Topics considered include: speed, strength, power and endurance. Examples are drawn from extreme performers, both human and animal, to identify the functional limits of the musculoskeletal and cardiovascular systems brought about by evolution. The class involves reading original research articles and is conducted in seminar format. Pre-requisite(s): KINE 321, or permission of instructor. Limited enrollment. Offered Fall. Instructor(s): Weyand.

KINE 440 RESEARCH METHODS (3)
Designed to introduce students to research methods and topics appropriate for experimental research, historical research, social science research, marketing and legal research. Pre-requisite(s): KINE 319. Offered Spring. Instructor(s): Disch.

KINE 441 MUSCLE PHYSIOLOGY AND PLASTICITY (3)
This course will specifically address cardiac and skeletal muscle physiology and plasticity when introduced to various stimuli. These stimuli include exercise, aging, injury, altitude, microgravity, heat, and pharmacological agents. An emphasis will be placed on practical application to health, disease, and performance enhancement. Limited enrollment. Offered Fall. Instructor(s): Sharp.

KINE 460 MANAGEMENT AND LEADERSHIP IN SPORTS (3)
An advanced study of research and policy in sport management. Emphasis will be developing a solid working knowledge of the current literature that guides academic and governing leaders in sport management. Students will be involved in the planning and administration of a large sporting event. Pre-requisite(s): KINE 260. Offered Spring. Instructor(s): Zapalac.

KINE 466 MEDIA RELATIONS AND PR (3)
An applied study of media in business and sport with emphasis on press conferencing, news release, media-athlete relations, print journalism, television contracts, and public relations. Offered Spring. Instructor(s): Haptonstall.

KINE 490 SEMINAR IN SPORTS MEDICINE: SPORTS NUTRITION (3)
Considers issues related to athletic injury including mechanisms, assessment, management, and rehabilitation. Limited enrollment. Offered Spring. Instructor(s): Sharp.

KINE 495 INDEPENDENT STUDY (3)
Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Fall. Instructor(s): Disch.

KINE 496 INDEPENDENT STUDY (3)
See KINE 495. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Spring. Instructor(s): Disch.

KINE 498 SPECIAL TOPICS (1 TO 4)
Repeatable for Credit. Offered Fall and Spring.

KINE 499 TEACHING PRACTICUM (3)
Teaching experience for upper level students who have excelled in one area of kinesiology. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Etnyre.

KORE (KOREAN)

School of Humanities/Center for Study of Languages

KORE 101 INTRODUCTION TO KOREAN LANGUAGE AND CULTURE I (5)
Introduction to Korean language and culture. Acquisition of the fundamentals of the four language skills. Recommended Prerequisite(s): No prior knowledge of Korean. Limited enrollment.

KORE 102 INTRODUCTION TO KOREAN LANGUAGE AND CULTURE II (5)
Continuation of KORE 101. Pre-requisite(s): KORE 101, or permission of instructor. Limited enrollment.

KORE 201 INTERMEDIATE KOREAN LANGUAGE AND CULTURE I (4)
Continuation of the development of speaking, listening, reading, and writing skills. Pre-requisite(s): KORE 102, or permission of instructor. Limited enrollment.

KORE 202 INTERMEDIATE KOREAN LANGUAGE AND CULTURE II (4)
Development of intermediate language skills, conversation, and composition. Pre-requisite(s): KORE 201, or permission of instructor. Limited enrollment.

KORE 311 SELECTED READINGS AND TRANSLATIONS (3)
This course is designed to develop advanced students' reading and translation skills of literary (short plays) and non-literary Korean texts (newspaper articles, magazines, business catalogues, etc) of modern topics. Students are expected to significantly improve their reading and interpretation skills at the completion of this course. Pre-requisite(s): KORE 202, or permission of instructor. Limited enrollment.

KORE 344 KOREAN LITERATURE AND CULTURE (3)
Exploration of selections from modern Korean literature and Korean films. Includes background survey of Korean history, philosophy, and religion. All texts and films in English translation. No previous knowledge of Korean required. Cross-listed with ASIA 344, HUMA 344. Instructor permission required.

KORE 345 LINGUISTIC STRUCTURE OF KOREAN AND RELATED LANGUAGES IN EAST ASIA (3)
Focuses on the origin of Korean and related languages. It explores the way the Korean language evolved and interacted with the other East Asian languages, including Chinese and Japanese. The socio-linguistic aspect of these languages will be studied, including the difference in male and female language usage and honorific systems. Cross-listed with ASIA 345, LING 345.

KORE 346 KOREAN CULTURE AND HISTORY (3)
This course will introduce students to the important elements of Korean history and culture through a reading of modern Korean literature. The class will concentrate on the period from the early 20th century to the present. Special attention will be given to topics such as Korean religion, family life, and literature. Films will be used. All readings in English translation. Cross-listed with ASIA 346.

KORE 499 INDEPENDENT STUDY (1 TO 6)

LATI (LATIN)

School of Humanities/Classical Studies

LATI 101 ELEMENTARY LATIN I (3)
Study of the fundamentals of Latin grammar with emphasis on acquisition of reading skill. Cross-listed with MDST 101. Offered Fall. Instructor(s): Wallace.

LATI 102 ELEMENTARY LATIN II (3)
Continuation of LATI 101. Cross-listed with MDST 102. Pre-requisite(s): LATI 101. Offered Spring. Instructor(s): Wallace.

LATI 201 INTERMEDIATE LATIN I PROSE (3)
Review of grammar and readings in Latin prose. Cross-listed with MDST 211. Pre-requisite(s): LATI 101 and LATI 102. Offered Fall. Instructor(s): Wallace.

LATI 202 INTERMEDIATE LATIN II (3)
Reading in Vergil. Cross-listed with MDST 212. Pre-requisite(s): LATI 201. Offered Spring. Instructor(s): Wallace.

LATI 301 ADVANCED LATIN: LITERATURE OF EXILE IN THE ROMAN TRADITION (3)
An examination of Latin works on exile, both prose and poetry. We will explore the actual circumstances on exile in ancient Rome, the consolation tradition and exile, relations between exile poetry and elegy, and how exile affected Roman notions of cultural and individual identity. Authors include Cicero, Ovid, and Seneca. Offered Fall. Instructor(s): McGill.

LATI 302 ADVANCED LATIN: ROMAN EPIC (3)
The course will read early fragments of epic verse and selections from Virgil, Ovid, Lucan, and Statius. Topics will include the nature of the epic genre, the development of the Roman epic and its relation to the Greek tradition, the styles of the individual epic poets, and the works' political and historical contexts. Not offered Fall and Spring. Instructor(s): McGill.

LATI 303 ADVANCED LATIN: PLAUTUS AND TERENCE (3)
We will read, Plautus, Pseudolus, Terence, and Adelphoe. We will consider the background of Greek comedy and the contemporary social situation in Rome. Not offered Fall and Spring. Instructor(s): Wallace.

LATI 311 LATIN PASTORAL POETRY (3)

Survey of Latin pastoral, with its idyllic country sides, singing shepherds, and lovely laments. Readings drawn from Virgil's Eclogues, Calpurnius, Siculus, Nemesianus, and early Christian pastoral. Principal focus will be stylistic and thematic aspects of individual poets. Later history of pastoral, particularly in English tradition, will also be examined. Not offered Fall and Spring. Instructor(s): McGill.

LATI 312 ADVANCED LATIN: OVID (3)

Survey of Ovid's elegiac and epic poetry with emphasis on the Metamorphoses. Not offered Fall and Spring. Instructor(s): Mackie.

LATI 313 CICERO AND CATULLUS: LITERATURE AND SOCIETY IN THE ROMAN REPUBLIC (3)

We will read Cicero's Pro Caelio and several of Catullus' longer poems as a vehicle for understanding politics and culture in the late Roman Republic. Not offered Fall and Spring. Instructor(s): McGill.

LATI 314 TACITUS (3)

Selections from the Roman historian Tacitus. We will focus on Tacitean style, his historiographical methods, his cultural and political milieu, and the political color of his work. Offered Spring. Instructor(s): McGill.

LATI 491 DIRECTED READING (3)

Independent work for qualified juniors and seniors in genres or authors not presented in other upper level courses. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Fall.

LATI 492 DIRECTED READING (3)

Independent work for qualified juniors and seniors in genres or authors not presented in other upper level courses. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit. Offered Spring.

LING (LINGUISTICS)**School of Humanities/Linguistics****LING 105 LANGUAGE, GENDER, AND SEXUALITY (3)**

This course examines the role that gender, biological sex, and sexuality play in the language varieties that people use. We will see that although all cultures have specified gender roles, and all cultures mark gender through language varieties, those differences are not, I promise what you think they are. Cross-listed with WGST 105, FSEM 105. Limited enrollment. Instructor(s): Niedzielski.

LING 110 LANGUAGES OF THE WORLD (3)

Survey of the world's languages: what are they, how are they? With emphasis on their diversity. Selected languages will be examined in more detail.

LING 200 INTRODUCTION TO THE SCIENTIFIC STUDY OF LANGUAGE (3)

Overview of the scientific study of the structure and function of language. Introduces the main fields of linguistics: phonetics, phonology, morphology, syntax, semantics, discourse, historical linguistics, sociolinguistics, and psycholinguistics. Highlights the interdisciplinary relationship of linguistics with anthropology, sociology, psychology, and cognitive sciences. Cross-listed with ANTH 200. Offered Fall and Spring.

LING 205 LANGUAGE AND SOCIETY (3)

This course treats language as a social phenomenon to show how language, personal identity and institutions of social control inter-relate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity and geographic variation affect language use. Cross-listed with WGST 205. Offered Fall. Instructor(s): Niedzielski.

LING 215 WORDS IN ENGLISH: STRUCTURE, HISTORY, USE (3)

Introduction to the study of English words, focusing on their internal structure and the nature and history of English vocabulary. Aims are to enhance knowledge of the rich lexical resources of the language and to facilitate the acquisition of scientific, technical, legal, and humanistic vocabulary. No previous linguistics background required. Cross-listed with ENGL 215. Offered Fall. Instructor(s): Kemmer.

LING 300 LINGUISTIC ANALYSIS (3)

A hands-on, data-oriented approach to how different languages construct words and sentences. Students will develop skills in linguistic problem solving and the foundations for pursuing grammatical description. Topics: word classes, morphology, tense-aspect-modality, clause structure, word order, grammatical relations, existentials/possessives/locatives, voice/valence, questions, negation, relative clauses, complements causatives. Cross-listed with ANTH 300. Graduate/Undergraduate version: LING 500. Pre-requisite(s): LING 200 or ANTH 200. Offered Spring. Instructor(s): Englebretson

LING 301 PHONETICS (3)

Introductory study of sound as it relates to speech and sound systems in the world's languages. Speech sounds are examined in terms of production mechanisms (articulatory phonetics), propagation mechanisms (acoustic phonetics), and perception mechanisms (auditory phonetics). Includes a basic introduction to Digital Signal Processing. Cross-listed with ANTH 301. Graduate/Undergraduate version: LING 501. Pre-requisite(s): LING 200, or permission of instructor. Offered Fall. Instructor(s): Niedzielski.

LING 304 INTRO TO SYNTAX (3)

An introduction to syntactic analysis and argumentation. Various topics will be covered, including (but not limited to) word classes, grammatical categories, simple and complex sentences, and constituency. Graduate/Undergraduate version: LING 504. Pre-requisite(s): LING 300, or permission of instructor. Offered Fall. Instructor(s): Bower.

LING 305 HISTORICAL LINGUISTICS (3)

Exploration of the nature of language change. Topics covered include sound change, syntactic and semantic change, modeling language splits, the sociolinguistics of language change, and the history of European languages. Cross-listed with ANTH 305. Graduate/Undergraduate version: LING 505. Pre-requisite(s): (LING 300 and LING 311) or (ANTH 300 and ANTH 311), or permission of instructor. Instructor(s): Bower.

LING 306 LANGUAGE, THOUGHT, AND MIND (3)

Study of language as a cognitive system. Linguistic data as evidence for the cognitive structures and processes that enable people to learn and use language; how linguistic structure influences concept formation and patterns of thinking. Graduate/Undergraduate version: LING 506. Pre-requisite(s): LING 200 or LING 300, or permission of instructor. Offered Spring. Instructor(s): Lamb; Achard.

LING 309 PSYCHOLOGY OF LANGUAGE (3)

Study of human and other animal communication. Cross-listed with PSYC 309. Offered Fall. Instructor(s): Crosswhite.

LING 310 MORPHOLOGY (3)

Morphology is the study of word formation and the relationship between form, meaning, and syntax. This course is an introduction to morphological theory. Topics covered include approaches to word formation, morphological change, and morphological phenomena in diverse languages. Graduate/Undergraduate version: LING 510. Pre-requisite(s): LING 300 and LING 311, or permission of instructor. Offered Fall. Instructor(s): Bower.

LING 311 INTRODUCTION TO PHONOLOGY (3)

Introduction to analysis techniques and theory concerning patternings of sounds in the world's languages. The course will involve extensive work with non-English data sets, and development of analytical techniques such as identification of sound alterations or restrictions, and formalization of abstract representations and rules to account for them. Cross-listed with ANTH 323. Graduate/Undergraduate version: LING 511. Pre-requisite(s): LING 200 or LING 301, or permission of instructor. Offered Spring. Instructor(s): Crosswhite, Niedzielsky.

LING 312 OLD ENGLISH (3)

This course is a combination of old English grammar and readings in old English. Cross-listed with ENGL 309, MDST 311. Instructor(s): Mitchell.

LING 313 LANGUAGE AND CULTURE (3)

Investigation of the relation between language and thought, language and worldview, and language and logic. Cross-listed with ANTH 313. Graduate/Undergraduate version: LING 513. Offered Fall. Instructor(s): Tyler.

LING 314 SECOND LANGUAGE ACQUISITION (3)

Review and analysis of major theoretical approaches to second language acquisition among adults. Major topics covered are: linguistic, cognitive and sociocultural factors in language development, instructed and non-instructed settings, research methodologies, development stages of acquisition. Major emphasis on morphosyntactic development, but attention to phonetics and lexicon too. Cross-listed with SPAN 381. Limited enrollment. Offered Spring.

LING 315 INTRODUCTION TO SEMANTICS (3)

Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Cross-listed with PSYC 315. Graduate/Undergraduate version: LING 515. Pre-requisite(s): LING 200, or permission of instructor. Offered Spring. Instructor(s): Kemmer.

LING 318 STRUCTURE OF FRENCH (3)

The primary objective of this course is to present contemporary French as a dynamic linguistic system shaped by historical, cognitive and sociological developments. Beyond the specific consideration of French, this course is concerned with the historical, psychological, and sociological dimensions that enter into the description of any language. Cross-listed with FREN 318. Pre-requisite(s): FREN 202, or placement test, or permission of instructor.

LING 320 ORIGINS AND EVOLUTION OF HUMAN LANGUAGE (3)

How did Human Language arise, and what role did language play in the evolution of our species? This course introduces the basic sources or evidence (e.g., fossil remains, comparative primatology, neonatal development) for knowledge of human linguistic prehistory, including the spread of modern humans and human language throughout the world.

LING 321 CHINESE: SYNTAX & SEMANTICS (3)

Examination of syntactic and semantic features of Chinese with special attention to contrastive analysis of selected topics of Chinese and English, including expressions of tense and aspect, conditional and counterfactual, word formation (morphology), the notion of syntactic category, grammaticalization, etc. Taught in English. Cross-listed with CHIN 321. Limited enrollment. Offered Fall. Instructor(s): Lilychew.

LING 330 CORPUS LINGUISTICS (3)

Investigation of the nature of linguistic representations from corpus-based analyses as compared to more traditional methodologies. Includes the collection of individual text data (or the exploration of existing text sources), the use of various text analysis programs (e.g. concordance software), and the production of lexical, syntactic, semantic, discourse, or cultural analyses of selected texts, using computer-based methods. Graduate/Undergraduate version: LING 530.

LING 340 THEORY AND METHODS OF TEACHING ESL (3)

Introduction to the theory and practice of teaching a second language. Includes the process of language learning viewed from social, psychological, and linguistic perspectives, as well as commonly used teaching "methods," such as the audiolingual method, situational language teaching, the natural approach, and TPR, among others. Required for linguistics majors in second language acquisition concentration. Graduate/Undergraduate version: LING 540. Instructor(s): Percy.

LING 345 LINGUISTIC STRUCTURE OF KOREAN (3)

The course focuses on the origin of Korean and related languages. It explores the way the Korean language evolved and interacted with other East Asian Languages, including Chinese and Japanese. The socio-linguistic aspect of these languages will be studied, including the difference in male and female language used and the honorific systems. Cross-listed with ASIA 345, KORE 345. Instructor(s): Lee.

LING 351 INTRODUCTION TO SANSKRIT I (3)

Cross-listed with SANS 301. Repeatable for Credit. Offered Fall. Instructor(s): Mitchell.

LING 352 INTRODUCTION TO SANSKRIT II (3)

This course is a continuation of LING 351, SANS 301 and aims at developing vocabulary and grammatical skills through reading biblical prose and poetic texts. Cross-listed with SANS 302. Pre-requisite(s): LING 351 or SANS 301. Instructor(s): Mitchell.

LING 370 STRUCTURE OF JAPANESE (3)

This course examines current issues in Japanese grammar in the framework of contemporary linguistic theory. Where appropriate, the traditional kokugogaku approach is compared with modern linguistic approaches. Basic knowledge of both Japanese and linguistics is required. Cross-listed with JAPA 370. Pre-requisite(s): LING 200 and JAPA 202. Repeatable for Credit. Offered Fall. Instructor(s): Shibatani.

LING 373 THE LINGUISTIC TURN (3)

This course will look at the role of narration in the construction of some of the basic forms of modernity and post-modernity, ranging from nationalism to performative approaches to identity. The first half of the course will introduce the basic linguistic tools necessary to analyze a variety of cultural materials, and the second half will be devoted to analyzing specific texts and student presentations. The course does not presuppose any technical training in linguistics or literary analysis. Cross-listed with ANTH 373.

LING 394 STRUCTURE OF THE ENGLISH LANGUAGE (3)

Introduction to modern English grammar, phonology, and semantics. Cross-listed with ENGL 394. Instructor(s):Shibatani.

LING 395 HISTORY OF THE ENGLISH LANGUAGE (3)

Survey of 6,000 years of language history. Includes the phonological, morphological, syntactic, and semantic history of the English language from its Indo-European origins, through the Anglo-Saxon and Middle English periods, and up to the present day. Cross-listed with ENGL 395.

LING 402 SYNTAX AND SEMANTICS (3)

Study of semantic categories and their formal expression in morphological, syntactic, and lexical units and patterns. Cross-listed with ANTH 402. Graduate/Undergraduate version: LING 502.

LING 403 FOUNDATIONS OF LINGUISTIC THEORY (3)

The foundations of important linguistic ideas and currents in the classic work of 19th and 20th century linguists, with reference to their influence on modern theories. Includes discussion of the neogrammarians, Saussure, Sapir, Jespersen, Bloomfield, Whorf, American and European structuralist, and Chomsky. Taught as a pro-seminar. Graduate/Undergraduate version: LING 503. Offered Spring. Instructor(s): Kemmer.

LING 404 RESEARCH METHODOLOGY AND LINGUISTIC THEORIES (3)

Compares and explores the nature of data, argumentation, goals, and assumptions of current theoretical approaches to language and linguistics. Centers on the discussion of general readings and source articles from cognitive, generative, typological, discourse-functional, and sociolinguistic orientations. Emphasizes critical thinking and awareness of the potential benefits and drawbacks of each approach. Pre-requisite(s): LING 300, or permission of instructor. Offered Spring. Instructor(s): Englebretson.

LING 405 TOPICS IN LANGUAGE CHANGE (3)

Survey of the current research on the nature of diachronic processes and their implications for linguistic theory. May include diachronic typology, issues in genetic classification, grammaticalization, syntactic change, and analogical change. Content varies from year to year. Pre-requisite(s): LING 305. Repeatable for Credit. Offered Fall. Instructor(s): Kemmer.

LING 406 COGNITIVE STUDIES (3)

Relations between thought, language, and culture. Special emphasis given to natural systems of classification and their underlying logical principles. Cross-listed with ANTH 406. Offered Spring. Instructor(s): Tyler.

LING 407 FIELD TECHNIQUES AND ANALYSIS (3)

Techniques and practice in the observation, analysis, and recording of a human language. Cross-listed with ANTH 407. Graduate/Undergraduate version: LING 507. Recommended prerequisite(s): LING 300, LING 301, LING 402 and permission of instructor. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Bowers.

LING 408 FIELD TECHNIQUES AND ANALYSIS (3)

Continuation of LING 407/ANTH 407. Cross-listed with ANTH 408. Repeatable for Credit. Limited enrollment. Offered Spring. Instructor(s): Bowers.

LING 409 SPECIAL TOPICS (3)

Course content varies from year to year. Repeatable for Credit. Instructor(s): Crosswhite.

LING 410 RHETORIC (3)

Overview of classical series of rhetoric and followed by more intensive discussions both of contemporary theories and applications in a wide variety of disciplines. Cross-listed with ANTH 412. Offered Fall. Instructor(s): Tyler.

LING 411 NEUROLINGUISTICS (3)

Study of language and the brain. Includes localization of speech, language, and memory functions, hemispheric dominance, pathologies of speech and language associated with brain damage, and hypotheses of the representation and operation of linguistic information in the cortex. Cross-listed with ANTH 411. Offered Fall. Instructor(s): Lamb.

LING 413 APPROACHES TO SYNTAX (3)

Syntactic analysis may be studied from a variety of nongenerative, functional approaches to syntactic perspectives. In this course, students are introduced to different approaches to theoretical syntax. Topics covered will vary from year to year according to the wishes and background of the students) but will include analysis of different syntactic phenomena in LFG, GB/minimalism, and comparison with functional approaches. Pre-requisite(s): LING 300 and LING 304, or permission of instructor. Instructor(s): Bowers.

LING 414 HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY (3)

Application of linguistic theory and method in the analysis of cultural materials. Includes discourse analysis and the structure and interpretation of texts and conversation. Cross-listed with ANTH 414. Instructor(s): Tyler.

LING 415 SOCIOLINGUISTICS (3)

Topic: Issues of language and gender, race and class. The course will begin with an overview of contemporary sociolinguistic theory and methodologies. We will then examine the linguistic consequences to speakers of their membership in groups defined in terms of gender, race and class. Cross-listed with WGST 415. Offered Spring. Instructor(s): Niedzielski.

LING 416 LANGUAGE UNIVERSALS AND TYPOLOGY (3)

Investigation of what human languages have in common and a range of ways in which they can differ. Includes marking patterns in particular linguistic domains (e.g., case marking, animacy, and passives) and theoretical and methodological issues. Offered Spring. Instructor(s): Shibatani.

LING 417 COMPUTER-ASSISTED LANGUAGE INSTRUCTION (3)

Exploration of the theory and practice of using computers and other technologies in the language classroom. Includes language software, authoring systems, hypertext, e-mail, video, videodisc, and CD-ROM, as well as a survey of the ways that technology can be used in language teaching and various aspects of courseware development. Required for linguistics majors in second language acquisition concentration.

LING 418 THE ACQUISITION OF L2 SPANISH (3)

This course reviews the available research on the acquisition of the phonology, vocabulary, morphosyntax and discursive pragmatic features of Spanish as a second language. Aims to provide students with a thorough understanding of second language acquisition processes that are specific to Spanish but generalizable to other languages as well. Cross-listed with SPAN 382. Recommended prerequisite(s): Third year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Salaberry.

LING 419 BILINGUALISM (3)

This course analyzes bilingualism from a variety of perspectives including cognitive, linguistic, and socio-cultural viewpoints. Topics to be covered include conceptual representations of the lexicon, sentence parsing, levels of activation of bilingual modes, lexical, phonological syntactic and pragmatic interference, code-switching, cultural identity, bilingual education, language and thought, etc. Cross-listed with SPAN 440. Recommended prerequisite(s): Advanced Spanish or permission of the instructor. Offered Fall. Instructor(s): Salaberry.

LING 420 COGNITION AND L2 ACQUISITION (3)

This course provides an in-depth analysis of general cognitive processes in second language development and cognitive based theories of second language acquisition. Some of the issues to be discussed in detail are perception, attention, memory, automaticity, restructuring, sentence processing, learnability theories, language and intelligence, critical periods for language acquisition, etc. Cross-listed with SPAN 442. Not offered Fall & Spring. Instructor(s): Salaberry.

LING 421 SOCIOLINGUISTICS OF SPANISH (3)

Analysis of the modern varieties of Spanish covering phonetics, vocabulary, morphosyntax, and pragmatics. The course requires the completion of a research project with an empirical database. Cross-listed with SPAN 350. Recommended prerequisite(s): Third-year Spanish or permission of the instructor. Offered Spring. Instructor(s): Salaberry.

LING 422 THE DEVELOPMENT OF TENSE AND ASPECT IN SECOND LANGUAGE LEARNING (3)

This course provides an introduction to (1) the morphosyntactic analysis of tense-aspect systems, (2) the development of inflectional morphology among first and second language learners, (3) the sequence and rate of development of aspectual contrasts, (4) the differences between natural and academic learning sessions and (5) the impact of pedagogical manipulations. Cross-listed with SPAN 444. Recommended prerequisite(s): Advanced Spanish or permission of the instructor. Not offered Fall and Spring. Instructor(s): Salaberry.

LING 424 THE EVOLUTION OF SPANISH (3)

This course provides an introduction to (1) major historical changes that led to the evolution of Proto-Romance (Vulgar Latin) to the Castillian dialect of Spanish (español or castellano), and (2) current developments and expected changes in the future of the various representatives of former Castillian dialect. Cross-listed with SPAN 380. Graduate/Undergraduate version: LING 516. Recommended prerequisite(s): Third-year Spanish or permission of the instructor. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Salaberry.

LING 425 AUSTRALIAN LANGUAGES (3)

A course on the structure of Australian languages examining the phonological, morphological, and syntactic systems. Emphasis placed on interaction with original data and making appropriate typological generalizations. Discussion of sociolinguistics, language use, language death, and revitalization. Cross-listed with ANTH 421. Graduate/Undergraduate version: LING 525. Pre-requisite(s): LING 200, or permission of instructor. Offered alternate years. Instructor(s): Bower.

LING 427 ADVANCED PHONOLOGY (3)

Examination of issues in contemporary phonological theory. Special attention will be given to more advanced representational theories (feature geometry, mosaic phonology) and phonetically motivated phonological analysis, especially within the framework of optionality theory. Graduate/Undergraduate version: LING 527. Pre-requisite(s): LING 301 and LING 311. Offered Spring. Instructor(s): Crosswhite.

LING 428 LABORATORY PHONOLOGY (3)

This course will examine phonetic and phonological phenomena from an empirical point of view placing priority on first-hand acoustic or experimental data. The primary goal will be the investigation of theoretical issues in the areas of phonetic processing, lexical representation, and phonological patterning. A secondary goal is familiarity with laboratory techniques. Graduate/Undergraduate version: LING 528. Pre-requisite(s): LING 301 and LING 311. Offered Fall. Instructor(s): Crosswhite.

LING 435 TOPICS IN GERMANIC LINGUISTICS (3)

Topic: Old Icelandic. Repeatable for Credit. Offered Fall. Instructor(s): Mitchell.

LING 451 ADVANCED SANSKRIT I (3)

Review of the nominal declensions and the classes of verbs to be followed by a series of readings from Lanman. Special attention will be given to the study of compounds and to Sanskrit verse forms. Cross-listed with SANS 401. Instructor(s): Mitchell.

- LING 452 ADVANCED SANSKRIT II (3)**
Continuation of LING 451. Cross-listed with SANS 402. Instructor(s): Mitchell.
- LING 480 INDEPENDENT STUDY (3)**
- LING 481 INDEPENDENT STUDY (1 TO 3)**
Repeatable for Credit.
- LING 482 HONORS PROJECT (3)**
Independent directed research toward preparation of an undergraduate honors project or thesis. Instructor permission required. Repeatable for Credit.
- LING 490 DISCOURSE ANALYSIS (3)**
An overview of features and organization of language-in-use. Examination of the macro-structure of different genres of discourse, the interplay between language and social/cultural interaction, and the role of discourse and communication in motivating and shaping grammatical form. Pre-requisite(s): LING 300, or permission of instructor. Instructor(s): Englebretson.
- LING 500 LINGUISTIC ANALYSIS (3)**
Graduate/Undergraduate version: LING 300.
- LING 501 PHONETICS (3)**
Graduate/Undergraduate version: LING 301.
- LING 502 SYNTAX AND SEMANTICS (3)**
Graduate/Undergraduate version: LING 402.
- LING 503 FOUNDATIONS OF LINGUISTIC THEORY (3)**
Graduate/Undergraduate version: LING 403.
- LING 504 INTRO TO SYNTAX (3)**
Graduate/Undergraduate version: LING 304. Pre-requisite(s): LING 500, or permission of instructor. Offered Fall. Instructor(s): Bownern.
- LING 505 HISTORICAL LINGUISTICS (3)**
Graduate/Undergraduate version: LING 305.
- LING 506 LANGUAGE, THOUGHT, AND MIND (3)**
Graduate/Undergraduate version: LING 306.
- LING 507 FIELD TECHNIQUES AND ANALYSIS (3)**
Cross-listed with ANTH 607. Graduate/Undergraduate version: LING 407. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Bownern.
- LING 508 FIELD TECHNIQUES AND ANALYSIS (3)**
Continuation of LING 507. Repeatable for Credit. Limited enrollment. Offered Spring. Instructor(s): Bownern.
- LING 510 MORPHOLOGY (3)**
Graduate/Undergraduate version: LING 310. Offered Fall. Instructor(s): Bownern.
- LING 511 INTRODUCTION TO PHONOLOGY (3)**
Graduate/Undergraduate version: LING 311. Offered Spring. Instructor(s): Crosswhite; Niedzielsky.
- LING 513 LANGUAGE AND CULTURE (3)**
Investigates the relation between language and thought, language and worldview, and language and logic. Cross-listed with ANTH 513. Graduate/Undergraduate version: LING 313. Offered Fall. Instructor(s): Tyler.
- LING 515 SEMANTICS: INTRO TO THE STUDY OF MEANING (3)**
Graduate/Undergraduate version: LING 315. Offered Spring. Instructor(s): Kemmer.
- LING 516 THE EVOLUTION OF SPANISH (3)**
Graduate/Undergraduate version: LING 424. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Salaberry.
- LING 525 AUSTRALIAN LANGUAGES (3)**
Cross-listed with ANTH 621. Graduate/Undergraduate version: LING 425. Offered alternate years. Instructor(s): Bownern.
- LING 527 ADVANCED PHONOLOGY (3)**
Graduate/Undergraduate version: LING 427. Offered Spring. Instructor(s): Crosswhite.
- LING 528 LABORATORY PHONOLOGY (3)**
Graduate/Undergraduate version: LING 428. Offered Fall. Instructor(s): Crosswhite.
- LING 530 CORPUS LINGUISTICS (3)**
Graduate/Undergraduate version: LING 330.

LING 540 THEORY AND METHODS OF TEACHING ESL AND FOREIGN LANGUAGE (3)

Graduate/Undergraduate version: LING 340.

LING 550 DEPARTMENTAL COLLOQUIUM (1)

Faculty, graduate students, and invited guests meet weekly to present reports on current research or to discuss current issues in linguistics. Repeatable for Credit. Instructor(s): Crosswhite.

LING 551 SEMINAR IN LINGUISTIC THEORY (3)

Topics vary from year to year. Repeatable for Credit.

LING 552 SEMINAR IN SYNTAX AND SEMANTICS (3)

Topic: Textual analysis. Repeatable for Credit.

LING 553 SEMINAR IN LINGUISTIC STRUCTURE (3)

Topics vary from year to year. Repeatable for Credit. Offered Spring. Instructor(s): Bowern.

LING 554 SEMINAR IN SEMANTIC THEORY (3)

Topics vary from year to year. Repeatable for Credit.

LING 555 SEMINAR IN PHONETICS (3)

Topics will vary from year to year. Pre-requisite(s): LING 301. Instructor(s): Niedzielski.

LING 556 SEMINAR IN LANGUAGE VARIATION (3)

Topics vary from year to year. Cross-listed with WGST 556.

LING 557 SEMINAR IN DISCOURSE (3)

Topic: Stance taking in discourse.

LING 581 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 582 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 583 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 584 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 585 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 586 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 587 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 588 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit.

LING 590 TEACHING LINGUISTICS (1 TO 15)

Repeatable for Credit.

LING 591 TEACHING LINGUISTICS (1 TO 3)

Repeatable for Credit.

LING 800 DISSERTATION RESEARCH (1 TO 9)

Repeatable for Credit.

LPAP (LIFETIME PHYSICAL ACTIVITY PROGRAM)**No School Designated/Lifetime Physical Activity Program****LPAP 100 INTRODUCTION TO TENNIS (0)**

This class will provide the student with the knowledge of tennis rules, sportsmanlike qualities, and a sound foundation of the basic tennis strokes so the game can be played with confidence and competence. Counts toward graduation requirement. Course equivalency: LPAP 200. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): White.

LPAP 103 INTERMEDIATE RACQUETBALL (0)

This course is designed to introduce the student to the skills and strategy necessary to compete in racquetball at the intermediate level. Counts toward graduation requirement. Course equivalency: LPAP 203. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 108. Offered Fall and Spring. Instructor(s): Robison.

LPAP 104 INTRODUCTION TO RACQUETBALL AND BADMINTON (O)
 An introduction to basic skills and knowledge necessary to play racquetball and badminton at the beginning level. Counts toward graduation requirement. Course equivalency: LPAP 204. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 105 INTRODUCTION TO BADMINTON (O)
 This course is designed to develop theoretical knowledge and basic badminton strokes and strategies. Counts toward graduation requirement. Course equivalency: LPAP 205. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring.

LPAP 106 INTERMEDIATE INSTRUCTION IN LIFETIME PHYSICAL ACTIVITY (O)
 Open to all students on space availability basis with priority to KINE major students. Counts toward graduation requirement. Course equivalency: LPAP 206. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 107 INTERMEDIATE TENNIS (O)
 This class will provide the student with the knowledge of tennis rules, sportsmanlike qualities, and a sound foundation of the basic tennis strokes so the game can be played competitively with confidence and competence. Counts toward graduation requirement. Course equivalency: LPAP 207. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 100. Offered Fall and Spring. Instructor(s): White.

LPAP 108 INTRODUCTION TO RACQUETBALL (O)
 An introduction to the basic skills and knowledge necessary to play racquetball at the beginning level. The goal of this class is to motivate students to incorporate racquetball at the introductory level. Counts toward graduation requirement. Course equivalency: LPAP 208. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Robinson.

LPAP 110 INTRODUCTION TO GOLF (O)
 Topics to be covered include: fundamentals, set up, aim & alignment, putting, chipping, irons, and woods. The rules and etiquette will also be covered. Counts toward graduation requirement. Course equivalency: LPAP 210. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Leber.

LPAP 111 INTERMEDIATE GOLF (O)
 This class is intended for an intermediate level player. Topics to be covered include: fundamentals, set up, aim & alignment, putting, chipping, irons, and woods. Counts toward graduation requirement. Course equivalency: LPAP 211. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 110. Not offered Fall and Spring.

LPAP 112 ARCHERY (O)
 This course is designed to offer basic knowledge and skill development in archery. Recurve bows will be used during class activities. Counts toward graduation requirement. Course equivalency: LPAP 212. Must be enrolled in one of the following Level(s): Undergraduate. Offered Spring.

LPAP 114 DISC GOLF (O)
 This is a course designed to offer an introduction to the fundamental disc golf skills, basic rules & strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 214. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 120 INTRODUCTION TO GOLF/ULTIMATE (O)
 This is a course designed to offer an introduction to the fundamental disc golf and ultimate frisbee skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 220. Must be enrolled in one of the following Level(s): Undergraduate. Offered Spring.

LPAP 121 ULTIMATE FRISBEE (O)
 This is a course designed to offer an introduction to the fundamental ultimate frisbee skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 221. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 122 INTRODUCTION TO FLAG FOOTBALL/SOFTBALL (O)
 This is a beginning level course designed to offer an introduction to the fundamental softball and flag-football skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 222. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Stein.

LPAP 123 FLAG FOOTBALL (O)

This is a beginning level course designed to offer an introduction to the fundamental flag-football skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 223. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 124 SOFTBALL (O)

This is a beginning level course designed to offer an introduction to the fundamental skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 224. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 125 INTRODUCTION TO SOCCER (O)

This is an entry level course offering fundamental soccer skills, basic rules, and team tactics. These skills, rules, and tactics will be presented through active participation and instruction and evaluated through physical performance, participation and written assessment. Counts toward graduation requirement. Course equivalency: LPAP 225. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Henshaw.

LPAP 126 INTERMEDIATE SOCCER (O)

This is an intermediate level course offering advanced soccer skills and team tactics. These skills and tactics will be presented through active participation and instruction and evaluated through physical performance, participation and written assignment. Counts toward graduation requirement. Course equivalency: LPAP 226. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 125. Not offered Fall & Spring.

LPAP 127 INTRODUCTION TO VOLLEYBALL/BASKETBALL (O)

This is a beginning level course designed to offer an introduction to the fundamental basketball and volleyball skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 227. Must be enrolled in one of the following Level(s): Undergraduate. Offered Spring.

LPAP 128 VOLLEYBALL (O)

This is a beginning level course designed to offer an introduction to the fundamental volleyball skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 228. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall.

LPAP 129 BASKETBALL (O)

This is a beginning level course designed to offer an introduction to the fundamental basketball skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. Counts toward graduation requirement. Course equivalency: LPAP 229. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall.

LPAP 131 INTRODUCTION TO MIDDLE EASTERN DANCE (O)

This is a beginning level course which will introduce the basic movements of Middle Eastern Dance. The students will also be expected to develop a knowledge and appreciation of Middle Eastern dance as a cultural, communal, and recreational activity. Counts toward graduation requirement. Course equivalency: LPAP 231. Must be enrolled in one of the following Level(s): Undergraduate. Offered Spring. Instructor(s): Loutsoudas.

LPAP 132 INTERMEDIATE MIDDLE EASTERN DANCE (O)

This is an intermediate course which will introduce advanced movements of Middle Eastern Dance. The students will also be expected to develop a knowledge and appreciation of Middle Eastern Dance as a cultural, communal, and recreational activity. Counts toward graduation requirement. Course equivalency: LPAP 232. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 131. Not offered Fall and Spring.

LPAP 133 CAPOEIRA (O)

The student will define Capoeira, understand how it is played and familiarize himself/herself with the rules and traditions of this fascinating aspect of the Brazilian culture. Counts toward graduation requirement. Course equivalency: LPAP 233. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Campos.

LPAP 134 CLASSICAL INDIAN DANCE (O)

This course focuses on the Bharatanatyam form very popular in South India. Bharatanatyam is the oldest of all classical Indian forms and its narrative style is known for its grace, purity, tenderness and its statuesque poses. Counts toward graduation requirement. Course equivalency: LPAP 234. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall. Instructor(s): Kumar.

LPAP 140 INTRODUCTION TO BALLROOM DANCE (O)

Students will learn the basic movements of American Ballroom Dance including the foxtrot, waltz, swing, and tango. Students will obtain a knowledge and appreciation of ballroom dance as a historical and recreational activity. Counts toward graduation requirement. Course equivalency: LPAP 240. Must be enrolled in one of the following Level(s): Undergraduate. Instructor permission required. Offered Fall and Spring. Instructor(s): Perry.

LPAP 141 INTERMEDIATE BALLROOM DANCE (0)

Students will learn the advanced movements of American Ballroom Dance. Students will obtain a knowledge and appreciation of ballroom dance as a historical and recreational activity. Counts toward graduation requirement. Course equivalency: LPAP 241. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 140. Not offered Fall and Spring.

LPAP 142 INTRODUCTION TO LATIN DANCE (0)

Course content includes demonstration of and brief lectures on the Merengue, Salsa, Mambo, Rumba, Cha Cha, and Tango. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills. Counts toward graduation requirement. Course equivalency: LPAP 242. Must be enrolled in one of the following Level(s): Undergraduate. Instructor permission required. Offered Fall and Spring. Instructor(s): Perry.

LPAP 143 INTERMEDIATE LATIN DANCE (0)

Course content includes demonstration of and brief lectures on the intermediate level of Merengue, Salsa, and Cha Cha. Topics include history of Latin Dance, social dance terminology, proper body alignment, leading and following, and social dance etiquette. Counts toward graduation requirement. Course equivalency: LPAP 243. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 142. Instructor permission required. Offered Spring. Instructor(s): Perry.

LPAP 144 INTRODUCTION TO COUNTRY WESTERN (0)

Course content includes demonstration of and brief lectures on the Two Step and Polka. Drills are created to improve footwork, arm positioning, and leading and following skills. Other topics: history of C&W Dance, terminology, proper body alignment, leading and following, and social dance etiquette. Counts toward graduation requirement. Course equivalency: LPAP 244. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall. Instructor(s): Perry.

LPAP 145 INTERMEDIATE COUNTRY WESTERN (0)

Course content includes demonstration of and brief lectures on the intermediate level Two Step, Polka, and an introduction to Western Cha Cha. Counts toward graduation requirement. Course equivalency: LPAP 245. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 144. Instructor permission required. Offered Spring. Instructor(s): Perry.

LPAP 146 INTRODUCTION TO SWING DANCE (0)

Course content includes demonstration of and brief lectures on the East Coast Swing, including swing and triple step versions. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills. Counts toward graduation requirement. Course equivalency: LPAP 246. Must be enrolled in one of the following Level(s): Undergraduate. Instructor permission required. Offered Fall and Spring. Instructor(s): Perry.

LPAP 147 INTERMEDIATE SWING DANCE (0)

Course content includes demonstration of and brief lectures on the intermediate level of East Coast Swing, including single step and triple step versions. Counts toward graduation requirement. Course equivalency: LPAP 247. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 146. Not offered Fall and Spring. Instructor(s): Perry.

LPAP 150 IMPROVISATION AND COMPOSITION DANCE (0)

This class will focus on expanding students' creative movement potential through improvisational dance which will allow for self discovery, self expression, and build skill in dance making (composition/choreography). Counts toward graduation requirement. Course equivalency: LPAP 250. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Valls.

LPAP 151 ALEXANDER TECHNIQUE (0)

Students will gain an historic perspective of Frederick Matthias (F.M.) Alexander and his work and learn the principles of the Alexander Technique, including awareness, inhibition, direction, primary control and non-doing (or undoing) in other words, to learn how to do nothing well. Counts toward graduation requirement. Course equivalency: LPAP 251. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Lidvall.

LPAP 152 INTRODUCTION TO MODERN DANCE (0)

Students are expected to understand modern dance as a unique dance form with similarities and differences to ballet/jazz. Students will also learn the basic techniques of modern dance, which include: basic body alignment, neuromuscular coordination, rhythmic accuracy, movement memory, spatial skills, use of energy, and performing skills. Counts toward graduation requirement. Course equivalency: LPAP 252. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall. Instructor(s): Valls.

LPAP 153 INTERMEDIATE MODERN DANCE (0)

To develop a higher level of modern dance technique to include: basic body alignment; neuromuscular coordination; rhythmic accuracy; movement theory; spatial skills; use of energy; and performing skills. Students are expected to master complex movement phrases and become familiar with stylistic and historic components of modern dance. Counts toward graduation requirement. Course equivalency: LPAP 253. Must be enrolled in one of the following Level(s): Undergraduate. Offered Spring. Instructor(s): Valls.

LPAP 154 ADVANCED MODERN DANCE (0)

To develop an advanced level of modern dance technique to include: basic body alignment; neuromuscular coordination; rhythmic accuracy; movement memory; spatial skills; use of energy; and performing skills. Students are expected to master complex movement phrases and become familiar with stylistic and historical components of modern dance. Counts toward graduation requirement. Course equivalency: LPAP 254. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall. Instructor(s): Valls.

LPAP 155 INTRODUCTION TO BALLET (0)

This class will introduce students to the basic principles and steps of ballet technique. It is designed to increase the students' knowledge and understanding of the structure of the human body and how the structure functions to greatest benefit in ballet technique. Counts toward graduation requirement. Course equivalency: LPAP 255. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall. Instructor(s): Lidvall.

LPAP 156 INTERMEDIATE BALLET (0)

This class will introduce students to advanced principles and steps of ballet technique. Counts toward graduation requirement. Course equivalency: LPAP 256. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 155. Offered Spring. Instructor(s): Lidvall.

LPAP 157 JAZZ DANCE (0)

A beginning level dance class that teaches basic technique, performance, dance fitness, alignment, and introduces the stylistic and historical components of jazz dance. Counts toward graduation requirement. Course equivalency: LPAP 257. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall & Spring.

LPAP 160 AQUATIC EXERCISE (0)

This course is designed to increase fitness through the use of a variety of water exercise activities. The course will contain a cognitive component which includes information concerning fitness, health, and wellness. The course will contain a written exam, fitness testing, lab activities, and shallow and deep water work-outs. Counts toward graduation requirement. Course equivalency: LPAP 260. Must be enrolled in one of the following Level(s): Undergraduate.

LPAP 161 INTRODUCTION TO AQUATIC ACTIVITIES (0)

This course is designed to offer basic knowledge and skill development in a variety of aquatic activities. Focus will be given to basic swimming and diving techniques as well as comparative, recreational, and fitness activities. Counts toward graduation requirement. Course equivalency: LPAP 261. Must be enrolled in one of the following Level(s): Undergraduate.

LPAP 162 WATER SAFETY INSTRUCTOR (0)

Students will work toward the American Red Cross Water Safety Instructor Certification. Counts toward graduation requirement. Course equivalency: LPAP 262. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring.

LPAP 163 LIFEGUARDING (0)

This course offers you training and possible certification in the American Red Cross Lifeguard Training, Community First Aid and Safety, and CPR for the Professional Rescuer. Counts toward graduation requirement. Course equivalency: LPAP 263. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall & Spring.

LPAP 164 INTRODUCTION TO FITNESS SWIMMING (0)

This course is designed to increase fitness through the use of swimming. There will also be a knowledge component to the course which includes information concerning fitness, health, stroke mechanics and wellness. The objective of the course is for students to design their own swimming work-outs to meet their fitness goals. Counts toward graduation requirement. Course equivalency: LPAP 264. Must be enrolled in one of the following Level(s): Undergraduate.

LPAP 165 INTERMEDIATE FITNESS SWIMMING (0)

This intermediate course is designed to increase fitness through the use of swimming. There will also be a knowledge component to the course which include information concerning fitness, health, stroke mechanics and wellness. Students will design their own swimming program based on self selected goals for the semester. Counts toward graduation requirement. Course equivalency: LPAP 265. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 166 BEGINNING SWIMMING (O)

This course is designed to offer basic knowledge and skill for the beginning swimmer. The following strokes and skills will be taught during the class: water entries, floating, rhythmic breathing patterns, front crawl, elementary back stroke, back crawl, deep water exploration, and treading water. Counts toward graduation requirement. Course equivalency: LPAP 266. Must be enrolled in one of the following Level(s): Undergraduate.

LPAP 167 SPECIALIZED AQUATICS (O)

This course is designed to offer more advanced knowledge and skill development in a variety of aquatic activities. Focus will be given to areas based on student selection. Counts toward graduation requirement. Course equivalency: LPAP 267. Must be enrolled in one of the following Level(s): Undergraduate.

LPAP 170 YOGA (O)

This course provides a solid foundation in the principals of yoga theory and practice. By incorporating traditional philosophy, physical poses (asana) and breath control (pranayama), this class helps you to discover vitality, flexibility and strength within yourself. Through committed involvement and an open mind, you will experience first hand the profound aspects of yoga. Counts toward graduation requirement. Course equivalency: LPAP 270. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Perkins.

LPAP 171 TAI CHI (O)

This is a beginning course which is designed to introduce the student to Tai Chi. Counts toward graduation requirement. Course equivalency: LPAP 271. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 172 INTRODUCTION TO FENCING (O)

This is a beginning course which is designed to introduce the student to the skills and strategy necessary to enjoy fencing. Counts toward graduation requirement. Course equivalency: LPAP 272. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Hamza.

LPAP 173 INTERMEDIATE FENCING (O)

This course is designed to introduce the student to the skills and strategy necessary to participate in fencing at the intermediate level. Counts toward graduation requirement. Course equivalency: LPAP 273. Must be enrolled in one of the following Level(s): Undergraduate. Offered Spring. Instructor(s): Hamza.

LPAP 174 ADVANCED FENCING (O)

This course is designed to introduce the student to the skills and strategy to being competent in fencing at a more advanced level. Counts toward graduation requirement. Course equivalency: LPAP 274. Must be enrolled in one of the following Level(s): Undergraduate. Pre-requisite(s): LPAP 173. Not offered Fall and Spring. Instructor(s): Hamza.

LPAP 175 MARTIAL ARTS (O)

This course is designed to introduce the students to the skills and strategy necessary to participate in Martial Arts. Counts toward graduation requirement. Course equivalency: LPAP 275. Must be enrolled in one of the following Level(s): Undergraduate. Offered Spring. Instructor(s): Kim.

LPAP 176 SELF DEFENSE FOR WOMEN (O)

This course exposes students to a program of realistic, self-defense tactics and techniques. It is a comprehensive course for women that begins with awareness, prevention, risk reduction and avoidance, while progressing on the basics of hands-on defense training. Counts toward graduation requirement. Course equivalency: LPAP 276. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Marshall.

LPAP 180 WALK, JOG, RUN (O)

The purpose of this class is to teach the student skills on how to improve cardiovascular and muscular strength, endurance, stress management and weight control as it pertains to the class and achieving total wellness. Counts toward graduation requirement. Course equivalency: LPAP 280. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Thompson.

LPAP 181 PERSONAL FITNESS (O)

Class will consist of brief lectures on health and fitness topics. Students will be exposed to activities that may be incorporated into an individualized personal fitness program. The goal of this course is to motivate the students to include physical activity as an integral part of his/her lifestyle. Counts toward graduation requirement. Course equivalency: LPAP 281. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall & Spring. Instructor(s): Thompson.

LPAP 182 WEIGHT TRAINING (O)

The class will consist of brief lectures and discussions on the topics listed in the course outline. Students will be exposed to several different types of weight training techniques throughout the semester that may be incorporated into an individual's personal fitness program. Counts toward graduation requirement. Course equivalency: LPAP 282. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Thompson.

LPAP 183 WEIGHT TRAINING AND CONDITIONING (0)

The class will consist of brief lectures and discussions on the topics listed in the course outline. Students will be exposed to several different types of weight training techniques throughout the semester that may be incorporated into an individual's personal fitness program. Counts toward graduation requirement. Course equivalency: LPAP 283. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Robinson.

LPAP 184 BICYCLING (0)

The class will consist of brief lectures and discussions on the topics listed in the course outline. Students will be exposed to several drills that are geared toward improving bicycling skills. Students will also engage in group cycling that will take them off campus. Counts toward graduation requirement. Course equivalency: LPAP 284. Must be enrolled in one of the following Level(s): Undergraduate. Offered alternate years.

LPAP 185 CARDIO KICKBOXING (0)

Kickboxing combines the best of boxing and other martial arts techniques and brings it to you in an exciting and easy to learn format. As the name implies, cardio kickboxing involves kickboxing movements, but with cardiovascular training principles. Counts toward graduation requirement. Course equivalency: LPAP 285. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Thompson.

LPAP 186 PILATES (0)

This is a beginning level course designed to offer an introduction to the fundamentals and beginner/intermediate classic Pilates mat work exercises. The acquisition and understanding of these exercises, their goal, and intent will be presented through activity and lecture sessions and will be evaluated through physical performance, participation, and written assessment. Counts toward graduation requirement. Course equivalency: LPAP 286. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring. Instructor(s): Handelman.

LPAP 187 GROUP FITNESS (0)

The purpose of this class will be to provide students a learning opportunity in the broad area of group exercise. Counts toward graduation requirement. Course equivalency: LPAP 287. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 188 TRACK AND FIELD (0)

The main objective of this class is to introduce students to track and field concepts, running events, and field events through various teaching methods. Students will have an opportunity to identify what track event and field event skills they possess through skill trials. Counts toward graduation requirement. Course equivalency: LPAP 288. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring.

LPAP 189 BOOT CAMP (0)

Boot camp is a fitness training course which includes intense cardiovascular and muscular strength exercises. Activities may include but are not limited to jumping rope, running, agility plus speed drills, plyometrics, stair drills, ab workouts, and stretching. Counts toward graduation requirement. Course equivalency: LPAP 289. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring. Instructor(s): Thompson.

LPAP 190 INTRODUCTION TO OUTDOOR ACTIVITIES (0)

This course will offer students the opportunity to explore a variety of outdoor activities. Possible activities will include; orienteering, boating, camping, snorkeling and SCUBA, and hiking. The class will be a combination of knowledge and hands on practical application. Counts toward graduation requirement. Course equivalency: LPAP 290. Must be enrolled in one of the following Level(s): Undergraduate. Not offered Fall and Spring.

LPAP 198 NUTRITION AND FITNESS CONCEPTS (0)

The class will consist of lectures and discussions on the topics listed in the course outline. Students will also be exposed to information and activities throughout the semester that may be incorporated into an individual's personal wellness program. Counts toward graduation requirement. Course equivalency: LPAP 298. Must be enrolled in one of the following Level(s): Undergraduate. Offered Fall and Spring.

LPAP 199 INDEPENDENT STUDY (0)

Counts toward graduation requirement. Course equivalency: LPAP 299. Must be enrolled in one of the following Level(s): Undergraduate. Department permission required. Offered Fall and Spring.

LPAP 200 INTRODUCTION TO TENNIS (1)

This class will provide the student with the knowledge of tennis rules, sportsmanlike qualities, and a sound foundation of the basic tennis strokes so the game can be played with confidence and competence. For credit, does not count towards graduation requirement. Course equivalency: LPAP 100. Department permission required. Offered Fall and Spring. Instructor(s): White.

LPAP 203 INTERMEDIATE RACQUETBALL (1)

This course is designed to introduce the student to the skills and strategy necessary to compete in racquetball at the intermediate level. For credit, does not count towards graduation requirement. Course equivalency: LPAP 103. Pre-requisite(s): LPAP 108 or 208. Department permission required. Offered Fall and Spring. Instructor(s): Robinson.

LPAP 204 INTRODUCTION TO RACQUETBALL AND BADMINTON (1)

An introduction to basic skills and knowledge necessary to play racquetball and badminton at the beginning level. For credit, does not count towards graduation requirement. Course equivalency: LPAP 104. Department permission required. Not offered Fall and Spring.

LPAP 205 INTRODUCTION TO BADMINTON (1)

This course is designed to develop theoretical knowledge and basic badminton strokes and strategies. For credit, does not count towards graduation requirement. Course equivalency: LPAP 105. Department permission required. Offered Fall and Spring.

LPAP 206 INTERMEDIATE INSTRUCTION IN LIFETIME PHYSICAL ACTIVITY (1)

Open to all students on space availability basis with priority to KINE major students. For credit, does not count towards graduation requirement. Course equivalency: LPAP 106. Department permission required. Not offered Fall and Spring.

LPAP 207 INTERMEDIATE TENNIS (1)

This class will provide the student with the knowledge of tennis rules, sportsmanlike qualities, and a sound foundation of the basic tennis strokes so the game can be played competitively with confidence and competence. For credit, does not count towards graduation requirement. Course equivalency: LPAP 107. Pre-requisite(s): LPAP 100 or 200. Department permission required. Offered Fall and Spring. Instructor(s): White.

LPAP 208 INTRODUCTION TO RACQUETBALL (1)

An introduction to the basic skills and knowledge necessary to play racquetball at the beginning level. The goal of this class is to motivate students to incorporate racquetball at the introductory level. For credit, does not count towards graduation requirement. Course equivalency: LPAP 108. Department permission required. Offered Fall & Spring. Instructor(s): Robinson.

LPAP 210 INTRODUCTION TO GOLF (1)

Topics to be covered include: fundamentals, set up, aim & alignment, putting, chipping, irons, and woods. The rules and etiquette will also be covered. For credit, does not count towards graduation requirement. Course equivalency: LPAP 110. Department permission required. Offered Fall and Spring. Instructor(s): Leber.

LPAP 211 INTERMEDIATE GOLF (1)

This class is intended for an intermediate level player. Topics to be covered include: fundamentals, set up, aim & alignment, putting, chipping, irons, and woods. For credit, does not count towards graduation requirement. Course equivalency: LPAP 111. Pre-requisite(s): LPAP 110 or 210. Department permission required. Not offered Fall & Spring.

LPAP 212 ARCHERY (1)

This course is designed to offer basic knowledge and skill development in archery. Recurve bows will be used during class activities. For credit, does not count towards graduation requirement. Course equivalency: LPAP 112. Department permission required. Offered Spring.

LPAP 214 DISC GOLF (1)

This is a course designed to offer an introduction to the fundamental disc golf skills, basic rules & strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 114. Department permission required. Not offered Fall and Spring.

LPAP 220 INTRODUCTION TO GOLF/ULTIMATE (1)

This is a course designed to offer an introduction to the fundamental disc golf and ultimate frisbee skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 120. Department permission required. Offered Spring.

LPAP 221 ULTIMATE FRISBEE (1)

This is a course designed to offer an introduction to the fundamental ultimate frisbee skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 121. Department permission required. Not offered Fall and Spring.

LPAP 222 INTRODUCTION TO FLAG FOOTBALL/SOFTBALL (1)

This is a beginning level course designed to offer an introduction to the fundamental softball and flag-football skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 122. Department permission required. Offered Fall and Spring. Instructor(s): Stein.

LPAP 223 FLAG FOOTBALL (1)

This is a beginning level course designed to offer an introduction to the fundamental flag-football skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 123. Department permission required. Not offered Fall and Spring.

LPAP 224 SOFTBALL (1)

This is a beginning level course designed to offer an introduction to the fundamental skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 124. Department permission required. Not offered Fall and Spring.

LPAP 225 INTRODUCTION TO SOCCER (1)

This is an entry level course offering fundamental soccer skills, basic rules, and team tactics. These skills, rules, and tactics will be presented through active participation and instruction and evaluated through physical performance, participation and written assessment. For credit, does not count towards graduation requirement. Course equivalency: LPAP 125. Department permission required. Offered Fall and Spring. Instructor(s)^(*) Henshaw.

LPAP 226 INTERMEDIATE SOCCER (1)

This is an intermediate level course offering advanced soccer skills and team tactics. These skills and tactics will be presented through active participation and instruction and evaluated through physical performance, participation and written assignment. For credit, does not count towards graduation requirement. Course equivalency: LPAP 126. Pre requisite(s)^(*) LPAP 125 or 225. Department permission required. Not offered Fall and Spring.

LPAP 227 INTRODUCTION TO VOLLEYBALL BASKETBALL (1)

This is a beginning level course designed to offer an introduction to the fundamental basketball and volleyball skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 127. Department permission required. Offered Spring.

LPAP 228 VOLLEYBALL (1)

This is a beginning level course designed to offer an introduction to the fundamental volleyball skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 128. Department permission required. Offered Fall.

LPAP 229 BASKETBALL (1)

This is a beginning level course designed to offer an introduction to the fundamental basketball skills, basic rules, and team play strategies. The acquisition and understanding of these skills and strategies will be presented through activity and lecture sessions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 129. Department permission required. Offered Fall.

LPAP 231 INTRODUCTION TO MIDDLE EASTERN DANCE (1)

This is a beginning level course which will introduce the basic movements of Middle Eastern Dance. The students will also be expected to develop a knowledge and appreciation of Middle Eastern dance as a cultural, communal, and recreational activity. For credit, does not count towards graduation requirement. Course equivalency: LPAP 131. Department permission required. Offered Spring. Instructor(s)^(*) Loutsoudas.

LPAP 232 INTERMEDIATE MIDDLE EASTERN DANCE (1)

This is an intermediate course which will introduce advanced movements of Middle Eastern Dance. The students will also be expected to develop a knowledge and appreciation of Middle Eastern Dance as a cultural, communal, and recreational activity. For credit, does not count towards graduation requirement. Course equivalency: LPAP 132. Pre requisite(s)^(*) LPAP 131 or 231. Department permission required. Not offered Fall and Spring.

LPAP 233 CAPOEIRA (1)

The student will define Capoeira, understand how it is played and familiarize himself/herself with the rules and traditions of this fascinating aspect of the Brazilian culture. For credit, does not count towards graduation requirement. Course equivalency: LPAP 133. Department permission required. Offered Fall and Spring. Instructor(s)^(*) Campus.

LPAP 234 CLASSICAL INDIAN DANCE (1)

This course focuses on the Bharatanatyam form very popular in South India. Bharatanatyam is the oldest of all classical Indian forms and its narrative style is known for its grace, purity, tenderness and its statuesque poses. For credit, does not count towards graduation requirement. Course equivalency: LPAP 134. Department permission required. Offered Fall. Instructor(s)^(*) Kumar.

LPAP 240 INTRODUCTION TO BALLROOM DANCE (1)

Students will learn the basic movements of American Ballroom Dance including the foxtrot, waltz, swing, and tango. Students will obtain a knowledge and appreciation of ballroom dance as a historical and recreational activity. For credit, does not count towards graduation requirement. Course equivalency: LPAP 140. Department permission required. Offered Fall and Spring. Instructor(s)^(*) Perry.

LPAP 241 INTERMEDIATE BALLROOM DANCE (1)

Students will learn the advanced movements of American Ballroom Dance. Students will obtain a knowledge and appreciation of ballroom dance as a historical and recreational activity. For credit, does not count towards graduation requirement. Course equivalency: LPAP 141. Pre-requisite(s): LPAP 140 or 240. Department permission required. Not offered Fall and Spring.

LPAP 242 INTRODUCTION TO LATIN DANCE (1)

Course content includes demonstration of and brief lectures on the Merengue, Salsa, Mambo, Rumba, Cha Cha, and Tango. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills. For credit, does not count towards graduation requirement. Course equivalency: LPAP 142. Department permission required. Offered Fall and Spring. Instructor(s): Perry.

LPAP 243 INTERMEDIATE LATIN DANCE (1)

Course content includes demonstration of and brief lectures on the intermediate level of Merengue, Salsa, and Cha Cha. Topics include history of Latin Dance, social dance terminology, proper body alignment, leading and following, and social dance etiquette. For credit, does not count towards graduation requirement. Course equivalency: LPAP 143. Pre-requisite(s): LPAP 142 or 242. Department permission required. Offered Spring. Instructor(s): Perry.

LPAP 244 INTRODUCTION TO COUNTRY WESTERN (1)

Course content includes demonstration of and brief lectures on the Two Step and Polka. Drills are created to improve footwork, arm positioning, and leading and following skills. Other topics: history of C&W Dance, terminology, proper body alignment, leading and following, and social dance etiquette. For credit, does not count towards graduation requirement. Course equivalency: LPAP 144. Department permission required. Offered Fall. Instructor(s): Perry.

LPAP 245 INTERMEDIATE COUNTRY WESTERN (1)

Course content includes demonstration of and brief lectures on the intermediate level Two Step, Polka, and an introduction to Western Cha Cha. For credit, does not count towards graduation requirement. Course equivalency: LPAP 145. Pre-requisite(s): LPAP 144 or 244. Department permission required. Offered Spring. Instructor(s): Perry.

LPAP 246 INTRODUCTION TO SWING DANCE (1)

Course content includes demonstration of and brief lectures on the East Coast Swing, including swing and triple step versions. Students will participate in drills created to improve footwork, arm positioning, and leading and following skills. For credit, does not count towards graduation requirement. Course equivalency: LPAP 146. Department permission required. Offered Fall and Spring. Instructor(s): Perry.

LPAP 247 INTERMEDIATE SWING DANCE (1)

Course content includes demonstration of and brief lectures on the intermediate level of East Coast Swing, including single step and triple step versions. For credit, does not count towards graduation requirement. Course equivalency: LPAP 147. Pre-requisite(s): LPAP 147 or 246. Department permission required. Not offered Fall & Spring. Instructor(s): Perry.

LPAP 250 IMPROVISATION AND COMPOSITION DANCE (1)

This class will focus on expanding students' creative movement potential through improvisational dance which will allow for self discovery, self expression, and build skill in dance making (composition/choreography). For credit, does not count towards graduation requirement. Course equivalency: LPAP 150. Department permission required. Offered Fall and Spring. Instructor(s): Valls.

LPAP 251 ALEXANDER TECHNIQUE (1)

Students will gain an historic perspective of Frederick Matthias (F.M.) Alexander and his work and learn the principles of the Alexander Technique, including awareness, inhibition, direction, primary control and non-doing (or undoing) in other words, to learn how to do nothing well. For credit, does not count towards graduation requirement. Course equivalency: LPAP 151. Department permission required. Offered Fall and Spring. Instructor(s): Lidvall.

LPAP 252 INTRODUCTION TO MODERN DANCE (1)

Students are expected to understand modern dance as a unique dance form with similarities and differences to ballet/jazz. Students will also learn the basic techniques of modern dance, which include: basic body alignment, neuromuscular coordination, rhythmic accuracy, movement memory, spatial skills, use of energy, and performing skills. For credit, does not count towards graduation requirement. Course equivalency: LPAP 152. Department permission required. Offered Fall. Instructor(s): Valls.

LPAP 253 INTERMEDIATE MODERN DANCE (1)

To develop a higher level of modern dance technique to include: basic body alignment, neuromuscular coordination, rhythmic accuracy, movement theory, spatial skills, use of energy, and performing skills. Students are expected to master complex movement phrases and become familiar with stylistic and historic components of modern dance. For credit, does not count towards graduation requirement. Course equivalency: LPAP 153. Department permission required. Offered Spring. Instructor(s): Valls.

LPAP 254 ADVANCED MODERN DANCE (1)

To develop an advanced level of modern dance technique to include: basic body alignment; neuromuscular coordination; rhythmic accuracy; movement memory; spatial skills; use of energy; and performing skills. Students are expected to master complex movement phrases and become familiar with stylistic, and historical components of modern dance. For credit, does not count towards graduation requirement. Course equivalency: LPAP 154. Department permission required. Offered Fall. Instructor(s): Valls.

LPAP 255 INTRODUCTION TO BALLET (1)

This class will introduce students to the basic principles and steps of ballet technique. It is designed to increase the students' knowledge and understanding of the structure of the human body and how the structure functions to greatest benefit in ballet technique. For credit, does not count towards graduation requirement. Course equivalency: LPAP 155. Department permission required. Offered Fall. Instructor(s): Lidvall.

LPAP 256 INTERMEDIATE BALLET (1)

This class will introduce students to advanced principles and steps of ballet technique. For credit, does not count towards graduation requirement. Course equivalency: LPAP 156. Pre-requisite(s): LPAP 155 or 255. Department permission required. Offered Spring. Instructor(s): Lidvall.

LPAP 257 JAZZ DANCE (1)

A beginning level dance class that teaches basic technique, performance, dance fitness, alignment, and introduces the stylistic and historical components of jazz dance. For credit, does not count towards graduation requirement. Course equivalency: LPAP 157. Department permission required. Not offered Fall and Spring

LPAP 260 AQUATIC EXERCISE (1)

This course is designed to increase fitness through the use of a variety of water exercise activities. The course will contain a cognitive component which includes information concerning fitness, health, and wellness. The course will contain a written exam, fitness testing, lab activities, and shallow and deep water work-outs. For credit, does not count towards graduation requirement. Course equivalency: LPAP 160. Department permission required.

LPAP 261 INTRODUCTION TO AQUATIC ACTIVITIES (1)

This course is designed to offer basic knowledge and skill development in a variety of aquatic activities. Focus will be given to basic swimming and diving techniques as well as comparative, recreational, and fitness activities. For credit, does not count towards graduation requirement. Course equivalency: LPAP 161. Department permission required.

LPAP 262 WATER SAFETY INSTRUCTOR (1)

Students will work toward the American Red Cross Water Safety Instructor Certification. For credit, does not count towards graduation requirement. Course equivalency: LPAP 162. Department permission required. Offered Fall and Spring.

LPAP 263 LIFEGUARDING (1)

This course offers you training and possible certification in the American Red Cross Lifeguard Training, Community First Aid and Safety, and CPR for the Professional Rescuer. For credit, does not count towards graduation requirement. Course equivalency: LPAP 163. Department permission required. Offered Fall and Spring.

LPAP 264 INTRODUCTION TO FITNESS SWIMMING (1)

This course is designed to increase fitness through the use of swimming. There will also be a knowledge component to the course which includes information concerning fitness, health, stroke mechanics and wellness. The objective of the course is for students to design their own swimming work-outs to meet their fitness goals. For credit, does not count towards graduation requirement. Course equivalency: LPAP 164. Department permission required.

LPAP 265 INTERMEDIATE FITNESS SWIMMING (1)

This intermediate course is designed to increase fitness through the use of swimming. There will also be a knowledge component to the course which include information concerning fitness, health, stroke mechanics and wellness. Students will design their own swimming program based on self selected goals for the semester. For credit, does not count towards graduation requirement. Course equivalency: LPAP 165. Department permission required. Not offered Fall and Spring.

LPAP 266 BEGINNING SWIMMING (1)

This course is designed to offer basic knowledge and skill for the beginning swimmer. The following strokes and skills will be taught during the class: water entries, floating, rhythmic breathing patterns, front crawl, elementary back stroke, back crawl, deep water exploration, and treading water. For credit, does not count towards graduation requirement. Course equivalency: LPAP 166. Department permission required.

LPAP 267 SPECIALIZED AQUATICS (1)

This course is designed to offer more advanced knowledge and skill development in a variety of aquatic activities. Focus will be given to areas based on student selection. For credit, does not count towards graduation requirement. Course equivalency: LPAP 167. Department permission required.

LPAP 270 YOGA (1)

This course provides a solid foundation in the principals of yoga theory and practice. By incorporating traditional philosophy, physical poses (asana) and breath control (pranayama), this class helps you to discover vitality, flexibility and strength within yourself. Through committed involvement and an open mind, you will experience first hand the profound aspects of yoga. For credit, does not count towards graduation requirement. Course equivalency: LPAP 170. Department permission required. Offered Fall and Spring. Instructor(s): Perkins.

LPAP 271 TAI CHI (1)

This is a beginning course which is designed to introduce the student to Tai Chi. For credit, does not count towards graduation requirement. Course equivalency: LPAP 171. Department permission required. Not offered Fall and Spring.

LPAP 272 INTRODUCTION TO FENCING (1)

This is a beginning course which is designed to introduce the student to the skills and strategy necessary to enjoy fencing. For credit, does not count towards graduation requirement. Course equivalency: LPAP 172. Department permission required. Offered Fall and Spring. Instructor(s): Hamza.

LPAP 273 INTERMEDIATE FENCING (1)

This course is designed to introduce the student to the skills and strategy necessary to participate in fencing at the intermediate level. For credit, does not count towards graduation requirement. Course equivalency: LPAP 173. Department permission required. Offered Spring. Instructor(s): Hamza.

LPAP 274 ADVANCED FENCING (1)

This course is designed to introduce the student to the skills and strategy to being competent in fencing at a more advanced level. For credit, does not count towards graduation requirement. Course equivalency: LPAP 174. Pre-requisite(s): LPAP 173 or 273. Department permission required. Not offered Fall and Spring Instructor(s): Hamza.

LPAP 275 MARTIAL ARTS (1)

This course is designed to introduce the students to the skills and strategy necessary to participate in Martial Arts. For credit, does not count towards graduation requirement. Course equivalency: LPAP 175. Department permission required. Offered Spring. Instructor(s): Kim.

LPAP 276 SELF DEFENSE FOR WOMEN (1)

This course exposes students to a program of realistic, self-defense tactics and techniques. It is a comprehensive course for women that begins with awareness, prevention, risk reduction and avoidance, while progressing on the basics of hands-on defense training. For credit, does not count towards graduation requirement. Course equivalency: LPAP 176. Department permission required. Offered Fall and Spring. Instructor(s): Marshall.

LPAP 280 WALK, JOG, RUN (1)

The purpose of this class is to teach the student skills on how to improve cardiovascular and muscular strength, endurance, stress management and weight control as it pertains to the class and achieving total wellness. For credit, does not count towards graduation requirement. Course equivalency: LPAP 180. Department permission required. Offered Fall and Spring. Instructor(s): Thompson.

LPAP 281 PERSONAL FITNESS (1)

Class will consist of brief lectures on health and fitness topics. Students will be exposed to activities that may be incorporated into an individualized personal fitness program. The goal of this course is to motivate the students to include physical activity as an integral part of his/her lifestyle. For credit, does not count towards graduation requirement. Course equivalency: LPAP 181. Department permission required. Not offered Fall and Spring Instructor(s): Thompson.

LPAP 282 WEIGHT TRAINING (1)

The class will consist of brief lectures and discussions on the topics listed in the course outline. Students will be exposed to several different types of weight training techniques throughout the semester that may be incorporated into an individual's personal fitness program. For credit, does not count towards graduation requirement. Course equivalency: LPAP 182. Department permission required. Offered Fall and Spring. Instructor(s): Thompson.

LPAP 283 WEIGHT TRAINING AND CONDITIONING (1)

The class will consist of brief lectures and discussions on the topics listed in the course outline. Students will be exposed to several different types of weight training techniques throughout the semester that may be incorporated into an individual's personal fitness program. For credit, does not count towards graduation requirement. Course equivalency: LPAP 183. Department permission required. Offered Fall and Spring. Instructor(s): Robinson.

LPAP 284 BICYCLING (1)

The class will consist of brief lectures and discussions on the topics listed in the course outline. Students will be exposed to several drills that are geared toward improving bicycling skills. Students will also engage in group cycling that will take them off campus. For credit, does not count towards graduation requirement. Course equivalency: LPAP 184. Department permission required. Offered alternate years.

LPAP 285 CARDIO KICKBOXING (1)

Kickboxing combines the best of boxing and other martial arts techniques and brings it to you in an exciting and easy to learn format. As the name implies, cardio kickboxing involves kickboxing movements, but with cardiovascular training principles. For credit, does not count towards graduation requirement. Course equivalency: LPAP 185. Department permission required. Offered Fall and Spring. Instructor(s): Thompson.

LPAP 286 PILATES (1)

This is a beginning level course designed to offer an introduction to the fundamentals and beginner/intermediate classic Pilates mat work exercises. The acquisition and understanding of these exercises, their goal, and intent will be presented through activity and lecture sessions and will be evaluated through physical performance, participation, and written assessment. For credit, does not count towards graduation requirement. Course equivalency: LPAP 186. Department permission required. Offered Fall and Spring. Instructor(s): Handelman.

LPAP 287 GROUP FITNESS (1)

The purpose of this class will be to provide students a learning opportunity in the broad area of group exercise. For credit, does not count towards graduation requirement. Course equivalency: LPAP 187. Department permission required. Not offered Fall and Spring.

LPAP 288 TRACK AND FIELD (1)

The main objective of this class is to introduce students to track and field concepts, running events, and field events through various teaching methods. Students will have an opportunity to identify what track event and field event skills they possess through skill trials. For credit, does not count towards graduation requirement. Course equivalency: LPAP 188. Department permission required. Offered Fall and Spring.

LPAP 289 BOOT CAMP (1)

Boot camp is a fitness training course which includes intense cardiovascular and muscular strength exercises. Activities may include but are not limited to jumping rope, running, agility plus speed drills, plyometrics, stair drills, ab workouts, and stretching. For credit, does not count towards graduation requirement. Course equivalency: LPAP 189. Department permission required. Not offered Fall and Spring. Instructor(s): Thompson.

LPAP 290 INTRODUCTION TO OUTDOOR ACTIVITIES (1)

This course will offer students the opportunity to explore a variety of outdoor activities. Possible activities will include; orienteering, boating, camping, snorkeling and SCUBA, and hiking. The class will be a combination of knowledge and hands on practical application. For credit, does not count towards graduation requirement. Course equivalency: LPAP 190. Department permission required. Not offered Fall and Spring.

LPAP 298 NUTRITION AND FITNESS CONCEPTS (1)

The class will consist of lectures and discussions on the topics listed in the course outline. Students will also be exposed to information and activities throughout the semester that may be incorporated into an individual's personal wellness program. For credit, does not count towards graduation requirement. Course equivalency: LPAP 198. Department permission required. Offered Fall and Spring.

LPAP 299 INDEPENDENT STUDY (1)

For credit, does not count towards graduation requirement. Course equivalency: LPAP 199. Department permission required. Offered Fall and Spring.

MANA (MANAGERIAL STUDIES)

School of Social Sciences/Managerial Studies

MANA 404 MANAGEMENT COMMUNICATIONS IN A CONSULTING SIMULATION (3)

The capstone course for the MANA major. Students must have completed 8 of the required courses for the major. Section 001- Teaches managerial communications with a focus on business strategy and communication problems. Section 002 (offered spring semester only)- Teaches managerial communications with a focus on entrepreneurship as well as management. Must be enrolled in one of the following Major(s): Managerial Studies. Offered Spring. URL: www.ruf.rice.edu/~junef/mana404/. Instructor(s): Ferrill

MANA 497 INDEPENDENT STUDY (3)

Independent research project with a Faculty member in the Jones Graduate School of Management. Only for students in the Honors Program of Managerial Studies. Must have the approval of the Director of Managerial Studies and the participating Jones School Faculty Member. Must be enrolled in one of the following Major(s): Managerial Studies. Instructor permission required.

MANA 498 INDEPENDENT STUDY (3)

See MANA 497. Must be enrolled in one of the following Major(s): Managerial Studies. Instructor permission required.

MATH (MATHEMATICS)

School of Natural Sciences/Mathematics

MATH 101 SINGLE VARIABLE CALCULUS I (3)

Differentiation, extrema, Newton's method, integration, fundamental theorem of calculus, area, volume, natural logarithm, exponential, arc length, surface area, Simpson's rule, L'Hopital's rule. May substitute MATH 111-112 or take MATH 101 after completing MATH 111.

MATH 102 SINGLE VARIABLE CALCULUS II (3)

Continuation of MATH 101. Includes further techniques of integration, as well as infinite sequences and series, tests for convergence, power series, radius of convergence, polar coordinates, parametric equations, and arc length.

MATH 111 FUNDAMENTAL THEOREM OF CALCULUS (3)

Study of calculus, forming with MATH 112 a slower-paced version of MATH 101/102. Contains less detail in the coverage of infinite series. Students may take MATH 111/112 followed by MATH 102, or MATH 111 followed by MATH 101/102.

MATH 112 CALCULUS AND ITS APPLICATIONS (3)

Continuation of the study of calculus from MATH 111.

MATH 211 ORDINARY DIFFERENTIAL EQUATIONS AND LINEAR ALGEBRA (3)

Study of ordinary differential equations (e.g., solutions to separable and linear first-order equations and to higher-order linear equations with constant coefficients, the properties of solutions to differential equations, and numerical solution methods) and linear algebra (e.g., vector spaces and solutions to algebraic linear equations, dimension, eigenvalues, and eigenvectors of a matrix), as well as the application of linear algebra to first-order systems of differential equations and the qualitative theory of nonlinear systems and phase portraits. Use of the computers in OwlNet as part of each homework assignment required. Course equivalency: MATH 213.

MATH 212 MULTIVARIABLE CALCULUS (3)

Study of gradient, divergence, and curl, Lagrange multipliers, multiple integrals, as well as line integrals, conservative vector fields, Green's theorem, Stokes's theorem, and Gauss's theorem. May substitute Math 221 and 222. Course equivalency: MATH 222.

MATH 213 BASIC MATHEMATICAL BIOLOGY (3)

Study of systems of differential and difference equations, with special attention to modeling of basic biological processes. Phase plane analysis of ordinary differential systems. Qualitative understanding of solutions of differential equations. Credit may not be received for this course and MATH 211. Course equivalency: MATH 211. Pre-requisite(s): MATH 102.

MATH 221 HONORS CALCULUS III (3)

This course and MATH 222 include the material of MATH 212 and much more. Topology of R^n , calculus for functions of several variables, linear and multilinear algebra, theory of determinants, inner product spaces, integration on manifolds.

MATH 222 HONORS CALCULUS IV (3)

See MATH 221. A student may not receive credit for both MATH 222 and MATH 212. Course equivalency: MATH 212.

MATH 321 INTRODUCTION TO ANALYSIS I (3)

A thorough treatment of basic methods of analysis such as metric spaces, compactness, sequences and series of functions. Also further topics in analysis, such as Hilbert spaces, Fourier series, Sturm-Liouville theory. Pre-requisite(s): MATH 221, or permission of department.

MATH 322 INTRODUCTION TO ANALYSIS II (3)

See MATH 321. Includes proofs of the basic results for multivariable calculus (MATH 321 provides proofs for single-variable calculus). Pre-requisite(s): MATH 321, or permission of instructor.

MATH 355 LINEAR ALGEBRA (3)

Linear transformations and matrices, solution of linear equations, eigenvalues and eigenvectors, quadratic forms, spectral theorem form, Jordan canonical form.

MATH 356 ABSTRACT ALGEBRA (3)

Groups: normal subgroups, factor groups, Abelian groups. Rings: ideals, Euclidean rings, and unique factorization. Fields: algebraic extensions, finite fields. Students may not take this course and MATH 463. Course equivalency: MATH 463.

MATH 365 NUMBER THEORY (3)

Properties of numbers depending mainly on the notion of divisibility. Continued fractions. Offered alternate years.

MATH 366 GEOMETRY (3)

Topics chosen from Euclidean, spherical, hyperbolic, and projective geometry, with emphasis on the similarities and differences found in various geometries. Isometries and other transformations are studied and used throughout. The history of the development of geometric ideas is discussed. This course is strongly recommended for prospective high school teachers.

MATH 368 TOPICS IN COMBINATORICS (3)

Study of combinatorics and discrete mathematics. Topics that may be covered include graph theory, Ramsey theory, finite geometries, combinatorial enumeration, combinatorial games. Repeatable for Credit.

MATH 381 INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (3)

Laplace transform: inverse transform, applications to constant coefficient differential equations. Boundary value problems: Fourier series, Bessel functions, Legendre polynomials.

MATH 382 COMPLEX ANALYSIS (3)

Study of the Cauchy integral theorem, Taylor series, residues, as well as the evaluation of integrals by means of residues, conformal mapping, and application to two-dimensional fluid flow. May not receive credit for this course and MATH 427. Course equivalency: MATH 427.

MATH 390 UNDERGRADUATE COLLOQUIUM (1)

Lectures by undergraduate students on mathematical topics not usually covered in other courses. Presentation of one lecture and attendance at all sessions required. Repeatable for Credit.

MATH 401 DIFFERENTIAL GEOMETRY (3)

Study of the differential geometry of curves and surfaces in \mathbb{R}^3 . Includes an introduction to the concept of curvature and thorough treatment of the Gauss-Bonnet theorem.

MATH 402 DIFFERENTIAL GEOMETRY (3)

Introduction to Riemannian geometry. Content varies from year to year. Pre-requisite(s): MATH 401. Repeatable for Credit.

MATH 423 PARTIAL DIFFERENTIAL EQUATIONS (3)

Wave equation, Laplace's equation, heat equation. Fundamental solutions. Other topics include first order hyperbolic systems, Cauchy-Kowalewski theorem, potential theory, Dirichlet and Neumann problems, integral equations, elliptic equations.

MATH 424 PARTIAL DIFFERENTIAL EQUATIONS (3)

More about partial differential equations. Pre-requisite(s): MATH 423. Repeatable for Credit.

MATH 425 INTEGRATION THEORY(3)

Lebesgue theory of measure and integration.

MATH 426 TOPICS IN REAL ANALYSIS (3)

Content varies from year to year. May include Fourier series, harmonic analysis, probability theory, advanced topics in measure theory, ergodic theory, and elliptic integrals. Pre-requisite(s): MATH 425.

MATH 427 COMPLEX ANALYSIS (3)

Study of the Cauchy-Riemann equation, power series, Cauchy's integral formula, residue calculus, and conformal mappings. Emphasis on the theory. Course equivalency: MATH 382.

MATH 428 TOPICS IN COMPLEX ANALYSIS (3)

Special topics include Riemann mapping theorem, Runge's Theorem, elliptic function theory, prime number theorem, Riemann surfaces, et al. Pre-requisite(s): MATH 382 or MATH 427. Repeatable for Credit.

MATH 435 DYNAMICAL SYSTEMS (3)

Existence and uniqueness for solutions of ordinary differential equations and difference equations, linear systems, nonlinear systems, stability, periodic solutions, bifurcation theory. Cross-listed with CAAM 435. Pre-requisite(s): MATH 211 and CAAM 335 or MATH 355 and CAAM 401 or MATH 321.

MATH 443 GENERAL TOPOLOGY (3)

Study of basic point set topology. Includes a treatment of cardinality and well ordering, as well as metrization.

MATH 444 GEOMETRIC TOPOLOGY (3)

Introduction to algebraic methods in topology and differential topology. Elementary homotopy theory. Covering spaces. Pre-requisite(s): MATH 443, or permission of department.

MATH 445 ALGEBRAIC TOPOLOGY (3)

Introduction to the theory of homology. Includes simplicial complexes, cell complexes and cellular homology and cohomology, as well as manifolds, and Poincare duality. Pre-requisite(s): MATH 444.

MATH 463 ALGEBRA I (3)

Groups, rings, fields, vector spaces. Matrices, determinants, eigenvalues, canonical forms, multilinear algebra. Structure theorem for finitely generated abelian groups. Galois theory. Course equivalency: MATH 356.

MATH 464 ALGEBRA II (3)

See MATH 463. Pre-requisite(s): MATH 463.

MATH 465 TOPICS IN ALGEBRA (3)

Content varies from year to year. Repeatable for Credit.

MATH 466 TOPICS IN ALGEBRA II (3)

Content varies from year to year.

MATH 468 POTPOURRI (3)

This course deals with miscellaneous special topics not covered in other courses. Repeatable for Credit.

MATH 490 SUPERVISED READING (1 TO 6)

Repeatable for Credit.

MATH 499 MATHEMATICAL SCIENCES VIGRE SEMINAR (1 TO 3)

Cross-listed with CAAM 499, STAT 499. Graduate/Undergraduate version: MATH 699. Repeatable for Credit.

MATH 501 TOPICS IN DIFFERENTIAL GEOMETRY (3)

Topic to be announced. Repeatable for Credit.

MATH 502 TOPICS IN DIFFERENTIAL GEOMETRY (3)

The Atiyah-Singer theorem, secondary invariants, and related topics. Repeatable for Credit.

MATH 521 ADVANCED TOPICS IN REAL ANALYSIS (3)

Topic to be announced. Repeatable for Credit.

MATH 522 TOPICS IN ANALYSIS (3)

Topic to be announced. Repeatable for Credit.

MATH 523 FUNCTIONAL ANALYSIS (3)

Topic to be announced. Repeatable for Credit.

MATH 527 ERGODIC THEORY AND TOPOLOGICAL DYNAMICS (3)

Topic to be announced.

MATH 528 ERGODIC THEORY AND TOPOLOGICAL DYNAMICS (3)**MATH 541 TOPICS IN TOPOLOGY (3)**

Topic to be announced. Repeatable for Credit.

MATH 542 TOPICS IN ADVANCED TOPOLOGY (3)

Topic to be announced. Repeatable for Credit.

MATH 590 CURRENT MATHEMATICS SEMINAR (1)

Lectures on topics of recent research in mathematics delivered by mathematics graduate students and faculty. Repeatable for Credit.

MATH 591 GRADUATE TEACHING SEMINAR (1)

Discussion on teaching issues and practice lectures by participants as preparation for classroom teaching of mathematics. Repeatable for Credit.

MATH 699 MATHEMATICAL SCIENCES VIGRE SEMINAR (1 TO 9)

Cross-listed with CAAM 699, STAT 699. Graduate/Undergraduate version: MATH 499. Repeatable for Credit.

MATH 800 THESIS AND RESEARCH (1 TO 15)

Repeatable for Credit.

MDST (MEDIEVAL STUDIES)**School of Humanities/Medieval Studies****MDST 101 ELEMENTARY LATIN I (3)**

Study of the fundamentals of Latin grammar with emphasis on acquisition of reading skills. Cross-listed with LATI 101. Instructor(s): Wallace.

MDST 102 ELEMENTARY LATIN II (3)

Continuation of MDST 101. Cross-listed with LATI 102. Instructor(s): Wallace.

MDST 104 CASE STUDIES IN ANCIENT AND MEDIEVAL ARCHITECTURE (3)

This course offers an introduction to the history of Western art and architecture through weekly case studies of some of the most important public and private buildings in antiquity and the Middle Ages: from the Parthenon to a Roman house, Carnavan Castle to Chartres Cathedral. Topics explored throughout the course include the construction of imperial authority, ritual and the formation of space, and the relationship between structure and design. Cross-listed with ARCH 104, HART 104.

MDST 108 ART IN CONTEXT: LATE MEDIEVAL AND RENAISSANCE CULTURE (3)

This course will be concerned with art, architecture, and history of the late Middle Ages and Renaissance. We will employ historical texts, literature, and illustrations of works of art, showing how historical documents and sources can illuminate the cultural context of art and architecture. Cross-listed with HART 240, HUMA 108. Instructor(s): Manca; Neagley.

MDST 111 INTRODUCTION TO THE HISTORY OF WESTERN ART I: PREHISTORIC TO GOTHIC (3)

A survey of painting, sculpture, and architecture from the Paleolithic period through the 15th century. Cross-listed with HART 101. Instructor(s): Staff

MDST 126 THE LEGEND OF KING ARTHUR IN THE MIDDLE AGES (FRESHMAN SEMINAR) (3)

In the 1100s people began writing down stories of Arthur, Guinevere, Merlin, and the Knights of the round table using sophisticated techniques of literary composition. Today, these stories count among the great writings of Europe. This course examines the spectrum of medieval stories and histories of Arthur that arose in England, France, and Germany from the beginning to the age of printing, plus some recent revivals. Cross-listed with FSEM 126, GERM 126. Must be in one of the following Classification(s): Freshman. Instructor(s): Westphal.

MDST 201 HISTORY OF PHILOSOPHY I (3)

Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-listed with CLAS 201, PHIL 201. Instructor(s): Morrison.

MDST 202 INTRODUCTION TO MEDIEVAL CIVILIZATION: THE EARLY MIDDLE AGES (3)

Introduction to European culture of the "Dark Ages," from the fall of Rome to the end of Viking invasions. Includes the use of historical, literary, artistic, and archaeological sources to trace changes in European material, spiritual, and cultural life between 300-1000 A.D. Cross-listed with HIST 202. Instructor(s): Quillon.

MDST 203 INTRODUCTION TO MEDIEVAL CIVILIZATION II: THE HIGH MIDDLE AGES (3)

European culture from the year 1000 to the discovery of the Americas, which encompasses the Crusades, the "discovery of the individual," chivalry and chivalric literature, the Black Death, and the beginnings of the Age of Exploration. Cross-listed with HIST 203. Instructor(s): Haverkamp.

MDST 211 INTERMEDIATE LATIN I: PROSE (3)

Review of grammar and readings in Latin prose. Cross-listed with LATI 201. Instructor(s): Wallace.

MDST 212 INTERMEDIATE LATIN II (3)

Readings in Vergil's Aeneid. Cross-listed with LATI 202. Instructor(s): Wallace.

MDST 222 MEDIEVAL AND RENAISSANCE ERAS (3)

Introduction to the study of Western music history, with emphasis on music before 1600. Score reading ability required. Cross-listed with MUSI 222. Pre-requisite(s): MUSI 211 or MUSI 317.

MDST 223 MEDIEVAL EMPIRES (3)

Course will explore the political, social, and economic conceptions of the Byzantine and Holy Roman Empires. Examining the self-perceptions of the Empire; the role of Roman tradition and languages; notions of (geographical) borders and nations; different constitutions in political representation, administrations, and economic organization. Cross-listed with HIST 223. Instructor(s): Haverkamp.

MDST 230 MEDIEVAL ART AND LITERATURE (3)

This course will focus on major themes represented in a selected number of works in art and literature from the Middle Ages. Cross-listed with HART 230. Instructor(s): Neagley

MDST 257 JEWS AND CHRISTIANS IN MEDIEVAL EUROPE (3)

Course will study relationships between Jewish and Christian communities within the context of Christian Europe. Topics will include settlement and demography; economics; legal status; hostility against Jews; family and the position of women; communal organizations; social diversity; and intellectual and spiritual achievements. Offered with additional work as MDST 357. Cross-listed with HIST 257. Course equivalency: MDST 357. Instructor(s): Haverkamp.

MDST 281 THE MIDDLE EAST FROM THE PROPHET MUHAMMAD TO MUHAMMAD ALI (3)

Introduction to the Middle East from the rise of Islam to the beginning of the 19th century. Topics include conquests and classical Islamic states, Arabization, Jewish and Christian communities, impact of Turkic peoples, and the Ottoman Empire, with emphasis on social, cultural, and political trends which shaped the region's history. Cross-listed with HIST 281. Instructor(s): Sanders.

MDST 300 MEDIEVAL WOMEN WRITERS (3)

This course examines significant medieval European women authors from the 10th - 17th centuries, from Italy and Germany to France, England, Austria, and Spain. Using various techniques and media to access works, we will combine close reading with a focus on intersexuality. Cross-listed with ENGL 311, WGST 300. Repeatable for Credit. Instructor(s): Chance.

MDST 301 ANCIENT AND MEDIEVAL PHILOSOPHY (3)

Topics in history of philosophy from the fourth century B.C. through the fourteenth. Cross-listed with CLAS 301, PHIL 301. Instructor(s): Morrison.

MDST 308 THE WORLD OF LATE ANTIQUITY (3)

Study of the social, religious, and political history of the Roman world from the Diocletian to the rise of Islam, with emphasis on the breaking of the unity of the Mediterranean world and the formation of Byzantine society in the Greek east. Cross-listed with HIST 308.

MDST 310 DANTE (3)

A reading of Dante's Divine Comedy, with attention to the meaning of words, images, symbols, figures, structures, the meaning of the book, with reference to the political and religious controversies of the time. Cross-listed with ENGL 310. Instructor(s): Chance.

MDST 311 OLD ENGLISH (3)

This course will be a combination of Old English Grammar and readings in Old English. Cross-listed with ENGL 309, LING 312. Instructor(s): Mitchell.

MDST 315 INTRODUCTION TO MEDIEVAL CULTURES (3)

Interdisciplinary course exploring the literature, art, philosophy, history, music, and science of the Middle Ages, with films by Pasolini, Bergman, Einstein, Annaud, Vigne, and others, and highlighted by a medieval banquet. Cross-listed with ENGL 315. URL: www.ruf.rice.edu/~jchange/cult.html. Instructor(s): Chance.

MDST 316 CHAUCER (3)

Chaucer and his literary and philosophical background. Readings include minor poems, a dream vision, The Canterbury Tales, and Le Troilus. Cross-listed with ENGL 316, WGST 305. URL: www.ruf.rice.edu/~jchange/chaucer2.html. Instructor(s): Chance.

MDST 317 ARTHURIAN LITERATURE (3)

A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-listed with ENGL 317, WGST 301. URL: www.english.rice.edu. Instructor(s): Chance.

MDST 318 J.R.R. TOLKIEN (3)

This course will trace the tension between the exile (wraecca) and the community; otherness and heroism; identity and marginalization; and revenge and forgiveness. Cross-listed with ENGL 318. Instructor(s): Chance.

MDST 321 DIRECTED READINGS IN MEDIEVAL HISTORY (4)

Cross-listed with HIST 521. Repeatable for Credit.

MDST 322 DIRECTED READINGS IN MEDIEVAL HISTORY (4)

Repeatable for Credit.

MDST 323 MEDIEVAL EMPIRES (3)

Enriched version of MDST 223. May not receive credit for both MDST 223 and MDST 323. Cross-listed with HIST 323. Instructor(s): Haverkamp.

MDST 330 EARLY MEDIEVAL ART FROM THE 5TH CENTURY TO THE ROMANESQUE PERIOD (3)

Study of medieval art, with emphasis in part one on the art and architecture produced in Europe during the Dark Ages (e.g. the work of the Visigoths, Celts, Anglo-Saxons, Merovingians, Carolingians, and Ottonians); and in part 2 on the major revival of art and architecture in the medieval monasteries of the Romanesque period. Cross-listed with HART 330. Instructor(s): Neagley.

MDST 331 GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1140-1300: THE AGE OF CATHEDRALS (3)

Examination of the full array of sacred and secular art and architecture produced in the early and high gothic periods in northern Europe. Includes cathedral architecture, sculpture, stained glass, manuscripts, and metalwork studied in relationship to the expansion of royal and Episcopal power. Cross-listed with HART 331. Instructor(s): Neagley.

MDST 332 LATE GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1300-1500 (3)

Examination of art and architecture produced in the late gothic period within three distinct settings—the court, the city, and the church. Includes private, public, and religious life as expressed in the objects, architecture, and decoration of the castle and palace, the house, city hall and hospital, and the chapel and parish church. Cross-listed with HART 332. Instructor(s): Neagley.

MDST 335 MAPPING GERMAN CULTURE: COURTSHIP, LOVE AND MARRIAGE IN THE AGE OF CHIVALRY (3)

The literature of the High Middle Ages is the first since antiquity to probe the hazards and potentials of romance between men and women, as well as single-sex friendship and love. This course will show how the literary ideal of love emerged in a society that was torn apart by war and rivalry. The poems and stories we will read belong to the treasures of medieval literature from the German lands. Taught in English with a possible FLAC section. Cross-listed with GERM 330, WGST 330, HUMA 330.

MDST 345 EARLY MODERN EUROPE: HUMANISM AND EXPANSION (3)

Exploration of major cultural developments in Western Europe from the rise of Italian humanism in the 14th century to European conquest and expansion in the 16th century. Cross-listed with HIST 345. Instructor(s): Quillen.

MDST 348 SUBJECTIVITY IN MODERN/POSTMODERN ART (3)**MDST 357 JEWS AND CHRISTIANS IN MEDIEVAL EUROPE (3)**

Enriched version of MDST 257. May not receive credit for both MDST 257 and HIST 357. Cross-listed with HIST 357. Course equivalency: MDST 257. Instructor(s): Haverkamp.

MDST 358 EUROPEAN INTELLECTUAL HISTORY FROM AUGUSTINE TO DESCARTES (3)

This course will survey key developments in Western thought (political theory, literature, philosophy, theology, and art) from the consolidation and institutionalization of Christian doctrine in the fourth and fifth centuries through the beginning of the "Scientific Revolution" in the 17th century. Cross-listed with HIST 358. Instructor(s): Quillen.

MDST 368 MYTHOLOGIES (3)

This course introduces students to a variety of work mythologies and mythmakers, from the beginnings to the modern period. Included mythologies: Babylonian, Sumerian, Hindu, Egyptian, Greek, Roman, Irish, Welsh, Old Norse, Anglo-Saxon, Finnish, Mayan, Hopi, and modern (Borges, Philip Glass). Cross-listed with WGST 368. URL: www.ruf.rice.edu/~jchance/myth/htm. Instructor(s): Chance.

MDST 382 CLASSICAL ISLAMIC CULTURE (3)

An introduction to the cultures and religions of the Islamic world from the 9th through the 14th centuries. Topics include Islamic law and theology, philosophy, ritual, Islamic science and medicine, classical Arabic literature, the impact of Arabo-Islamic culture on Jewish and Christian cultures of the Islamic world. Cross-listed with HIST 382. Instructor(s): Sanders.

MDST 385 CHRISTIANS AND JEWS IN THE MEDIEVAL ISLAMIC WORLD (3)

Examination of Christian and Jewish communities in the Islamic world from the rise of Islam to the Ottoman Empire. Includes the legal status of dhimmis (protected peoples), social and economic life, communal organization, interplay of religious laws, and political authority in these communities, as well as discussion of their modern historiography, a comparative study of Jewish communities in Christendom and Islam, and discussion of Muslim communities living under Christian rule in the Middle Ages. Cross-listed with HIST 437. Instructor(s): Sanders.

MDST 411 THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN (3)

Comparison and contrast of the presentation of the medieval woman in literature with extant evidence of historical women from contemporary documents and records. Graduate/Undergraduate version: FREN 510. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Instructor(s): Nelson-Campbell.

MDST 425 COURTLY LOVE IN MEDIEVAL FRANCE (3)

Undergraduate version of FREN 515. Study of the Occitan and Old French poetry that served as the source of the kind of love that came to be called "armour courtois" in the 19th century. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Instructor(s): Nelson-Campbell.

MDST 429 MUSIC OF THE MIDDLE AGES (3)

A study of the major musical styles and composers of western art music before 1400 and their historical, cultural, and sociological contexts. Cross-listed with MUSI 429.

MDST 431 ARCHITECTURE OF THE GOTHIC CATHEDRAL FROM THE MIDDLE AGES TO THE TWENTIETH CENTURY (3)

This course will focus on one of the most important contributions to the history of western architecture-- the Gothic cathedral. The course will approach the material from a number of different perspectives--the formal and technical development of Gothic architecture; the Medieval architect and the design of Gothic buildings; the social, economic, and political history of "big church" building in the Middle Ages; Gothic architecture as experience and metaphor; and the afterlife of the Gothic cathedral from Vasari to the National Cathedral in Washington, D.C. Cross-listed with HART 431. Instructor(s): Neagley.

MDST 436 LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR (3)

Examination of the origins of the legend of King Arthur and reasons for its popularity, particularly in literature of the French Middle Ages, but also in other medieval literatures of Western Europe. Includes discussion of the legend's influence in diverse areas even in modern times. Cross-listed with FREN 416. Pre-requisite(s): FREN 311 or FREN 312, or placement test, or permission of instructor. Instructor(s): Nelson-Campbell.

MDST 438 WOMEN AND GENDER IN THE MEDIEVAL ISLAMIC WORLD (3)

Examination of some features of the legal position and social realities of men and women in the Islamic world, with emphasis on how boundaries of gender have traditionally been drawn. Includes the family and sexual ethics, the harem, polygyny, divorce, and eunuchs (who played an important role in both the military and in certain religious institutions). Cross-listed with HIST 438, WGST 455. Limited enrollment. Instructor(s): Sanders.

MDST 440 JAN VAN EYCK: PROBLEMS OF INTERPRETATION (3)

Seminar and in-depth research on the art and historiography of the early Netherlandish painter Jan Van Eyck. Cross-listed with HART 440. Instructor(s): Neagley.

MDST 441 HILDEGARD OF BINGEN (3)

The course examines the life and works of 12th century polymath Hildegard of Bingen, including her achievements in music, poetry, religious thought, medicine, natural science, and linguistics. Limited enrollment.

MDST 444 MEMORY AND COMMEMORATION IN THE MIDDLE AGES (3)

Memory and commemoration are the intentions, attitudes, acts, and media that should prevent oblivion of individuals and communities (beyond death). Possessing universal dimensions that go back to antiquity, in the present they are often driven into individual remembrance, the institutional realm of politics, or the secluded world of museums. Cross-listed with HIST 444. Instructor(s): Haverkamp.

MDST 446 MEDIEVAL WOMEN (3)

Many aspects of today's life for women go back to developments in Medieval times. Seminar explores the freedom and restrictions of women from different religions, queens and nobles, merchants to prostitutes, in families and monasteries. Participation includes a trip to an exhibition in Germany. Course fulfills requirement for MDST majors. Cross-listed with HIST 446. Instructor(s): Haverkamp.

MDST 447 THE AGE OF CRUSADES (3)

Seminar will discuss characteristics of the Crusades against Muslims, Jews, pagans, Mongols, heretics, schismatics, and political enemies and explore to what extent the concepts of "holy war" and new expressions of religious beliefs impacted fundamentalism creating new possibilities for globalization in medieval Europe. Discussions will include primary and secondary sources. Cross-listed with HIST 447. Limited enrollment. Instructor(s): Haverkamp.

MDST 451 BOSCH AND BRUEGEL (3)

The Sacred and Profane in the Paintings of Bosch and Bruegel. The obscene, the grotesque, the humorous, and the bizarre were frequently depicted alongside sacred religious scenes in the margins of late Medieval manuscripts or the periphery of Gothic cathedral facade sculpture. By the sixteenth century, this fantastic world had migrated to the center of religious paintings, especially in the work of Hieronymus Bosch and Pieter Bruegel the Elder. This course will examine the juxtapositions and the complex meanings of sacred and profane imagery within the context of sixteenth-century religious and social life. Cross-listed with HART 441. Instructor(s): Neagley.

MDST 456 COLLEGIUM (1)

Performance of music up to the early 17th century. Does not count as chamber music. Instructor permission required. Repeatable for Credit.

MDST 481 SEMINAR IN ANCIENT AND MEDIEVAL PHILOSOPHY (3)

Graduate/Undergraduate version: PHIL 501. Instructor(s): Morrison.

MDST 486 ILLUMINATED MUSIC MANUSCRIPTS (3)

The study of illuminated music manuscripts from the Middle Ages through the mid-sixteenth century, with discussion of changed in production, design, decoration, and function throughout this period. Non-music manuscripts will also be examined in order to place music collections in the context of contemporary manuscript culture. Graduate/Undergraduate version: MUSI 726. Limited enrollment.

MDST 488 TOPICS IN MEDIEVAL HISTORY (3)

Research seminar on selected issues, subject or themes in medieval history. Topics vary. Cross-listed with HIST 488. Repeatable for Credit.

MECH (MECHANICAL ENGINEERING)

School of Engineering/Mech Eng. & Materials Science

MECH 200 CLASSICAL THERMODYNAMICS (3)

Explication of the fundamental laws of classical thermodynamics and deductions from them. Includes applications with particular attention to pure substances. Required for mechanical engineering majors. Pre-requisite(s): PHYS 101 and PHYS 102. Offered Spring. Instructor(s): Chapman.

MECH 211 ENGINEERING MECHANICS (3)

The study equilibrium of static systems, the dynamics of a particle and particle systems, and rigid-body dynamics. Includes elements of vibrational analysis. Required for mechanical engineering and materials science and engineering majors. Cross-listed with CEVE 211. Pre-requisite(s): PHYS 101 and MATH 101 and MATH 102. Offered Fall and Spring. URL: www.owlnet.rice.edu/~mech211. Instructor(s): Landis.

MECH 308 SENIOR DESIGN JUNIOR OBSERVERS (1)

Offered Fall and Spring.

MECH 311 MECHANICS OF DEFORMABLE SOLIDS (3)

Analysis of stress and the deformation of solids with applications to beams, circular shafts, and columns. Required for mechanical engineering majors. Pre-requisite(s): MECH 211. Instructor(s): Carroll.

MECH 331 JUNIOR LABORATORY I (1)

Instruction in static and impact testing of engineering materials. Includes beam deflection and shear center experiments, as well as the application and testing of strain gauges. Required for mechanical engineering majors in B.S. program. Offered Spring.

MECH 332 JUNIOR LABORATORY II (1)

Instruction in fluid mechanics and thermodynamics. Students work in groups and perform classic experiments in fluid flow with emphasis on boundary-layer theory, flow separation, laminar to turbulent transition, and Bernoulli equation. This laboratory course provides experimental support to MECH 371. Required course for mechanical engineering majors in B.S. program. Lab schedules will be determined at pre-registration. Section enrollment limited to 4. If a section is full and you need a specific section, please contact the instructor. Limited enrollment. Offered Spring. Instructor(s): McStravick.

MECH 340 INDUSTRIAL PROCESS LAB (1)

Practical experience in, and observation of, selected industrial processes. Must sign up in department office at the beginning of registration for sections; each section is limited to 8 students. Open only to mechanical engineering majors. Required for mechanical engineering majors in B.S. program. Final registration confirmed after the first week's organizational meeting. Meeting announcements posted in the MEMS department. Must be enrolled in one of the following Major(s): Mechanical Engineering. Limited enrollment. Offered Fall and Spring. Instructor(s): Gesenhues.

MECH 343 MODELING OF DYNAMICS SYSTEMS (4)

Energy-based modeling of dynamic systems. The focus of the course will be mechanical systems and electrical circuits, but will also involve fluid, thermal and other domains. Various techniques such as signal flow graphs and Bond Graphs will be introduced. Modeling and simulation of systems via MATLAB, and an introduction to systems theory. Includes laboratory assignments. Required for mechanical engineering majors in B.S. program. Pre-requisite(s): MECH 211 and MECH 200 and MATH 211. Recommended co or prerequisite(s): CAAM 335. Offered Fall. URL: www.owlnet.rice.edu/~mech343.

MECH 371 FLUID MECHANICS I (3)

Introduction to fluid statics and dynamics. Includes the development of the fundamental equations of fluid mechanics and their application to problems of engineering interest. Required for mechanical engineering majors in B.S. program. Pre-requisite(s): MECH 200 and MECH 211 and MATH 212. Offered Fall. URL: www.owlnet.rice.edu/~mech371.

MECH 372 FLUID MECHANICS II (3)

Continuation of MECH 371. The fundamental principles of fluid mechanics are applied to the study of: potential flow, laminar and turbulent pipe and boundary-layer flow, flow separation, airfoil theory, compressible flow, and turbomachinery. Pre-requisite(s): MECH 371. Offered Spring. URL: www.owlnet.rice.edu/~mech372. Instructor(s): Meade.

MECH 373 ACOUSTICS (3)

Basics of technical acoustics, including generation, propagation, reception and reproduction of sound, speech and hearing, musical and architectural acoustics, and noise control. Offered alternate years. Instructor(s): Carroll.

MECH 380 INTRODUCTION TO MECHANICAL EFFECTS IN TISSUES (3)

Development of a general background in physiology and in advanced mechanics for applications in medicine. Includes bone mechanics in remodeling, cartilage and ligament mechanics, and muscle mechanics, as well as an on paper design project on a subject selected by students. Graduate/Undergraduate version: MECH 580. Pre-requisite(s): MECH 211 and MECH 311 or CEVE 300.

MECH 383 INTRODUCTION TO BIOMEDICAL INSTRUMENTATION AND MEASUREMENT TECHNIQUES (3)

Review of basic sensors, measurement principles and analog electronics using operational amplifiers. Includes design problems using operational amplifier circuits (e.g. instrumentation and isolation amplifiers, comparators, timer circuits). Introduction to development of virtual instruments (VIs) using LabView. Discussion of micro and macro-biopotential electrodes, cell cytometry, the measurement of blood pressure, blood flow, and heart sounds, temperature, and the principles of electrical safety (e.g. micro and macro-shock hazards in the clinical environment). Includes discussion of pulmonary instrumentation and medical applications of ultrasound. Two lab exercises and a term project required. Pre-requisite(s): ELEC 381, or permission of instructor. Instructor(s): Anvari.

MECH 401 MECHANICAL DESIGN APPLICATIONS (3)

Applications of the principles of mechanical design to the analysis and design of machine elements. Required for mechanical engineering majors in B.S. program. Pre-requisite(s): MECH 311 or CEVE 300. Offered Spring. URL: www.owl.net.rice.edu/~mech401/. Instructor(s): McStravick.

MECH 403 COMPUTER AIDED DESIGN (3)

Investigation of the integration of the computer into the area of design. Includes such subjects as optimization, simulation, finite elements, and expert systems. Graduate/Undergraduate version: MECH 503. Pre-requisite(s): CAAM 210. Offered Fall. URL: www.owl.net.rice.edu/~mech403/. Instructor(s): Akin.

MECH 404 MECHANICAL DESIGN PROJECT (4)

Project-based course with group or independent design project relating to mechanical engineering topics. Pre-requisite(s): MECH 311 or CEVE 300, or permission of instructor. Offered Spring. Instructor(s): McStravick.

MECH 407 CAPSTONE DESIGN PROJECT I (4)

An interdisciplinary capstone design experience in mechanical engineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build a system to meet a prescribed set of requirements. The topics covered in this course will include design methodology, effective teamwork, project management, documentation, and presentation skills. Must complete MECH 408 to receive credit for MECH 407. Required for mechanical engineering majors in B.S. program. Offered Fall. URL: www.owl.net.rice.edu/~mech407/.

MECH 408 CAPSTONE DESIGN PROJECT II (3)

An interdisciplinary capstone design experience in mechanical engineering. This course provides an opportunity for students to apply knowledge and skills acquired in previous courses to the solution of a realistic engineering problem. Teams of students will specify, design, and build a system to meet a prescribed set of requirements. The topics covered in this course will include design methodology, effective teamwork, project management, documentation, and presentation skills. Must complete MECH 408 to receive credit for MECH 407. Required for mechanical engineering majors in B.S. program. Offered Spring. URL: www.owl.net.rice.edu/~mech407/.

MECH 411 DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS (3)

The application and the principles of kinematics, dynamics and systems and control theory to the design and analysis of controlled mechanical systems. Kinematics and Newtonian dynamics of particles and rigid bodies, elements of analytical dynamics, system analysis, stability, and simulation of dynamical behavior, control of mechanical systems. Demonstrations and laboratory examples. Graduate/Undergraduate version: MECH 501. Pre-requisite(s): MECH 343 and MECH 420. Recommended prerequisite(s): MECH 343 and MECH 402 or equivalent. Offered Fall. URL: www.owl.net.rice.edu/~mech411/. Instructor(s): Ghorbel.

MECH 412 VIBRATIONS (3)

Analysis of discrete and continuous linear vibrating systems, with emphasis on multi-degree-of-freedom systems. Includes approximate methods. Required for mechanical engineering majors in B.S. program. Graduate/Undergraduate version: MECH 502. Pre-requisite(s): MECH 343. Offered Spring. Instructor(s): Spanos.

MECH 417 FINITE ELEMENT ANALYSIS (3)

An introduction to finite element analysis by Galerkin's method and the method of least squares as applied to both ordinary and partial differential equations common in engineering applications. Element interpolations, numerical integration, computational considerations for efficient solution and post-processing methods. Application of educational and commercial codes to heat transfer and stress analysis. Cross-listed with CEVE 417. Graduate/Undergraduate version: MECH 517. Pre-requisite(s): MATH 212 and CAAM 210 or CAAM 211. Offered Spring. Instructor(s): Akin.

MECH 420 FUNDAMENTALS OF CONTROL SYSTEMS (3)

Linear systems and the fundamental principles of classical feedback control, state variable analysis of linear dynamic systems, stability of linear control systems, time-domain analysis and control of linear systems, root-locus analysis and design and pole-zero synthesis, frequency domain techniques for the analysis and design of control systems. Required for mechanical engineering majors in B.S. program. Cross-listed with ELEC 436. Pre-requisite(s): MECH 343 and CAAM 335. Offered Spring. URL: www.owlnet.rice.edu/~mech420. Instructor(s): Ghorbel.

MECH 431 SENIOR LABORATORY I (1)

Laboratory instruction in heat transfer, thermodynamics, and engine cycles. Students work in small groups doing experiments with emphasis on applied thermodynamics and vibration analysis. Required for mechanical engineering majors in B.S. program. See online registration for sections. Offered Fall. Instructor(s): McStravick.

MECH 435 ELECTROMECHANICAL DEVICES AND SYSTEMS (3)

Introduction to the physical and engineering aspects of electromechanical sensors and actuators. Includes underlying physical phenomena, practical devices, electrical and mechanical interfacing, and control of electro-mechanical systems. Cross-listed with ELEC 435. Pre-requisite(s): ELEC 241 or ELEC 242 or ELEC 243. Offered Fall. Instructor(s): Wise.

MECH 454 FINITE ELEMENT OF METHODS IN FLUID MECHANICS (3)

Fundamental concepts of finite element methods in fluid mechanics, including spatial discretization and numerical integration in multidimensions, time-integration, and solution of nonlinear ordinary differential equation systems. Advanced numerical stabilization techniques designed for fluid mechanics problems. Strategies for solution of complex, real-world problems. Topics in large-scale computing, parallel processing, and visualization. Cross-listed with BIOE 454, CEVE 454. Graduate/Undergraduate version: MECH 554. Offered Fall. URL: www.mems.rice.edu/TAFSM/MISC/MECH454/. Instructor(s): Tezduyar.

MECH 471 APPLICATIONS OF THERMODYNAMICS (3)

Applications of thermodynamics to various systems of interest in mechanical engineering, with emphasis on energy conversion, refrigeration, and psychrometrics. Pre-requisite(s): MECH 200. Offered Fall. Instructor(s): Chapman.

MECH 472 THERMAL SYSTEMS DESIGN (3)

Design and synthesis of systems based on applications of thermodynamics, fluid mechanics, heat transfer, economics, and optimization theories. Pre-requisite(s): MECH 200 and MECH 371 and MECH 372 and MECH 471 and MECH 481.

MECH 481 HEAT TRANSFER (3)

Study of the general principles of heat transfer by conduction, convection, and radiation. Includes their application to problems of engineering practice. Required for mechanical engineering majors. Offered Spring. Instructor(s): Bayazitoglu.

MECH 482 INTERMEDIATE HEAT TRANSFER (3)

Continuation of MECH 481. Includes applications to various problems in mechanical engineering. Pre-requisite(s): MECH 481. Instructor(s): Bayazitoglu.

MECH 483 INTRODUCTION OF BIOMEDICAL INSTRUMENT AND MEASUREMENT TECHNIQUES (3)

Review of basic sensors and measurement principles. Includes design problems using operational amplifier circuits (e.g., instrumentation and isolation amplifiers, comparators, timer circuits). Introduction to development of virtual instruments (VIs) using LabView. Discussion of micro- and macro-bio-potential electrodes, cell cytometry, the measurement of blood pressure, blood flow, and heart sounds, temperature, and the principles of electrical safety (e.g., micro- and macro-shock hazards in the clinical environment). Includes discussion of pulmonary instrumentation and medical applications of ultrasound. Two lab exercises and a term project required. Cross-listed with BIOE 483, ELEC 483. Pre-requisite(s): ELEC 481, or permission of instructor. Instructor(s): Ghorbel; Clark.

MECH 485 BIOMECHANICS OF HUMAN MOVEMENT (3)

Application of basic mechanics to the study of human movement. Includes joint mechanics and locomotion analysis. Lagrange and Newton-Euler methods, and basic feedback control, signal analysis, and data acquisition techniques. Graduate/Undergraduate version: MECH 585. Pre-requisite(s): MECH 211.

MECH 488 DESIGN OF MECHATRONIC SYSTEMS (3)

Analog electronic design for purposes of controlling electromechanical systems, including electromechanical sensors and actuators, analog electronic design of filters, state space and classical controllers, and transistor-based servo amplifiers and high voltage amplifiers. Implementation of digital controllers. Significant laboratory component with design and fabrication of circuits to control electromechanical systems. Graduate/Undergraduate version: MECH 588. Pre-requisite(s): MECH 343 and ELEC 241. Corequisite(s): MECH 420. Instructor(s): O'Malley.

MECH 496 ROBOTICS LABORATORY (1)

Lab for computer vision experiments, the programming of a mobile robot and industrial type PUMA robot, and operation of a Computer Numerical Control (CNC) mill and industrial-size CNC lathe, as well as projects. Cross-listed with ELEC 496. Corequisite(s): MECH 498

MECH 498 INTRODUCTION TO ROBOTICS (3)

Introduction to the kinematics, dynamics, and control of robot manipulators and to applications of artificial intelligence and computer vision in robotics. Cross-listed with COMP 498, ELEC 498. Graduate/Undergraduate version: MECH 598. URL: www.owl.net.rice.edu/~mech498. Instructor(s): O'Malley.

MECH 501 DYNAMICS AND CONTROL OF MECHANICAL SYSTEMS (3)

Offered concurrently with MECH 411. Graduate/Undergraduate version: MECH 411. Offered Fall. Instructor(s): Ghorbel.

MECH 502 VIBRATIONS (3)

Term project is required. Offered concurrently with MECH 412. Graduate/Undergraduate version: MECH 412. Offered Spring. Instructor(s): Spanes.

MECH 503 COMPUTER-AIDED DESIGN(3)

Graduate/Undergraduate version: MECH 403. Pre-requisite(s): CAAM 211. Offered Fall. Instructor(s): Akin.

MECH 507 NONLINEAR DYNAMICS SYSTEMS ANALYSIS I (3)

Introduction to analytical methods describing functions (e.g., singular point and phase plane analysis) and to stability analysis via Lyapunov functions, digital computer simulation methods, parameter estimation, and sensitivity analysis. Includes an introduction to the chaotic behavior of nonlinear dynamic systems. Cross-listed with ELEC 507. Instructor(s): Clark.

MECH 508 NONLINEAR SYSTEMS ANALYSIS II (3)

Review of fundamental properties of nonlinear systems. Nonlinear ordinary differential equations: Existence and uniqueness of solution. Lyapunov Stability: Stability definitions, Lyapunov's direct method, invariance theory, stability of linear systems, Lyapunov's linearization method, converse theorems. Input-Output stability: Small gain theorem, passivity theorem. Case studies: Application to control problems including nonlinear and adaptive control and robotics. Cross-listed with CAAM 508, ELEC 508. Offered Fall. URL: www.owl.net.rice.edu/~mech508. Instructor(s): Ghorbel.

MECH 510 ELASTO DYNAMICS (3)

Propagation of waves in linearly-elastic strings, fluids, and solids. Surface waves, wave reflection and refraction at interfaces. Wave propagation in waveguides. Steady-state and transient half-space problems. Scattering of waves by cracks.

MECH 511 CONTINUUM MECHANICS I (3)

Exploration of concepts and general principles common to all branches of solid and fluid mechanics. Includes non-Newtonian fluid mechanics and nonlinear elasticity. Instructor(s): Carroll.

MECH 513 THEORY OF ELASTICITY (3)

Advanced topics in the linear and nonlinear theory of elasticity. Cross-listed with CEVE 513. Instructor(s): Landis.

MECH 514 NONLINEAR ELASTICITY (3)

Development of the theory of finite elastic deformation and motion. Some exact solutions and methods of approximation. Instructor(s): Carroll.

MECH 516 THEORY OF PLASTICITY (3)

Mathematical theory of plasticity. Thermodynamics of irreversible processes as applied to plasticity. Elasto-plastic boundary value problems. Slip-line theory. General principles. Single crystal plasticity. Dislocation dynamic-based plasticity. Pre-requisite(s): MECH 511 or MECH 513, or permission of instructor. Instructor(s): Landis.

MECH 517 FINITE ELEMENT METHODS (3)

An introduction to Galerkin's method and the method of least squares applied to partial differential equations. Computational considerations for efficient interpolation, numerical integration, solution and post-processing methods. Error estimation and adaptive finite element analysis. Requires programming for a student project and a supporting literature survey. Graduate/Undergraduate version: MECH 417. Must be enrolled in one of the following Level(s): Graduate. Offered Spring. URL: www.owl.net.rice.edu/~mech517. Instructor(s): Akin.

MECH 518 THEORETICAL FRACTURE MECHANICS (3)

Topics on the theory of linear and nonlinear fracture mechanics. Energetics of fracture, the J-integral, stress and strain fields near crack tips, R-curve behavior. Graduate/Undergraduate version: MSCI 609. Offered Spring. Instructor(s): Landis.

MECH 523 PROBABILISTIC STRUCTURAL DYNAMICS (3)

Introduction to probability theory and random processes. Includes the dynamic analysis of linear and nonlinear structural systems subjected to stationary and nonstationary random excitations reliability studies related to first excursion and fatigue failures, and applications to earthquake engineering, offshore engineering, and wind engineering. Cross-listed with CEVE 523. Pre-requisite(s): MECH 412 or CEVE 521. Recommended prerequisite(s): MECH 412 or CEVE 521 and basic knowledge of probability theory.

MECH 524 ENGINEERING MATHEMATICAL AND NUMERICAL METHODS (3)

Correspondence between quadratic minimization problems and linear equation systems for discrete and continuous physical systems, calculus of variations, elements of solid and fluid mechanics, Green's functions, conformal mapping, elements of approximation theory and convergence analysis of finite element methods.

MECH 527 COMPUTATIONAL METHODS IN STRUCTURAL MECHANICS (3)

Introduction to differential and integral formulations, variational principles, weighted residuals, and principle of virtual work. Simple boundary, initial, and eigenvalue problems. Finite element, boundary element, and finite difference methods for structural mechanics. Study of nonlinearities. Computational methods for geometric and material nonlinear analysis. Applications to static and dynamic problems. Programming and use of computer software. Cross-listed with CEVE 527. Instructor(s): Nagarajaiah.

MECH 537 DESIGN AND CONTROL OF COMPUTER NETWORKS (3)

Graduate-level introduction to fundamental concepts for the design and control of computer networks. Topics include resource allocation, routing, traffic modeling, congestion control, service disciplines, and multicasting. Concepts are applied to state-of-the-art systems and protocols such as current and future Internet architectures. Cross-listed with ELEC 537, MECH 437.

MECH 538 EXPERT SYSTEMS – ROBOTICS (3)

Introduction to expert systems and fuzzy logic control. Includes robotics and automation.

MECH 554 FINITE ELEMENT METHODS IN FLUID MECHANICS (3)

Cross-listed with BIOE 554, CEVE 554. Graduate/Undergraduate version: MECH 454. Pre-requisite(s): MECH 371 and MECH 517, or permission of instructor. Offered Fall. Instructor(s): Tezduyar.

MECH 563 ENGINEERING APPROACH TO MATH PROGRAM (3)

Study of the minimization of functions of variables that are either unconstrained, subject to equality constraints, subject to inequality constraints, or subject to both equality and inequality constraints. Includes analytical and computational methods. Cross-listed with CAAM 563. Offered Fall. Instructor(s): Miele.

MECH 564 ENGI APPROACH TO OPTIMAL CONTROL (3)

Study of optimal control theory and calculus of variations. Includes minimization of functionals depending on variables subject to differential constraints, nondifferential constraints, initial constraints, and final constraints, as well as analytical and computational methods. Offered Spring. Instructor(s): Miele.

MECH 573 ADVANCED FLUID MECHANICS I (3)

Examination of conservation equations for viscous compressible fluids. Includes applications to viscous and inviscid flows, as well as simple flows of non-Newtonian fluids. Limited enrollment.

MECH 574 ADVANCED FLUID MECHANICS II (3)

Continuation of MECH 573. Advanced topics in fluid mechanics. Possible topics include: vortex dynamics, aeroacoustics, fluid stability theory, receptivity theory. Pre-requisite(s): MECH 573.

MECH 576 STRUCTURAL DYNAMICS AND CONTROL (3)

Elements of linear systems and control theory, transform methods, state space methods, feedback control, and Lyapunov's method. Analytical modeling of structures, and response to dynamic loading. Base isolation, smart materials and devices, sensors, structural control applications, monitoring, and case studies. Cross-listed with CEVE 576. Pre-requisite(s): (CEVE 521 or MECH 502) and CEVE 527.

MECH 580 MECHANICAL MODELING AND ANALYSIS OF PHYSIOLOGICAL AND BIOLOGICAL SYSTEMS (3)

A survey of existing Mathematical models for physiological systems will be presented. Bone Remodeling around Orthopedic devices, Circulatory Mechanics. Models for Immune Response, Reaction-Diffusion Systems, and others will be discussed. Graduate/Undergraduate version: MECH 380.

MECH 582 CONVECTIVE HEAT TRANSFER (3)

Rigorous study of the transfer of heat by free and forced convection. Not offered every year. Instructor(s): Bayazitoglu.

MECH 583 RADIATIVE HEAT TRANSFER I (3)

This course will analyze the radiative heat transfer phenomena. After introduction, radiative exchange between surfaces in an enclosure without a radiatively participating medium will be analyzed. Then the radiative transfer equation through an absorbing, emitting and scattering medium (or participating medium) will be developed. Theradiative properties of gases and particulates will be discussed. Instructor(s): Bayazitoglu.

MECH 585 BIOMECHANICS OF HUMAN MOVEMENT (3)

Term project required. Graduate/Undergraduate version: MECH 485.

MECH 586 RESPIRATORY SYSTEM MECHANICS (3)

Mechanics of ventilation, respiratory muscle mechanics, rib cage mechanics, mechanical coupling between the respiratory muscles and the rib cage, and inferences on mechanics from respiratory muscle anatomy. The class will meet in the Pulmonary Division at Baylor College of Medicine in the Texas Medical Center. Offered Fall. Instructor(s): Boriek.

MECH 588 DESIGN OF MECHATRONIC SYSTEMS (3)

Graduate/Undergraduate version: MECH 488. Pre-requisite(s): MECH 343 and MECH 420 and ELEC 241. Offered Spring. Instructor(s): O'Malley.

MECH 591 GAS DYNAMICS (3)

Study of the fundamentals of compressible, one-dimensional gas flows with area change, normal shocks, friction, and heat addition. Includes oblique shocks, Prandtl-Meyer flows expansions, and numerical techniques. Pre-requisite(s): MECH 371. URL: www.owl.net.rice.edu/~mech591. Instructor(s): Meade.

MECH 593 MECHANICAL ENGINEERING PROBLEMS (3)

An approved investigation or design project under the direction of a member of the staff. Open only to mechanical engineering majors. Must be enrolled in one of the following Major(s): Mechanical Engineering. Offered Fall & Spring.

MECH 594 INTRODUCTION TO AERODYNAMICS (3)

Development of theories for the prediction of aerodynamic forces and moments acting on airfoils, wings, and bodies. Includes their design applications. Not offered every year. URL: www.owl.net.rice.edu/mech594.

MECH 595 MODELING TISSUE MECHANICS (3)

Independent study and seminar course which focuses on modeling the mechanical properties of biological tissues. Data from experiments will be used to refine the predictions of nonlinear mathematical computer models. Aimed at juniors, seniors, and graduate students. Laboratory work performed at Baylor College of Medicine, computer work at Rice University. Offered Fall. Instructor(s): Boriek.

MECH 598 INTRODUCTION TO ROBOTICS (3)

Cross-listed with COMP 598, ELEC 598. Graduate/Undergraduate version: MECH 498.

MECH 601 SPECIAL TOPICS (1 TO 9)

Topics may vary. Please consult with the department for additional information. Offered Fall and Spring.

MECH 602 SPECIAL TOPICS (1 TO 9)

Topics may vary. Please consult with the department for additional information. Offered Fall and Spring.

MECH 603 SPECIAL TOPICS (1 TO 9)

Topics may vary. Please consult with the department for additional information. Offered Fall and Spring.

MECH 604 SPECIAL TOPICS (1 TO 9)

Topics may vary. Please consult with the department for additional information. Not offered Fall and Spring.

MECH 605 SPECIAL TOPICS (1 TO 9)

Topics may vary. Please consult with the department for additional information. Not offered Fall and Spring.

MECH 606 GRADUATE SEMINAR (1)

Repeatable for Credit.

MECH 611 INDEPENDENT STUDY (1 TO 9)

Offered Fall.

MECH 612 INDEPENDENT STUDY (1 TO 9)

Offered Spring.

MECH 621 M.M.E. RESEARCH PROJECT I (3)

This is the first part of the M.M.E. research project course. The faculty advisor, taking into account the background and research interests of the student as well as the research interests of the faculty advisor, will determine the contents. Course requirements will include a final report. Offered Fall and Spring.

MECH 622 M.M.E. RESEARCH PROJECT II (3)

This is the second part of the M.M.E. research project and continuation of MECH 621. Course requirements will include a final report. Offered Fall and Spring.

MECH 654 ADVANCED COMPUTATIONAL MECHANICS (3)

Advanced topics in computational mechanics with emphasis on finite element methods and fluid mechanics. Stabilized formulations. Fluid-particle and fluid-structure interactions and free-surface and two-fluid flows. Interface-tracking and interface-capturing techniques, space-time formulations, and mesh update methods. Enhanced discretization and solution techniques. Iterative solution methods, matrix-free computations, and advanced preconditioning techniques. Cross-listed with CEVE 654, BIOE 654. Pre-requisite(s): MECH 554, or permission of instructor. Offered Spring. Instructor(s): Tezduyar.

MECH 678 ADVANCED STOCHASTIC MECHANICS (3)

Nonlinear random vibrations, Statistical Linearization, ARMA filters modeling, Monte Carlo Simulation, Wiener-Volterra series, time-variant structural reliability, and Stochastic Finite Elements are presented from a perspective of usefulness to aerospace, civil, marine, and mechanical applications. Cross-listed with CEVE 678. Instructor(s): Spanos.

MECH 679 APPLIED MONTE CARLO ANALYSIS (3)

Probability density and power spectrum based simulation concepts and procedures are discussed. Scalar and vectorial simulation are addressed. Spectral decomposition and digital filter algorithms are presented. Applications from aerospace, earthquake, marine, and wind engineering, and from other applied science disciplines are included. Cross-listed with CEVE 679. Offered Fall. Instructor(s): Spanos.

MECH 684 RADIATIVE HEAT TRANSFER II (3)

Study of radiative transfer in the presence of absorbing, emitting, and scattering media. Includes combined radiation, conduction, and convection, as well as heat transfer in furnaces, fire propagation, and air pollution problems. Not offered every year. Instructor(s): Bayazitoglu.

MECH 695 ADVANCED MODELING TISSUE MECHANICS (3)

Continuation of MECH 595/BIOE 595 with emphasis on advanced modeling the micromechanics of biological tissues. Independent study and seminar/discussion course. Data from experiments will be used to refine the predictions of mathematical models. Designed for juniors, seniors, and graduate students. Laboratory work performed at Baylor College of Medicine and computer work at Rice University. Offered Spring. Instructor(s): Boriek.

MECH 800 RESEARCH AND THESIS (1 TO 12)

Repeatable for Credit. Offered Fall and Spring.

MGMT (MANAGEMENT)**Jones School of Management/Management****MGMT 501 FINANCIAL ACCOUNTING (2)**

Introduction to the preparation, analysis, and use of corporate financial reports. Covers the basic techniques of financial reporting and analysis from the perspective of managers as well as external users of information such as investors. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Widener.

MGMT 502 COST MANAGEMENT (1)

Introduction to the use of financial and cost information by managers in budgeting, resource allocation, pricing, quality control, and other contexts to help managers set goals and monitor and evaluate performance. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 501. Repeatable for Credit. Offered Spring. Instructor(s): Anderson.

MGMT 503 MANAGEMENT CONTROL (1)

This course builds on earlier courses on cost management and corporate strategy and focuses on the management control systems that can be used for the effective implementation of strategy. Included topics are the balanced scorecard, stretch budgets, performance evaluation and incentives, organizational and operational controls, and the development of metrics to motivate and evaluate performance. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 502. Repeatable for Credit. Offered Spring. Instructor(s): Epstein.

MGMT 507 LEADERSHIP (1)

Explores different perspectives on leadership and management. Considers how leadership and management complement each other and what constitutes effective leadership in business situations. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Smith.

MGMT 508 POWER, INFLUENCE AND POLITICS (1)

Development of action-oriented skills in organizational politics, personal influence, and impression management, grounded in an integration of intellectual understanding of relevant theories and cases with experiential exercises. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Kehoe.

MGMT 509 NEGOTIATION (1)

Development of analytical and behavioral skills for effective negotiation, including topics such as diagnosing conflict, decision making, adversarial versus cooperative strategies, ethical and cultural factors, and third-party intervention. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Zhou.

MGMT 510 ORGANIZATIONAL BEHAVIOR (1)

Study of the many factors, which influence how individuals, groups, and teams behave and function in complex organizations and how they can be effectively managed. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): George.

MGMT 511 ORGANIZATIONAL THEORY AND CHANGE MANAGEMENT (1)

Emphasizes understanding what constitutes effective organizational designs; considers both the macro designing of change initiatives and the micro execution of those initiatives. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Weigelt.

MGMT 530 INFORMATION TECHNOLOGY (1)

Overview of information technology and its applications in organizations, with emphasis on effectively managing the use of information technology. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Timmreck.

MGMT 540 MANAGERIAL ECONOMICS (1)

We study production and pricing decisions under different assumptions about firm market power. Emphasis is placed on understanding the relevant costs in firm decision-making. Examples are used from marketing and accounting areas. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Paye.

MGMT 541 ECONOMIC ENVIRONMENT OF BUSINESS (1)

Examination of the global economic environment that serves as a backdrop for business decision making, with emphasis on the key macroeconomic policy goals and tools and how they affect exchange rates, interest rates, business cycles, and long-term economic growth. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 540. Repeatable for Credit. Offered Spring. Instructor(s): Ostdiek.

MGMT 543 FINANCE (3)

Introduction to the theory and practice of corporate finance, with emphasis on topics such as valuation, capital budgeting, risk and return, and capital structure. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 501. Repeatable for Credit. Offered Fall. Instructor(s): Lyandres; Downing.

MGMT 560 BUSINESS ETHICS (1)

An exploration of the ethical and legal bases of managerial decision making and the social dimension of the business firm. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Cording.

MGMT 561 BUSINESS-GOVERNMENT RELATIONS (1)

Study of how public policy influences the private competitive environment of the firm. Examines the major political institutions and actors--Congress, the President, interest groups, the media, and administrative agencies--that shape U.S. public policy. Students analyze business political strategies and formulate several of their own. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Schuler.

MGMT 565 GLOBALIZATION OF BUSINESS (1)

Examination of the increasing importance of trade and globalization to U.S. business. Course first focuses on the industrial winners and losers of free trade and protectionism, and then examines the institutions governing trade between the U.S. and its industrial competitors. Finally, the course examines the main challenges for foreign investment in important markets, such as Japan and China. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Zhang.

MGMT 570 COMPETITIVE STRATEGY (2)

Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the roles of key players in competitive situations and the fundamentals of analytical and fact-oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall.

MGMT 574 OPERATIONS MANAGEMENT (1)

Introduction to the principles of production management and process improvement. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Roman.

MGMT 580 MARKETING (3)

Introduction to the key concepts underlying the function of marketing and its interaction with other functions in a business enterprise. Explores marketing's role in defining, creating, and communicating value to customers. Primarily case-based with capstone simulation exercise, providing a foundation for advanced course work in marketing. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Seetharaman.

MGMT 595 DATA ANALYSIS (2)

The ever-increasing capacity of computers to analyze data and the explosion of the amount of data available have resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and methods relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covers the following topics: sampling, descriptive statistics, probability distributions, and regression analysis. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Borle.

MGMT 596 COMMUNICATIONS I (2)

Introduction to the strategy and practice of management communication. Assignments are based on core courses integrated across the curriculum. Includes individual communication skills assessment and development and team-based oral and written communication instruction. Required for M.B.A. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Barrett; Peters; Wiley.

MGMT 598 ACTION LEARNING PROJECT I (2)

ALP I focuses completely on the group project, including interacting with the faculty and corporate liaison to refine the scope and proposal, developing data gathering methods (surveys, interviews, research, etc.), completing research, beginning analysis, conducting progress reviews, and adjusting the project as necessary to ensure satisfactory completion of the project in ALP II. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 596. Repeatable for Credit. Offered Fall.

MGMT 599 ACTION LEARNING PROJECT II (4)

Group project in which students, under the guidance of faculty and a corporate liaison, study the scope of improvements needed, examine a company's processes, and then provide written recommendations and present findings to senior management. Required for MBA. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 598. Repeatable for Credit. Offered Spring.

MGMT 601 FINANCIAL STATEMENT ANALYSIS (3)

Study of how investors, financial analysts, creditors, and managers use financial statement information in evaluating firm performance and in valuing firms. Emphasizes industry and firm-level analysis of accounting information using financial accounting concepts and finance theory. Must be enrolled in one of the following Program(s): MBA. Repeatable for Credit. Offered Fall. Instructor(s): Dharan; Rountree.

MGMT 602 STRATEGIC COST MANAGEMENT (1)

Using the value chain as the organizing framework, this class explores how firms design business processes and management information systems to achieve strategic advantage through a competitive cost structure. Competitive cost structures are increasingly obtained, not through technical efficiencies of a single firm, but through innovative collaboration among firms--what has been termed the extended enterprise. Thus more than half of the course considers strategic cost management at the boundaries of the firm--where the firm interacts with suppliers, strategic alliance partners, customers and society. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Anderson.

MGMT 603 FEDERAL TAXATION (3)

Survey of the basic federal tax law concepts of business income and deductions, proceeding to tax aspects of different forms of business organizations, emphasizing corporations. Includes sections of tax planning for mergers and acquisitions, compensation planning, and international tax effects. Introduces tax research. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 501. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Viebig; Westheimer.

MGMT 606 CORPORATE FINANCIAL REPORTING (3)

Course covers aspects of interest to corporate finance officers and financial statement readers on a number of critical financial reporting issues, including those related to merchandise inventories, fixed and intangible assets, liabilities, shareholders' equity, business combinations, consolidated financial statements and segment reporting, and the effects of changing prices on net income and rate of return. The strategic role of the newly restructured International Accounting Standards Board, especially as viewed by the Securities and Exchange Commission and the European Commission, will be explored. Students will be apprised of the sweeping and fundamental changes that are occurring today in the milieu of international financial reporting. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Zeff.

MGMT 607 FINANCIAL REPORTING AND ANALYSIS (2)

This course is intended to enhance your ability to relate economic events to financial statement disclosures and to aid in developing a coordinated set of concepts and principles to serve as a framework for analyzing a variety of financial reporting issues. The goal is to make you an informed issuer or user of financial statement information. We will focus on understanding the mapping between underlying economic events and the information in financial statements, and on how this mapping affects inferences about the firm's financial position and future profitability. To provide context for understanding the implications of firms' accounting and reporting decisions, we will rely on case analyses. Topics to be covered include accounts receivable and inventory valuation, intangible assets, intercorporate investments, including consolidations and goodwill accounting, post-employment benefits, stockholders' equity, and employee stock options. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 501. Repeatable for Credit. Offered Spring. Instructor(s): Nelson.

MGMT 613 MANAGING FOR CREATIVITY AND INNOVATION (3)

Study of the nature of creativity, creative thinking skills and ways to encourage, promote, and effectively manage creativity and innovation in complex organizations. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Zhou.

MGMT 614 ADVANCE SEMINAR IN STRATEGY MAKING FOR MANAGERS (3)

This course builds upon the coverage of strategic management in core courses to provide participants with advanced skills for developing creative organizational strategies. It anticipates future strategy-making contexts facing organizations and examines a variety of useful ways to develop effective "emergent", "adaptive", "growing", and/or "analytic" strategies under these conditions. In this seminar, teams of participants are actively involved in building state-of-the-art strategy-making skills for successful management careers. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Taylor.

MGMT 616 SEMINAR IN ORGANIZATIONAL PSYCHOLOGY (3)

The objective of this course is to orient students to current topics in organizational psychology and provide an advanced treatment of core concepts in organizational behavior. Topics will include organizational climate and culture, misbehavior in organizations, leadership, job satisfaction and job attitudes, and organizational justice. Topics will also cover a special section on recent advances in conducting organizational research, including multi-level modeling of organizational survey data. Course is also open to students pursuing a graduate degree in psychology. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Smith.

MGMT 617 MANAGERIAL DECISION MAKING (3)

Examination of current advances in managerial decision-making theories, processes and practices. Advances featured in the 2003 course include: problem finding and solving; enhancing decision-making creativity; avoiding cognitive decision traps; using the major decision-making approaches (decision analysis, logical incrementalism, and intuition); understanding team, inclusive, participative, and distributed decision making; and implementing decisions effectively. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Taylor.

MGMT 619 CORPORATE GOVERNANCE (1)

Critical examination of director selection, board decision-making processes, chief executive officer evaluation and compensation, the board's role in strategic planning, the impact of external constituencies of governance, and legal aspects of governance. Must be enrolled in one of the following Program(s):MBA. Not offered Fall & Spring.

MGMT 620 THE NEW ENTERPRISE (2)

Evaluating opportunities and developing a business concept; analyzing new ventures; pricing, selling, and cost control; attracting stakeholders and bootstrap finance; the legal form of business and taxation; financing, deal structure and venture capital; harvesting value. Emphasis on case method. (NOTE: MGMT 620 and MGMT 621 provide much of the same content and may not both be taken for credit.) Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Napier.

MGMT 621 THE NEW ENTERPRISE AND BUSINESS PLAN DEVELOPMENT (3)

Evaluating opportunities and developing a business concept; analyzing new ventures; pricing, selling, and cost control; attracting stakeholders and bootstrap finance; the legal form of business and taxation; financing, deal structure and venture capital; harvesting value; developing a business plan. (NOTE: MGMT 620 and MGMT 621 provide much of the same content and may not both be taken for credit.) Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Crist; Napier.

MGMT 622 REAL TIME ENTERPRISE (2)

Investigates the significance of this phenomenon with respect to key elements of traditional enterprises. The effect on business strategy is discussed, with a view toward competing in this new environment. Several types of contribution to value creation will be identified. Importantly, the value limits of the Real Time Enterprise (RTE) will also be identified, i.e., the point at which the cost of being real time exceeds the value. The new infrastructures and architectures needed to support Real Time Enterprises will also be explored. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Timmreck; Papadopoulos.

MGMT 623 ENTREPRENEURSHIP IN BIOTECHNOLOGY (1)

Provides an insider's perspective on workings and challenges of an early to mid-stage pharmaceutical company. Current company issues and case studies are used to discuss topics including pre-clinical & clinical development, licensing & business development and intellectual property and patent strategies. Intended for students considering a career in an entrepreneurial biotechnology company. Previous coursework in entrepreneurship or healthcare is preferred. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Varadnachary.

MGMT 624 REAL ESTATE (3)

This course emphasizes the components and processes of real estate industry including identification and analysis of investment and development opportunities from an entrepreneurial standpoint. It utilizes Harvard Cases and requires a major field project. Guest lectures will constitute a portion of most sessions. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): Finger.

MGMT 625 CREATIVE ENTREPRENEURSHIP (2)

Designed for those wishing to form their own business. It takes the prospective entrepreneur from the conception stage through the opening of the doors on the first day of business. Students will form teams to make final presentations of their business plans. The winning team of the final presentation will be eligible to participate in the Southwest Business Plan Competition at Rice University. Numerous invited speakers. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): Murphree.

MGMT 626 VENTURE CAPITAL (2)

Overview of the venture capital industry; the organization and operation of venture capital funds; investment methodology; monitoring and portfolio liquidation; leveraged investing; and specialized investments. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 620 or MGMT 621. Offered Spring. Instructor(s): Banks; Marathi.

MGMT 627 ENTERPRISE EXCHANGE (3)

The needs approach to buying and selling businesses; enterprise valuation; deal and contract structuring; mergers and acquisitions; leveraged buyouts; consolidating fragmented industries. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 601 and (MGMT 620 or MGMT 621). Repeatable for Credit. Offered Spring. Instructor(s): Williams.

MGMT 628 OPPORTUNITY, IDENTIFICATION, AND ANALYSIS (2)

Opportunity Identification and Analysis teaches students to recognize attractive opportunities. The most attractive opportunities can generate large cash flows with a minimum of investment; the least attractive ideas have little chance for significant profits but soak up large amounts of time and money. Students will learn to apply skills learned in Finance, Accounting, Marketing and Strategy to a series of real world case dilemmas. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 630 SYSTEMS ANALYSIS AND DESIGN (1)

History and evolution of software systems analysis and design; the major approaches to systems development, including structured analysis, data-driven analysis, and object-oriented analysis and design techniques; and examination of traditional life-cycle methodologies and newer interactive approaches to systems development. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring

MGMT 632 E-BUSINESS (2)

An overview of electronic commerce, including an examination of methods used to create and manage a business on the Internet. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 633 BUSINESS PROCESS RE-ENGINEERING (1)

The origins of reengineering, current methods for reorganizing a corporation around business processes, reengineering's relationship to systems development, and the relevance of developing modern information systems around business processes. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 634 INTELLECTUAL CAPITAL (1)

Exploration of intellectual capital knowledge, information, intellectual property, experience--that can be put to use to create wealth. This course focuses on intellectual capital asset mapping (human, structural, customer capital), knowledge work, role of collaborative information technologies, and creating networked organizations. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring

MGMT 635 EMERGING TECHNOLOGIES (2)

Leaders of 21st century companies are digital business architects requiring insight into the emerging technology landscape in order to exploit potential disruptions rather than being made irrelevant by them. The goal is not to predict the future, but to make better decisions in the present. What will be the important technologies in two to three years? What will be the impacts of these new technologies on work? Organizations? New value propositions? In this course, we will scan new technologies by looking at innovations in development as well as discuss cases of the recent past to learn from companies that were both successful and not so successful in exploiting them. Must be enrolled in one of the following Program(s):MBA. Not offered Fall & Spring.

MGMT 637 STRATEGIC USE OF INFORMATION TECHNOLOGY (1)

Examination of the strategic use of information technology to provide a competitive advantage. Exploration of business models, case studies, IT trends, and hot topics. Must be enrolled in one of the following Program(s): MBA. Pre-requisite(s): MGMT 530. Repeatable for Credit. Offered Spring. Instructor(s): Baker.

MGMT 640 INVESTMENTS AND PORTFOLIO ANALYSIS (1)

This course, conducted in seminar format, will review recent advances in financial theory and research concerning asset pricing and portfolio management. The course will focus on both classic as well as new, cutting-edge issues in both investment and corporate finance. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Foote.

MGMT 641 INVESTMENTS AND PORTFOLIO ANALYSIS (B) (1)

This continues the study of financial theory and research concerning asset pricing and portfolio management that was initially started in MGMT 640. The course focuses on classic issues in investment finance as well as new and exciting issues at the cutting edge of finance. The course is conducted in an interactive, seminar-like format and is open to all second year students who satisfy the prerequisites regardless of whether they have or have not taken MGMT 648. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 648 and MGMT 643. Offered Fall. Instructor(s): Foote.

MGMT 642 FUTURES AND OPTIONS I (1)

An introduction to forward, futures, option, and swap contracts, including the basic valuation principles, the use of these contracts for hedging financial risk, and an analysis of option-like investment decisions. Recommended for finance students. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Repeatable for Credit. Offered Fall. Instructor(s): Fleming.

MGMT 643 PORTFOLIO MANAGEMENT I (3)

Exploration of professional money management by students managing an actual portfolio (the M.A. Wright Investment Fund). Includes all aspects of asset management and performance measurement with emphasis on the class's effort to evaluate securities and arrive at actual buy/sell decisions. Students are expected to continue to MGMT 644. Individual applications reviewed by instructor. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Corequisite(s): MGMT 645 Limited enrollment. Offered Fall. Instructor(s): Foote.

MGMT 644 PORTFOLIO MANAGEMENT II (3)

Continuation of MGMT 643: Exploration of professional money management by students managing an actual portfolio (the M.A. Wright Investment Fund). Includes all aspects of asset management and performance measurement with emphasis on the class's effort to evaluate securities and arrive at actual buy/sell decisions. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543 and MGMT 643. Corequisite(s): MGMT 648. Limited enrollment. Offered Spring. Instructor(s): Foote.

MGMT 645 INVESTMENTS (3)

Review of classic investment theory, with emphasis on measuring and managing investment risk and return. Includes the development of modern portfolio theory and asset pricing models, an introduction to option and futures contracts, market efficiency, and stock valuation. Recommended for most finance students. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Repeatable for Credit. Offered Fall. Instructor(s): Xing.

MGMT 647 CORPORATE FINANCIAL MANAGEMENT (2)

Examination of corporate investment and financing, with emphasis on valuation methods and how financial policy impacts corporate value. Includes the implications of agency costs, asymmetric information and signaling, taxes, mergers and acquisitions, corporate restructuring, real and embedded options, and financial risk management. Recommended for finance students. Must be enrolled in one of the following Program(s):MBA. Corequisite(s): MGMT 543. Offered Spring. Instructor(s): Grullon.

MGMT 648 APPLIED FINANCE (2)

Study of the theory and practice of the fundamental principles in finance emphasizing hands-on experience with a wide range of corporate finance and investments applications. The course provides extensive opportunity to implement finance theory at a practical level and to develop advanced analytical spreadsheet expertise. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Repeatable for Credit. Offered Spring. Instructor(s): Weston.

MGMT 650 FUTURES AND OPTIONS II (3)

In-depth analysis of the theory and practice of derivative securities. Develops a general set of valuation, hedging, and risk management techniques which are then applied to the equity, interest rate, currency, and commodity markets. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543 and MGMT 642. Repeatable for Credit. Instructor(s): Fleming.

MGMT 651 FIXED INCOME MANAGEMENT (3)

Study of fixed income securities and markets in the U.S. and abroad, with an emphasis on the term structure of interest rates and the pricing of fixed income securities, derivatives, and portfolios. Include Treasury, Corporate Debt, and Mortgage-Backed Securities. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Repeatable for Credit. Offered Spring. Instructor(s): Wang.

MGMT 652 MERGERS AND ACQUISITIONS (2)

The course examines the merger and acquisition process from the perspectives of buyers and sellers. Attention is paid to the internal (make) versus external (buy) growth opportunities and their value consequences. The course also analyzes the M&A transaction process through the study of cases. An additional focus will be in the interaction of strategic planning, value planning, financial strategies, and investment decisions. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Repeatable for Credit. Offered Spring. Instructor(s): Grullan.

MGMT 653 PRIVATE EQUITY (1)

Provides an overview of the private equity process. Private equity is a rapidly growing segment of the capital markets that funds; mature and growing companies during the pre-public growth phase. Many companies are sold to strategic buyers as an alternative to going public. The private equity market also provides capital for LBOs and MBOs. We will examine three perspectives: (1) the organization and operation of private equity funds, (2) the due diligence investigation, negotiation of terms and valuation analysis necessary to make private equity investments and (3) exiting private equity investments. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Repeatable for Credit.

MGMT 654 COMMERCIAL BANKING (1)

Role of commercial banks in: Payments and clearing; new money creation, financing enterprise; reacting to monetary policy, credit criteria, services, economic and competitive environment, and global issues. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Baker.

MGMT 656 ENERGY DERIVATIVES (3)

Examines the physical energy markets, common financial instruments, and their applications, including cross-commodity hedges, dual variable assets, synthetic options, and swaps. Decision criteria for both outright and risk management trading are covered with respect to both fundamental and technical analysis. Eight guest speakers from various companies throughout the industry will participate. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 642 and MGMT 650. Repeatable for Credit. Offered Spring. Instructor(s): Kaminski.

MGMT 657 INTERNATIONAL FINANCE (3)

Exploration of special problems encountered by financial officers in international arenas. Includes the economics of the foreign exchange market, exchange rate risk management, international portfolio management, capital budgeting for international projects, and international financing strategies. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543 and MGMT 642. Repeatable for Credit. Offered Fall. Instructor(s): Watanabe.

MGMT 658 APPLIED RISK MANAGEMENT (2)

This course focuses on applied risk management projects. The hands-on experience allows in-depth analysis and understanding of practical risk management issues and exposure to different risk management tools including Value at Risk and Monte Carlo simulations. The course emphasizes student development and application of skills rather than lectures. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): (MGMT 647 or MGMT 645) and MGMT 642 and MGMT 684. Repeatable for Credit. Offered Spring. Instructor(s): Cory.

MGMT 659 REAL ESTATE FINANCE (3)

This course provides an introduction to the concepts and techniques used to analyze and commercial real estate assets and the instruments commonly used to finance these assets. The topics covered include financial analysis of income-generating real property, analysis of mortgage instruments, commercial mortgage-backed securities (CMBS), and real estate investment trusts (REITs). This course is designed for students who are interested in commercial real estate; topics pertaining to single-family residential real estate will be covered only in passing. The course will offer all students an opportunity to develop their business presentation skills through case discussions and a final project presentation. The final project involves the detailed analysis of a CMBS deal, including separate, linked analyses of the mortgage collateral pool, the mortgages, and the note structure. The final project will require the use of all of the tools developed in the course. Must be enrolled in one of the following Program(s):MBA. Corequisite(s): MGMT 642 Repeatable for Credit. Offered Fall. Instructor(s): Downing.

MGMT 660 PUBLIC NONPROFIT STRATEGIC AND FINANCIAL MANAGEMENT (1 TO 3)

Introduction to the key elements of financial management in the public and nonprofit sectors: noncommercial accounting, appropriations process, budgeting procedures, social cost-benefit and cost-effectiveness analysis, financial supervision, and related topics. Suitable for students interested in government, health care, nonprofit management, or consulting practices in those areas. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Windsor.

MGMT 661 INTERNATIONAL BUSINESS LAW (3)

Exploration of U.S. and foreign law as it relates to the law-business interface of importing-exporting trade problems, foreign operations, and foreign investments. Includes the extraterritorial impact of U.S. law, corporate organization, foreign exchange, joint ventures, withdrawal from foreign ventures, and third-country manufacturing. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 561. Repeatable for Credit. Offered Spring. Instructor(s): Hannan.

MGMT 663 ADVANCED CORPORATE FINANCE (1)

This course provides students an in-depth study and analysis of advanced topics in corporate finance such as financial restructuring through mergers and acquisitions and spin-offs and financial engineering such as issues of complex securities. The course requires a solid understanding of the theory and practice of corporate finance. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring

MGMT 667 CORPORATE FINANCE FOR NON-FINANCIAL MANAGERS (2)

Focuses on the essentials of corporate finance for students who do not wish to pursue finance-oriented careers. It builds on the basic principles of valuation, financing, and budgeting, and introduces personal taxes, agency problems, real options, and mergers and acquisitions. The emphasis is on an overview of leading financial theories, empirical evidence, and case studies and requires an understanding of the basic principles of finance. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Not offered Fall and Spring.

MGMT 668 INTERNATIONAL TRADE (3)

An overview of the economic and political environment of international trade, foreign investment, and competitiveness, focusing on institutions that affect international commerce. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Schuler.

MGMT 669 BUSINESS STRATEGY IN THE ENERGY INDUSTRY (1)

This course is designed to examine business in the energy industry from a strategic standpoint, and provide students with a basic understanding of major business issues in the energy industry, including historical and current events. Emphasis will be on oil and gas, but may also touch on other energy subset such as utilities. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Baker.

MGMT 670 STRATEGIC PLANNING AND CREATIVITY (3)

Examination of strategic planning approaches and methods for managing 21st Century organizations. Emphasizes design and implementation of planning systems that are highly responsive to the dynamic, competitive, stakeholder-influenced planning contexts facing modern organizations. Examples of excellent planning performed by a variety of actual companies and industries are analyzed. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Taylor.

MGMT 671 CORPORATE CRISIS MANAGEMENT (1)

Studies current methods of crisis communications with practical application utilizing numerous recent real-world case studies. Class will research and prepare strategies, make recommendations, then dissect and analyze each crisis situation, the processes, policies and results. This process will enhance strategic thinking, allow the consideration of pros and cons of alternative courses of action and provide a better understanding of the management decision making process. Class time will be interactive with individual and small group participation. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Hemeyer.

MGMT 673 INTERNATIONAL COMMUNICATIONS (1)

Students will learn how to assess communication requirements for a broad range of global business situations and develop successful communication strategies appropriate to specific international engagements. Students will also become familiar with a variety of resources available to assist with international and intercultural communication issues. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 674 PRODUCTION AND OPERATIONS MANAGEMENT (3)

Introduce students to the key issues facing managers regarding the operations management of their companies. The goal is to expose students to operations management issues they may face in general management or financial management of companies, either in the manufacturing or service sectors. Topics include: Just In Time (Lean) Production, Total Quality Management, Statistical Process Control (Six Sigma), The Theory of Constraints, Business Process Re-engineering, Supply Chain Cost Management, Leadership Skills in Operations, and Participative Management. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 571. Repeatable for Credit. Offered Fall. Instructor(s): Flatt.

MGMT 675 MANAGEMENT OF INNOVATION (2)

This course is a study in the creation and maintenance look of competitive advantage through both incremental and radical innovation. We learn to formulate innovation strategies consistent with a firm's business strategies. We study processes, management systems, and organizational structures that promote and support innovation. The scope of the course ranges from new product development to business model innovation. We also seek to understand the key drivers of innovation and sources for new ideas. The focus is primarily on large firms. The perspective is that of general management. Readings and case studies are used. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Austgen.

MGMT 676 PROJECT MANAGEMENT/PROJECT FINANCE (3)

Examination of the practice of developing, managing and financing projects, and managing the expectations of project stakeholders. Includes introduction to project alignment methodology, decision analysis, risk analysis and mitigation for project application, and the introduction of the innovative 'project finance' discipline which is substantially different from organic corporate financing of projects. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Not offered Fall and Spring.

MGMT 678 U.S. HEALTH CARE MANAGEMENT (1 TO 3)

Sequence of offerings that provides an introduction to the business of health care in the U.S. Topics include health care systems, health service organizations, and issues relating to the aging problem and the technology explosion in health care. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Boom; Parke; Whitney; Cunningham.

MGMT 679 COST AND QUALITY IN HEALTH CARE (1 TO 3)

Sequence of offerings that provides further analysis of the business of health care in the U.S. Topics include issues of cost and quality, health care financial management, and national and international solutions to the challenge of providing health care to a population. This class is designed to stand-alone, yet build upon MGMT 678. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Boom; Cunningham; Parke; Whitney.

MGMT 680 CUSTOMER SATISFACTION AND LOYALTY (3)

Introduction to major concepts in the analysis of customer satisfaction and loyalty, with emphasis on managerial applications. Also examines related consumption and post-purchase phenomena related to customer satisfaction and loyalty. Open only to second-year MBA students. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 580. Repeatable for Credit. Offered Spring. Instructor(s): Westbrook.

MGMT 682 PRICING STRATEGIES (2)

Study of the paradigm that success of a product lies not only in its acceptance by the end consumer but also in how it is priced and how it reaches the intended consumer, with emphasis on understanding and analyzing the issues, problems, and opportunities characteristic of the channel relationship and of the various faces of pricing. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Dholakia.

MGMT 683 SERVICE MARKETING AND MANAGEMENT (3)

Exploration of challenges in the marketing of services, with emphasis on service quality, the importance of cross-functional interactions, and the development of breakthrough service organizations. Examines the differences between marketing services and marketing products, service quality, customer satisfaction, the design of services, and service guarantees, by using lectures, discussions, and case analyses. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Not offered Fall and Spring.

MGMT 684 BRAND MANAGEMENT (3)

Application of various dimensions of marketing strategy and management to the role of the product manager responsible for all marketing activities of a given product. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 580. Repeatable for Credit. Offered Fall. Instructor(s): Perkins.

MGMT 686 MARKETING RESEARCH (2)

The objective of the course is to provide a comprehensive look at the marketing research process and the associated data collection techniques that can be used to collect information to better manage the marketing mix. Qualitative, survey-based, and experimental research designs will be discussed. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 580. Offered Spring. Instructor(s): Singh.

MGMT 687 MARKETING STRATEGY (3)

Considers key elements of marketing strategy, namely, segmentation, targeting, positioning, new product introduction, product line policies, competition. Also treats development of strategic marketing plan. The concepts are discussed through cases, lectures, and a simulation game called MARKSTRAT. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 688 BUYER BEHAVIOR (2)

Drawing on established theoretical frameworks of cognitive and social psychology, this course examines three aspects of consumer behavior: (1) individual, social and cultural influences on consumers, (2) psychological mechanisms of pre- and post-consumption processes such as decision-making and attitude formation and change, and (3) methodological issues in consumer analysis. Implications for strategy as well as marketing program design, measurement and execution are discussed. These topics will be studied through discussion of academic articles, cases and projects. Must be enrolled in one of the following Program(s):MBA. Offered Fall. Instructor(s): Dholakia.

MGMT 689 MARKETING MODELS (3)

Development and analysis of state-of-the-art marketing models that utilize consumer-level data and statistical software packages (SAS, SPSS, and GAUSS) to uncover the various key marketing measures such as price and advertising elasticities, to study the impact of promotions and advertising on sales, to analyze the diffusion of new products such as answering machines and cellular phones, and to do segmentation and market structure analysis. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring

MGMT 692 MARKETING FOR HIGH TECHNOLOGY INDUSTRIES (2)

Examines the opportunities and challenges of marketing on the Internet, focusing on 3 areas: strategy, communications and consumers. First, we consider strategic issues facing internet marketers, and examine emerging and traditional theoretical frameworks and concepts of value. Second, we examine the media characteristics and potential of the digital environment, and compare it to traditional forms of marketing communication. Third, we study demand-side issues, examining consumer behavior in digital environments with implications for marketers. These topics will be studied through cases, discussions of academic and trade articles, and projects. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Dholakia.

MGMT 693 NEW PRODUCTS AND SERVICES (3)

Exploration of the critical role of new products within the corporation and in small businesses, focusing on consumer products. Discusses the critical steps in new product development from ideal generation to business analysis and cross-functional team management to product launch into the marketplace. Students will work in groups to develop their own new products and to prepare the key elements of a new product introduction. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Singh.

MGMT 694 ADVERTISING CREATIVITY (1)

Many CEOs and Marketing Managers are not trained how to evaluate advertising creativity or ad content even though advertising plays a key role in a company's/product's marketplace performance. Advertising Creative Management will provide a basic framework for managing and evaluating advertising creativity with a focus on television ads. The course will include lectures, numerous advertising samples for discussion, a guest speaker and two assignments. There will not be a final exam. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 695 TRADING ROOM SEMINAR (1)

Independent projects based on data, software, and analysis techniques developed in the Jones School trading room. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 696 MARKETING FOR FINANCIAL SERVICES INDUSTRIES (1)

The objective of this course is to help participants better understand market research data and special research techniques, including test marketing, advertising research, and new product research. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Dhoakia.

MGMT 697 ADVERTISING AND PROMOTION (3)

This course will take an Integrated Marketing Communications approach to the development, implementation and control for advertising and promotion programs. We will examine the role of Integrated Marketing Communications in marketing, setting objectives and budgets, development, monitoring, evaluating for advertising, direct marketing, public relations, and sales promotion programs. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 580. Repeatable for Credit. Offered Spring. Instructor(s): Yoon.

MGMT 699 ADVANCED MARKETING RESEARCH (3)

In this course we develop a thorough understanding surrounding the design of studies to measure perception and preference in a market. Topics include: Projective Techniques, Multidimensional Scaling, Factor Analysis, Conjoint Analysis, and Choice Models. Design of data collection instruments, collection, analysis, and reporting of results are emphasized in a project context. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring

MGMT 700 INDEPENDENT STUDY (1 TO 3)

Independent study or directed reading on an approved project under faculty supervision. Contact MBA program office for application information. No more than 3 credit hours of independent study will count towards graduation unless approved by the Jones School Academic Standard Committee. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall and Spring.

MGMT 701 MANAGEMENT CONSULTING (1)

This course will introduce students to the basics of management consulting, with a focus on what it means to be a successful management consultant. The course will include instruction on managing client relations and projects, determining and controlling the scope of engagements, working effectively in, and leading client teams, and integrating strategic/analytic, organizational/process, and behavioral/anthropological disciplines into lasting impact for clients. Class work will include case studies, role-play, and interaction with real clients. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): Kurtzman.

MGMT 702 SPANISH COMMERCE (1)

This class, conducted entirely in Mexico, is a language, culture, business practices and specific business language training in Mexico. It will be held January 2-11 and requires travel to Mexico City and Cuauhnahuac, Mexico. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Spring. Instructor(s): Houston.

MGMT 703 FIELD STUDY IN AMERICAN BUSINESS I (0)

The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a summer internship with a firm in the United States. The readings are meant to complement much of your course work in the first year of the MBA program. Must be enrolled in one of the following Program(s):MBA. Offered Summer. Instructor(s): VanDrie.

MGMT 704 FIELD STUDY IN AMERICAN BUSINESS II (0)

The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a fall internship with a firm in the United States. The readings are meant to complement much of your course work in the second year of the MBA program. Must be enrolled in one of the following Program(s):MBA. Offered Fall. Instructor(s): VanDrie.

MGMT 705 FIELD STUDY IN AMERICAN BUSINESS III (0)

The purpose of this course is to expose students to the American business enterprise. This exposure is accomplished through two primary means: (1) readings about the drivers of success in U.S. firms; and (2) a spring internship with a firm in the United States. The readings are meant to complement much of your course work in the second year of the MBA program. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): VanDrie.

MGMT 706 MANAGEMENT OF TECHNOLOGY (1)

This course is a study in the creation and maintenance of competitive advantage through the development and exploitation of technology in both core products and enabling processes. We study the formulation and implementation of technology strategy and seek to understand how new and improved technologies are exploited through innovation. We learn to formulate technology strategy. We explore the appropriate scope and dimensions of technology strategy, forces that shape it, processes for crafting it, and integration of technology strategy into the firm's corporate- and business-level strategies. We also study processes, management systems, and organizational structures that promote effective technology development. The focus is primarily on large firms. The perspective is that of general management. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Merrill.

MGMT 707 BUYER BEHAVIOR II (1)

The objective of this course is to understand the psychological mechanisms underlying important marketing processes. In particular, we will examine the psychological bases of customer satisfaction, loyalty, relationship marketing, and branding. In each case, drawing on psychological theoretical frameworks, we will understand what these constructs mean from the consumer's standpoint, and how managers should take these meanings into account during planning, creating and executing marketing strategies. It is expected that this knowledge will benefit not just students interested in a marketing emphasis, but those in general management and finances as well, in evaluating the implications of their functional responsibilities on their firm's top-line through influencing customer processes and behaviors. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Dholakia.

MGMT 708 STRUCTURAL EQUATIONS MODELS (3)

Explores issues related to measurement and hypothesis testing interpretation in management research and the behavioral sciences. Structural equations methodology will also be used as the primary means of analysis, but also considers reliability, validity, explanation, prediction, control, and understanding of individual, group, and organizational phenomena. Examples drawn from management, the social sciences, and psychology used to illustrate the approaches and concepts examined. An introductory background in probability and statistics, preferable including multiple regression, will be assumed. Must be enrolled in one of the following Level(s):Graduate. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 595 or STAT 310 or STAT 410 or (PSYC 502 and PSYC 503) or (POLI 502 and POLI 503) or (ECON 510 and ECON 511). Instructor permission required. Offered Spring. Instructor(s): Baggozi.

MGMT 710 BUSINESS TO BUSINESS MARKETING (3)

The objective of this course is to provide the student with an understanding of the various concepts and tools relevant to the marketing of products in a business-to-business setting. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 711 APPLIED OPTIMIZATION (1)

Airlines don't schedule without "it" and refineries don't produce gasoline without "it", and Wall Street is investing "it." "It" is optimization. The evolution of powerful micro-computers has brought the application of optimization to the desktop, and industry after industry is exploring ways to take advantage of this family of techniques to reduce cost and increase profitability. Successful line managers need to understand its potential, and analytically inclined MBAs will appreciate its elegance. This course will focus on the application of linear and integer programming techniques to supply chain optimization. Although the application focus will be on supply chain, the successful student will be able to recognize optimization and profit maximization opportunities across many different business contexts. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): Bixby.

MGMT 712 DATABASE MARKETING (3)

This course on Database Marketing will provide students with an understanding of 1.) The managerial issues related to database marketing and customer relationship management, 2.) The importance of integrating internal processes with customer relationship management processes, 3.) Technology issues in developing relationship tools such as data architecture, data warehousing, content personalization, etc. 4.) Data models used in understanding and predicting customer behavior for improved customer relationships from large databases, and will provide students with the ability to develop and utilize specific data mining techniques to integrate customer data and business processes. Must be enrolled in one of the following Program(s):MBA. Offered Fall.

MGMT 713 GLOBAL STRATEGIC MANAGEMENT (3)

Seeks to provide students with the skills, knowledge and sensitivity required to attain and maintain sustainable competitive advantage within a global environment. Emphasizes a strategic perspective and highlights topics such as global environment analysis, global strategy, global strategic alliances, and the important role of organizational structure and strategic control. Must be enrolled in one of the following Program(s):MBA. Instructor(s): Zhang.

MGMT 716 DESIGN AND CONSTRUCTION PROJECT DELIVERY INNOVATION (3)

Process innovation in the design and construction industries is far to rare. Even with access to powerful tools such as CADD and the Internet, many opportunities for process improvement are overlooked and problems are repeatedly ignored. Within this course, cross-discipline project teams will use contemporary business tools to evaluate long-standing industry practices and develop ideas for process innovation. At the end of the semester, students will present innovation concepts to members of the Project Delivery Innovation Forum, a group of industry leaders that may select student ideas for further research on real projects. Cross-listed with ARCH 616. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): Bryson.

MGMT 717 LEADERSHIP SEMINAR (3)

This course will examine common competencies taught in corporate leadership development programs (e.g., self-development, conflict-management, diversity management, cross-cultural management). Emphasis will be placed on critical leadership skills that have been proven to impact career success. Competencies important for individual, team, and organizational performance will be discussed. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 720 STRUCTURING AND MANAGING INTERNATIONAL STRATEGIC ALLIANCES (1)

This course seeks to provide students with the skills, knowledge, and sensitivity required to structure and manage strategic alliances/joint ventures within a global environment. This course will discuss the following topics: motivations for joining strategic alliances/joint ventures, partner selection, structuring strategic alliances/joint ventures to meet firms' strategic objectives, control and management of alliances/joint ventures, evaluation of performance of alliances/joint ventures, and exiting alliances/joint ventures. Case studies will also be used to develop students' capacity to identify issues, to reason carefully through various options and improve students' ability to manage the organizational process by which alliances/joint ventures get formed and executed. We will also read and discuss recent articles from the business press and academic journals. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall. Instructor(s): Zhang.

MGMT 722 MANAGEMENT CONTROL AND DESIGN (1)

This course builds on and extends the topics introduced in MGMT 503, Management Control. It is situated at the intersection of strategy and control and will focus on the use and design of control systems to facilitate strategic objectives and achieve business goals. It will begin by taking an in-depth look at the levers of control typology introduced in MGMT 503. The course will examine incentive issues that arise when compensation is linked to diagnostic controls, and whether it facilitates or hinders the achievement of strategic objectives. The course then shifts to examine the presence of strategic risks and how strategic pressures impact the accounting environment. Finally, it will examine how a component of the management control system is used to manage those risks. It will also include the current changes in management control and the requirements now imposed on top executives. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring. Instructor(s): Widener.

MGMT 724 STRATEGIC ALLIANCES AND JOINT VENTURES (1)

In today's world of global markets, rapid technological advancement, and increasing complexity of new products, few companies can successfully compete alone. As such, for industry giants and ambitious start-ups alike, strategic partnerships have become critical. The Strategic Alliance and Joint Ventures course will examine the theory and logic of alliances in value creation as well as exploring the life cycle of an alliance. Must be enrolled in one of the following Program(s):MBA. Offered Fall. Instructor(s): Foote.

MGMT 725 STRATEGIC ALLIANCES AND JOINT VENTURES II (1)

This course examines: theory and logic of alliances in value creation, alliance evolution in various industries, the spectrum of alliance types from a low level of interdependence to a high. The course is discussion-based, focusing on reading material, case studies and problem sets. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 724. Offered Fall. Instructor(s): Foote.

MGMT 726 FIXED INCOME PORTFOLIO SIMULATION (2)

In this course, students will gain hands-on experience in the challenges and excitement of managing a simulated Fixed Income portfolio (U.S. Treasuries, corporate bonds and mortgages). FIP Sim 'student-managers' will actively learn and utilize the resources of the El Paso Finance Center to set up, research, and manage/trade their simulated portfolios. Each portfolio will consist of securities selected by the 'student manager' from an index in conformance with pre-established investment guidelines - analogous to the real investment management world. Monthly portfolio performance will be calculated and benchmarked against the index. Classroom time will be used for a combination of lectures, speakers, interactive Finance Center activities, and professor/student consultation sessions on investment strategy. This course work will leverage off of material learned in MGMT 651, and to receive credit, you must simultaneously take MGMT 651. Must be enrolled in one of the following Program(s): MBA. Pre-requisite(s): MGMT 651. Offered Spring. Instructor(s): Foote.

MGMT 730 ADVANCED INVESTMENT MANAGEMENT (3)

Advanced theory and practice in investment management, including security analysis, optimal asset allocation for active fund managers, dynamic portfolio insurance programs, arbitrage-free pricing, bond fundamentals and arbitrage, and interest rate swaps and derivatives. Must be enrolled in one of the following Program(s):MBA. Pre-requisite(s): MGMT 543. Offered Spring. Instructor(s): Wang.

MGMT 732 E-BUSINESS: APPLICATIONS AND INFRASTRUCTURE (2)

Analysis of the technologies and alternative business models for Internet business, including the launch of a new Internet business and Internet extensions of established businesses. We will explore Internet infrastructure components, including the Internet itself, creative and content management tools, Internet application servers, wireless technologies, neutral marketplaces and exchanges, and the integration of these components. Students will study several existing eBusinesses and present their analyses of the strengths and weaknesses of the technologies and business models that are represented. Must be enrolled in one of the following Program(s):MBA. Not offered Fall and Spring.

MGMT 734 TECHNOLOGY ENTREPRENEURSHIP (3)

Through exposure to literature on technology entrepreneurship and active involvement with technology entrepreneurs, the student will deepen his/her knowledge of the process of starting, funding, and growing an entrepreneurial company that is based on a science, engineering, software, or e-commerce innovation. Involvement with technology entrepreneurs will be made through the Rice Alliance for Technology and Entrepreneurship. Must be enrolled in one of the following Program(s):MBA. Offered Fall. URL: www.alliance.rice.edu. Instructor(s): Currall.

MGMT 737 INVESTOR RELATIONS (2)

Students learn theory and practice of investor relations, with emphasis on the role of investor relations/financial communications. Subjects covered include: history of the stock market, formation of the SEC, evolution of SEC regulations, dynamics of the equity markets, flow of investor information, planning and implementing an investor relations program, fitting investor relations into a corporation's communications program. Students will be mentored by local investor relations practitioners who will serve as real world guides for course assignments. Students will learn specifics about filing with the SEC, the creation of annual reports, road shows, stockholder meetings, preparing financials, and more. Investor relations managers, analysts, and CEOs will serve as guest lecturers to talk about their challenges in today's workplace. only. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): Wiley.

MGMT 739 DELIVERING SHAREHOLDER, EMPLOYEE AND CUSTOMER VALUE (2)

The course delivers fundamental concepts of how a company delivers value to its primary stakeholders. Successful business models are examined and analyzed. Successful companies will be examined, primarily in the way of delivering value. The course will highlight what constitutes a good value chain and why. A portion of the course will revolve around the definition of value and the formulation of a "value proposition". A delineation will be made in the formulation of the "value proposition" for companies with different value disciplines. Real examples and case studies will be shared with the students derived from many years of the instructors' consulting experience with internal and external customers in their pursuit to provide satisfaction to all three major stakeholders: Customers, Employees, and Shareholders. Must be enrolled in one of the following Program(s):MBA. Offered Fall. Instructor(s): Merrill; Papadopoulos.

MGMT 741 MANAGING GROWTH (2)

Companies are either thought of as small start-ups or large, mature businesses. The small start-up is considered to be the domain of the entrepreneur, where by force of personality, spark of creativity, or bold opportunism, a business is formed ex nihilo. On the other extreme, the large business is considered to be the domain of the manager, where by force of scale and scope, imposition of process, and careful analysis, an empire is sustained and expanded. In summary, the focus of the course will be how to create wealth by buying a small business, putting systems and processes in place to create a foundation for future growth, driving growth both internally and externally, and, finally, selling the business. Students will learn to apply those skills to small businesses with growth potential. Must be enrolled in one of the following Program(s):MBA. Offered Fall. Instructor(s): Morgan.

MGMT 750 MANAGEMENT FOR SCIENTISTS AND ENGINEERS (3)

This course is designed for science and engineering students who want to understand the management of new and/or small technology-based businesses. The course is taught in modular format to give students insights into how technology-oriented firms manage intellectual property, marketing, organization behavior, strategy, accounting, and finance. Concepts covered will be particularly relevant to students interested in careers in technology or entrepreneurial ventures. This course is part of a two-class sequence and provides the foundation for students taking NEW VENTURE CREATION for SCIENCE and ENGINEERING, which is offered in the spring. Cross-listed with CHEM 750, MSCI 750. May not be enrolled in any of the following College(s): . May not be enrolled in any of the following Program(s):MBA - Executive Program, MBA. Offered Fall.

MGMT 751 NEW VENTURE CREATION FOR SCIENCE AND ENGINEERING (3)

This course deals with the concepts and theories relevant to new venture creation. Our primary focus is the start-up process with particular emphasis being placed on market issues, intellectual property and entrepreneurial finance. As part of the course, we will evaluate the commercial potential of a live technology drawn from the Rice engineering/science community. The concepts covered will be particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. Cross-listed with CHEM 751, MSCI 751. May not be enrolled in any of the following College(s): . May not be enrolled in any of the following Program(s):MBA - Executive Program, MBA. Pre-requisite(s): MGMT 750. Offered Spring.

MGMT 752 TECHNOLOGY TRANSFER INTERNSHIP (3)

The Office of Technology Transfer at Rice University has currently established a formal internship program with the Jones Graduate School of Management (JGSM) to provide students exposure and experience with the process of transferring technology discovered in research activities at Rice to commercial activities. The program allows students to work directly with the Office of Technology Transfer. Technology Transfer is the process of facilitating the relationship between academia and industry, allowing ideas to flow or be transferred both ways and resulting in the development of technologies. This benefits the public through introducing new and better products for the improvement of quality of life. The national economy benefits as these technologies mature to grow their own industry and contribute to other sectors of the economy as well. Must be enrolled in one of the following Program(s):MBA. Offered Spring. Instructor(s): Napier; Schuerman.

MGMT 753 HOUSTON ANGEL NETWORK (3)

The Houston Angel Network (HAN) is establishing a formal internship program with the Jones Graduate School of Management (JGSM) at Rice University in order to give students exposure and experience with evaluating and funding early-stage companies within Houston. The program will allow students to work directly with start-up companies seeking funding and with HAN itself. The program will be beneficial for both HAN, by providing experienced volunteers, and the Jones school students, by giving them a chance to apply the knowledge they gain in the classroom to the real world funding process which all start-up companies face. Interns will be required to sign a confidentiality agreement before the HAN Internship begins. Registration by application. Must be enrolled in one of the following Program(s):MBA. Limited enrollment. Offered Fall and Spring. Instructor(s): Napier.

MGMT 760 HOUSTON TECHNOLOGY INTERNSHIP (3)

The Houston Technology Center (HTC) is working to enhance Houston's position as a leading city for technology companies and has established a formal internship program with the Jones Graduate School of Management (JGSM) to give students exposure and experience with high-tech companies within Houston. The program allows students to work directly with high-tech companies and with the HTC itself. The program provides Jones school students the chance to apply the knowledge they gain in the classroom to the real world problems which all start-up companies face. Must be enrolled in one of the following Program(s):MBA. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Napier.

MGMT 780 EXTENDED LEARNING LAB I (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world setting such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s): MBA - Executive Program.

MGMT 781 EXTENDED LEARNING LAB II (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world setting such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s): MBA - Executive Program.

MGMT 782 EXTENDED LEARNING LAB III (1)

In the Great Ice Cream Game, profits are a measure of performance, not just in the short-term, but more importantly over longer periods of time. You and your team will be dynamically competing in a stable marketing environment to maximize profits for your company through dollar sales and market share. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Batsell.

MGMT 783 EXTENDED LEARNING LAB IV (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world setting such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s): MBA - Executive Program.

MGMT 784 EXTENDED LEARNING LAB V (1)

Directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester subject areas in practical, real-world setting, such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s):MBA - Executive Program.

MGMT 785 EXTENDED LEARNING LAB VI (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world setting such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s): MBA - Executive Program.

MGMT 786 INTERNATIONAL BUSINESS BRIEFING (1)

An overseas course trip involving intensive meetings with company and commercial bank executives, directors in consulting and investment banking firms, executives in public sector and health care enterprises, and government officials and academics. The objective is to enhance students' appreciation of the opportunities and obstacles to doing business in different parts of the world and to heighten their interest in engaging in global ventures. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Uecker.

MGMT 787 CROSS-CULTURAL ISSUES IN BUSINESS (1)

Introduction to cultural business differences and discussion of problems and obstacles to business caused by non-synchronous historical and political viewpoints. Emphasizes management challenges to non-American and multicultural environments where values, practices, negotiation styles, concepts of time and methods of communication are dissimilar. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Lesnick; Currall.

MGMT 790 EXTENDED LEARNING LAB VII (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world setting such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s): MBA - Executive Program.

MGMT 791 EXTENDED LEARNING LAB VIII (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world setting such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s): MBA - Executive Program.

MGMT 792 EXTENDED LEARNING LAB IX (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world setting such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s): MBA - Executive Program.

MGMT 793 EXTENDED LEARNING LAB X (1)

Extended learning labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world settings such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s):MBA - Executive Program.

MGMT 794 EXTENDED LEARNING LAB XI (1)

Extended Learning Labs are directed jointly by the four faculty members responsible for any given mini-semester. Their purpose is to apply information from each of that mini-semester's subject areas in practical, real-world settings such as cases, simulations, and communication exercises. Must be enrolled in one of the following Program(s):MBA - Executive Program.

MGMT 800 INDEPENDENT STUDY (1 TO 3)

Must be enrolled in one of the following Program(s):MBA - Executive Program. Repeatable for Credit.

MGMT 801 FINANCIAL ACCOUNTING (2)

Preparation of financial statements, financial reporting framework and financial accounting techniques. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Nelson.

MGMT 802 COST MANAGEMENT (1)

Provides general managers with an understanding of the design and function of a firm's management accounting system to enable them to become active consumers of accounting information. The course describes how accounting information can assist managers in making decisions about products, services, and customers; improving existing processes; and aligning organizational activities toward long-term strategic objectives. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Anderson.

MGMT 807 LEADERSHIP (1)

Covers key elements of sound leadership theory and practice in organizational settings. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Windsor.

MGMT 810 LEADING ORGANIZATIONS (1)

This course is designed to further students' leadership skills by providing an assessment of their leadership competencies. This assessment will be used to focus participants' leadership development efforts. Additionally, the course will cover the common causes of executive derailment, critical competencies for effective leadership, leadership as coaching, leading decision-making in teams, and managing change. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Smith.

MGMT 811 CHANGE MANAGEMENT (1)

Examination of practical challenges in planning and in implementing organizational change. Topics include organizational transformation, continuous change, choices in organizational change initiatives, leadership of organizational change and transformation at different organizational levels, and motivation and resistance around change efforts. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Kehoe.

MGMT 813 MANAGING FOR CREATIVITY (1)

Study of the nature of creativity, creative thinking skills and ways to encourage, promote, and effectively manage creativity and innovation in complex organizations. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Zhou.

MGMT 817 DECISION ANALYSIS (1)

Decision analysis is the discipline that helps people choose wisely under conditions of uncertainty. Decision analysis provides the only logical, consistent way to incorporate judgments about risks and uncertainties into an analysis. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Skinner.

MGMT 830 INFORMATION TECHNOLOGY (1)

The role and impact of information technology (IT) in organizations, strategic uses of IT, the internet and electronic commerce, outsourcing versus insourcing of IT activities, technology directions and management of the IT function. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Gorry.

MGMT 835 MANAGING KNOWLEDGE IN THE INFORMATION AGE (1)

People processes and technology. Technology for managing knowledge. New organizational models. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Gorry.

MGMT 840 MANAGERIAL ECONOMICS (1)

Part I of the course first covers the basics of consumer demand and then focuses on the relevant costs in making production and pricing decisions, with an emphasis on seeking economics rather than accounting profit. Part II explores incentive problems in decision-making within firms and studies the relation between decision rights, compensation, and performance evaluation in productive organizational design. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Paye.

MGMT 841 ECONOMIC ENVIRONMENT OF BUSINESS (1)

Examination of the global economic environment that serves as a backdrop for business decision making, with emphasis on the key macroeconomic policy goals and tools and how they affect exchange rates, interest rates, business cycles, and long-term economic growth. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Ostdiek.

MGMT 843 CORPORATE FINANCIAL MANAGEMENT (2)

Capital budgeting, risk and return, cost of capital, EVA concept, capital asset pricing model, time value of money, net present value, and internal rate of return. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Underwood.

MGMT 845 CAPITAL INVESTMENT ANALYSIS (1)

This course examines quantitative techniques for evaluating capital investment opportunities for corporations. In addition, the course will analyze cases to examine the use of those techniques in making capital investment decisions. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Atherton.

MGMT 858 ENTERPRISE-WIDE RISK MANAGEMENT (1)

This course explores the responsibilities for risk management from the top levels - the corporate directors - down to the roles of the internal audit department, risk control, and risk management groups, and examines an organization's internal risk management structure and the thought process for identifying key risks. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Cory.

MGMT 860 BUSINESS ETHICS (1)

Moral obligations of firms and managers. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Windsor.

MGMT 861 BUSINESS-GOVERNMENT RELATIONS (1)

The course exposes students to the governmental institutions that surround the business environment. Strategies for influencing and responding to governmental factors are explored as well as other issues related to business-government relations. Must be enrolled in one of the following Program(s):MBA - Executive Program.

MGMT 865 GLOBALIZATION OF BUSINESS (1)

This course examines the increasing importance of trade and the global economy to U.S. business. It focuses first on the industrial winners and losers of free trade and protectionism, and then examines the major laws and agencies governing trade between the U.S. and her industrial competitors. Finally, the course examines current issues and challenges for foreign investment in some of the most important markets for U.S. firms such as Japan and China. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Schuler.

MGMT 869 BUSINESS STRATEGY IN THE ENERGY INDUSTRY (1)

This course is designed to examine business in the energy industry from a strategic standpoint, and provide students with a basic understanding of major business issues in the energy industry, including historical and current events. Emphasis will be on oil and gas, but may also touch on other energy subsets such as utilities. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Papadopoulos.

MGMT 870 COMPETITIVE STRATEGY (1)

Systematic examination of models and techniques used to analyze a competitive situation within an industry from a strategic perspective. Examines the role of key players in competitive situations and the fundamentals of analytical and fact oriented strategic reasoning. Examples of applied competitive and industry analysis are emphasized. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Cording.

MGMT 871 STRATEGY FORMULATION AND IMPLEMENTATION (1)

This course focuses on formulating and implementing effective organizational strategy, including competitive positioning, core competencies and competitive advantage, cooperative arrangements, and tools for implementation. Must be enrolled in one of the following Program(s):MBA - Executive Program.

MGMT 874 TECHNOLOGY AND OPERATIONS MANAGEMENT (1)

Introduction to the design and improvement of operations, including manufacturing technologies, quality management and control, and organizational issues in operations. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Flatt.

MGMT 880 MARKETING (2)

Introduction to the key concepts underlying the function of marketing in a business enterprise. Includes lectures and an extensive analysis of marketing management cases. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Westbrook.

MGMT 884 BRAND MANAGEMENT (1)

Application of various dimensions of marketing strategy and management to the role of the product manager responsible for all marketing activities of a given product. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Perkins.

MGMT 895 DATA ANALYSIS (2)

The ever-increasing capacity of computers to analyze data, and the explosion of the amount of data available, has resulted in an increased role for data analysis as an aid to business decision-making. This course exposes the student to the most important ideas and method relevant for data analysis in a business context. Emphasizing practical applications to real problems, the course covers the following topics: Sampling, Descriptive Statistics, Probability Distributions, and Regression Analysis. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Batsell.

MGMT 896 LEADERSHIP COMMUNICATION (1)

This course is an introduction to corporate communication strategy and global communication, with individual and team-based instruction in both written and oral communications. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): O'Sullivan; Hampton.

MGMT 901 FINANCIAL STATEMENT ANALYSIS (2)

Study of how investors, financial analysts, creditors, and managers use financial statement information in evaluating firm performance and in valuing firms. Emphasizes industry and firm-level analysis of accounting information using financial accounting concepts and finance theory. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Dharan.

MGMT 907 FINANCIAL REPORTING AND ANALYSIS (1)

This course is designed to increase your ability to extract and interpret information in corporate financial statements. It will focus on developing your skills in accounting analysis, using the disclosures in a firm's annual and quarterly reports to determine accounting policy choices, and assessing how those choices affect the firm's primary financial statements. This course will improve your ability to use an accounting report as part of an overall assessment of the firm's strategy and the potential rewards and risks of dealing with the firm. Must be enrolled in one of the following Program(s):MBA - Executive Program. Pre-requisite(s): MGMT 901. Limited enrollment. Instructor(s): Nelson.

MGMT 909 NEGOTIATION AND CONFLICT RESOLUTION (1)

Development of analytical and behavioral skills for resolving conflict and negotiating successfully in a business context. Topics include analysis of your negotiation counterpart, adversarial versus cooperative bargaining, influence tactics, and ethics. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Currall.

MGMT 911 ORGANIZATIONAL ARCHITECTURE AND COMPETITIVE ADVANTAGE (1)

Study of effective organizational design, with a focus on costs and benefits as well as on increasing performance. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Weigel.

MGMT 919 CORPORATE GOVERNANCE (1)

Critical examination of director selection, board decision-making processes, chief executive officer evaluation in compensation, the board's role in strategic planning, the impact of external constituencies of governance, and legal aspects of governance. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Stobaugh; S. Currall.

MGMT 925 STRATEGIC ALLIANCES AND JOINT VENTURES (1)

In today's world of global markets, rapid technological advancement, and increasing complexity of new products, few companies can successfully compete alone. As such, for industry giants and ambitious start-ups alike, strategic partnerships have become critical. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Foote.

MGMT 926 VENTURE CAPITAL (1)

Overview of the venture capital industry, the organization and operation of venture capital funds, investment methodology, monitoring and portfolio liquidation, leveraged investing, and specialized investments. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Murphree.

MGMT 927 ENTREPRENEURSHIP: ENTERPRISE EXCHANGE (2)

The needs approach to buying and selling businesses. Enterprise valuation, deal and contract structuring. Leveraged buyouts and consolidating fragmented industries. Economics and financing. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Napier; Williams.

MGMT 937 INVESTOR RELATIONS (1)

Students will learn theory and practice of investor relations, with special emphasis on the role of investor relations/financial communication, compliance with SEC regulations, the creation of annual reports, road shows, stock holder meetings, preparing financial statements for the public, and more. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Wiley.

MGMT 942 MANAGING GROWTH (1)

The focus of the course will be how to transform a small business into a large business: putting systems and processes in place to create a foundation for growth, driving a transformation both internally and externally, and leading people through that transition. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Linbeck.

MGMT 947 CORPORATE FINANCE (1)

Capital structure, stockholder distributions, agency issues. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Wang.

MGMT 948 ECONOMIC INCENTIVES AND ORGANIZATIONS (1)

This course deals with incentive conflicts within organizations and how they affect shareholder value. A framework is presented for constructing a productive organizational architecture that assigns design rights to the appropriate employees, evaluates appropriately their efforts, and rewards them based on performance. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Weston.

MGMT 950 FINANCIAL RISK MANAGEMENT (1)

The basics of futures and options, as well as real options and use of derivatives to hedge risk. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Fleming.

MGMT 952 MERGERS AND ACQUISITIONS (1)

Motivation, valuation, and strategy in the process of merging established businesses or evaluating/acquiring other enterprises. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Grullon.

MGMT 954 FINANCIAL RESTRUCTURING (1)

This course will examine the causes of and the alternatives available to firms that are confronting financial distress. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Atherton.

MGMT 957 INTERNATIONAL FINANCE (1)

Exploration of issues encountered in international financial arenas, including foreign exchange rate risk management, capital budgeting for international projects, and international financing strategies. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Watanabe.

MGMT 961 BUSINESS LAW (1)

Contracts, employment law, product liability, and foreign corrupt practices act. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Stuart.

MGMT 970 STRATEGY PLANNING AND CREATIVITY (1)

Controlling and evaluating effectiveness. Action planning scenario creation and planning. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Taylor.

MGMT 974 OPERATIONS MANAGEMENT--LEAN SIX SIGMA (1)

This course is about making money the old-fashioned way -- by rolling up one's sleeves and fixing the problems that constrain us from making more money. We will use the framework of the latest consulting terminology -- Lean Six Sigma -- to try to understand the interactions of Better, Cheaper and Faster. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Flatt.

MGMT 982 ADVERTISING AND PROMOTION (1)

This course will take an Integrated Marketing Communications approach to the development, implementation, and control for advertising and promotion programs. We will examine the role of IMC in marketing and discuss how to develop, monitor, and evaluate advertising, sales promotion, direct marketing, public relations, and other types of non-traditional marketing communication programs. Must be enrolled in one of the following Program(s): MBA - Executive Program. Instructor(s): Yoon.

MGMT 984 MARKETING RESEARCH (1)

The objectives of the course are: to familiarize you with the marketing research process, alternative research designs and data collection techniques; to develop capabilities in designing and executing studies appropriate for a particular marketing problem; and to provide skills for using and understanding various data analysis procedures for survey and experimental data. Must be enrolled in one of the following Program(s):MBA - Executive Program. Instructor(s): Batsell.

MGMT 985 GLOBAL LEADERSHIP (1)

Leadership challenges, skills and strategies in the global context. Cross-cultural differences in characteristics of leadership, values, information-processing styles, interpersonal relationships, group dynamics and many other areas. Implications of these differences for employee attitudes and behavior, and for leadership effectiveness in the workplace. Scientifically-proven course material and dynamic, interactive teaching style. Must be enrolled in one of the following Program(s):MBA - Executive Program. Limited enrollment. Instructor(s): Zhou.

MILI (MILITARY SCIENCE)**No College Designated/Military Science****MILI 106 ADVANCED PHYSICAL FITNESS COURSE (1)**

Physically demanding. Develops skills through team competition. Land navigation, assembly/disassembly of weapon, tactics, assembly of one-man rope bridge. Students are also required to attend fitness training 5 times a week. Participants compete for Ranger Challenge slots. Selected cadets compete against other teams at the annual Ranger Challenge competition. Recommended prerequisite(s): must be ROTC cadet. Repeatable for Credit.

MILI 109 PHYSICAL FITNESS TRAINING (1)

Open to all students. Utilizes Army fitness techniques; develops strength, flexibility and endurance; develops self-confidence through leadership training and physical activities. Repeatable for Credit.

MILI 121 INTRODUCTION TO ROTC (2)

Learn fundamental concepts of leadership in both classroom and outdoor laboratory environments. Increase self-confidence through team study and activities in basic drill, physical fitness, rappelling, first aid and basic marksmanship. Develop communication skills to improve individual performance and group interaction. One hour classroom session and a required lab. No military commitment is required for attending this course. Offered Fall.

MILI 122 INTRODUCTION TO LEADERSHIP (2)

Learn and apply principles of effective leadership. Reinforce self-confidence through participation in physically and mentally challenging training with upper division ROTC students. Develop communications skills to improve individual performance and group interaction. Relate ethical values to the effectiveness of a leader. Includes training on survival skills and self-defense. One hour classroom session and a required lab. No military commitment is required for attending this course. Offered Spring.

MILI 123 LEADERSHIP LAB (0)**MILI 201 MILITARY LEADERSHIP DEVELOPMENT (2)**

Characteristics of leadership, problem analysis, decision making, oral presentations, first aid, small unit tactics, land navigation, basic radio communication, marksmanship, fitness training, rappelling. Fitness training required two times per week in addition to class and lab. Offered Fall.

MILI 202 MILITARY LEADERSHIP DEVELOPMENT (2)

Continuation of MILI 201. Offered Spring.

MILI 203 LEADERSHIP LABORATORY (0)

Repeatable for Credit.

MILI 281 LEADER TRAINING COURSE (LTC) (8)

Four week off campus field training practicum. Introduces students to the Army and Leadership. No military obligation is associated with this course. Department permission required.

MILI 301 ADVANCED MILITARY SCIENCE (3)

Leadership training, preparing combat orders, military instruction principles, small unit tactics, and tactical communications. Course is designed to prepare students for Leader Development Assessment Course (LDAC). In addition to class, students must attend lab and physical fitness training. Department permission required. Offered Fall.

MILI 302 ADVANCED MILITARY SCIENCE (3)

Continuation of MILI 301. Offered Spring.

MILI 304 LEADERSHIP LABORATORY (0)**MILI 349 LEADER DEVELOPMENT ASSESSMENT (4)**

Off campus field training practicum stressing application of leadership management with emphasis on tactical and special military skills. Pre-requisite(s): MILI 302. Department permission required.

MILI 398 SPECIAL PROBLEMS (3)

Must be in one of the following Classification(s): Junior. Department permission required.

MILI 401 ADVANCED MILITARY SCIENCE (3)

Leadership and command, military law, administrative/staff operations and procedures, dynamics of the military team, training management, ethics and professionalism. In addition to class, students must attend lab and physical fitness training. Department permission required. Offered Fall.

MILI 402 ADVANCED MILITARY SCIENCE (3)

Continuation of MILI 401. Department permission required. Offered Spring.

MILI 403 LEADERSHIP LABORATORY (0)**MILI 439 SPECIAL PROBLEMS (3)**

Must be in one of the following Classification(s): Senior. Department permission required.

MSCI (MATERIALS SCIENCE)

School of Engineering/Mech Eng. & Materials Science

MSCI 301 MATERIALS SCIENCE (3)

Introduction to the science of solid materials. Includes metals, ceramics, plastics, and semiconductors, as well as the properties of solid materials from atomic and macroscopic points of view. Required for mechanical engineering and materials science and engineering majors. Offered Fall and Spring.

MSCI 303 MATERIALS SCIENCE JUNIOR LAB (1)

Selected lab experiments in materials science. Open only to junior materials science and engineering majors. Required for materials science and engineering majors. At the start of the semester, please check with the Department of Mechanical Engineering and Materials Science for the time and location of the organizational meeting for the course. Offered Spring.

MSCI 304 APPLIED MATERIALS ENGINEERING (1)

Practical application of the basic principles of materials science. Includes case studies of failures under a variety of conditions, as well as topics in the fabrication and heat treatment of metallic materials. Instructor(s): Cunningham.

MSCI 311 INTRODUCTION TO DESIGN (4)

Introduction of fundamental aspects of design through semester-long group projects. Open to nonmajors only with permission of instructor. Required for materials science and engineering majors. Instructor(s): Barrera.

MSCI 401 THERMODYNAMICS AND TRANSPORT PHENOMENA IN MATERIALS SCIENCE (4)

Unified presentation of the kinetics and thermodynamics of mass and energy transport. Includes heterogeneous equilibrium, diffusion in solids, and heat transfer, as well as their application to engineering design. Required for materials science and engineering majors. Offered Fall. Instructor(s): McLellan.

MSCI 402 MECH PROPERTIES OF MATERIALS (3)

Survey of the mechanical properties of solid materials. Includes basic mechanics, elasticity, plasticity, fracture, fatigue, creep, hardening mechanisms, mechanical testing, and structure-property relationships. Required for materials science and engineering majors. Pre-requisite(s): MATH 211. Offered Spring. Instructor(s): Barrera; Brotzen.

MSCI 404 MATERIALS ENGINEERING AND DESIGN (4)

Exploration of technological aspects of materials selection, design, failure, and analysis. Lab time spent in an industrial setting. Open to nonmajors only with permission of instructor. Required for materials science and engineering majors. Instructor(s): Cunningham.

MSCI 406 PHYSICAL PROPERTIES OF SOLIDS (3)

Survey of the electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Required for materials science and engineering majors. Not offered every year. Pre-requisite(s): MATH 211. URL: www.owl.net.rice.edu/~msci406. Instructor(s): Yakobson.

MSCI 411 METALLOGRAPHY AND PHASE RELATIONS (3)

Study of microstructures that may be observed in metals and alloys, optical metallography (in addition to more sophisticated techniques), and the relationships between structural properties and failures. Required for materials science and engineering majors. Pre-requisite(s): MSCI 301. Offered Spring. Instructor(s): McLellan.

MSCI 415 CERAMICS AND GLASSES (3)

Fundamentals of ceramic and glassy materials, including phase relations, theoretical properties, structure, bonding, and design.

MSCI 500 MATERIALS SCIENCE SEMINAR (0)

A series of seminars on selected topics in Materials Science. Required for materials science and engineering majors. Repeatable for Credit. Offered Fall and Spring.

MSCI 501 MATERIALS SCIENCE SEMINAR (1)

See MSCI 500. Required for materials science and engineering majors. Repeatable for Credit. Offered Fall & Spring.

MSCI 510 COMPUTATIONAL NANOMECHANICS (3)

Fundamentals of mechanical properties in nanometer scale. Role of discrete structure, underlying atomic, molecular and interfacial forces is illustrated with modern examples. Includes overview of computational modeling methods with the emphasis on multi-scale physics. Accessible for senior undergraduates. Instructor permission required. Instructor(s): Yakobson.

MSCI 523 PROPERTIES, SYNTHESIS AND DESIGN OF COMPOSITE MATERIALS (3)

Study of the science of interfaces and the properties that govern their use in composite materials. Not offered every year.

MSCI 535 CRYSTALLOGRAPHY AND DIFFRACTION (3)

Study of crystals by x-ray and electron diffraction and electron microscopy. Includes basic diffraction theory and methods for characterization of structure and the constitution of materials. Required for materials science and engineering majors. Cross-listed with PHYS 535. Offered Fall. URL: www.owl.net.rice.edu/~msci535.

MSCI 537 MATERIALS SCIENCE SENIOR LAB (1)

Selected lab experiments in materials science. Required for materials science and engineering majors. Pre-requisite(s): MSCI 303. Offered Fall.

MSCI 545 THIN FILMS (3)

Exploration of materials issues relevant to thin films. Includes techniques for vapor phase deposition of thin films (e.g., evaporation, sputtering, and chemical vapor deposition), epitaxy, generation of thin film defects, strain, growth anisotropy, and grain structure, as well as electrical, optical, and magnetic properties of thin film materials and structures. Cross-listed with ELEC 545. URL: www.owl.net.rice.edu/~msci545.

MSCI 561 ADVANCED METALLURGICAL LAB I (1)

Students whose interest lies primarily in the field of materials and metallurgy are given the opportunity for research in these fields. Instructor permission required.

MSCI 569 CORROSION SCIENCE AND ENGINEERING (3)

Survey of surface activity and corrosion processes on metals, semiconductors, and insulating materials. Survey of the principles and theories of corrosion, corrosion testing, and the selection of materials for corrosion prevention. Not offered every year. Pre-requisite(s): MSCI 301.

MSCI 570 SENIOR DESIGN THESIS PROJECT (2)

A design project in the materials science field will be undertaken by the student in close collaboration with at least one materials science faculty member.

MSCI 571 SENIOR DESIGN THESIS PROJECT (2)

A design project in the materials science field will be undertaken by the student in close collaboration with at least one materials science faculty member.

MSCI 593 POLYMER SCIENCE AND ENGINEERING (3)

Basic concepts in macromolecular chemistry and their application in the synthesis and chemical modification of polymers. Cross-listed with CHBE 593. Pre-requisite(s): CHEM 211 and CHEM 212. Instructor(s): Armeniades.

MSCI 594 PROPERTIES OF POLYMERS (3)

Study of the molecular organization and physical properties of polymeric materials. Includes elastomeric, semi-crystalline, and glassy polymers, as well as the processing and technology of polymeric systems. Required for materials science and engineering majors. Cross-listed with CHBE 594. Instructor(s): Armeniades.

MSCI 596 CHEMISTRY OF ELECTRONIC MATERIALS (3)

A review of the chemical processes involved in the manufacture of microelectronic chips, including: crystallization, purification, oxidation, thin film methods, lithography and ceramic processing. Usually alternates with CHEM 595. Open to undergraduates by special permission only. Cross-listed with CHEM 596.

MSCI 597 POLYMER SYNTHESIS, SOFT MATERIALS AND NANO-COMPOSITES (3)

The course will cover methods of characterization and some basic synthetic polymer methods (step growth and chain growth approaches). New synthetic polymer methods will be presented including ATRP, ADMET, ROMP, metallocene catalysts and the development of flame retardant polymer blends. Carbon-carbon composites will be discussed, along with the functionalization of carbon nanotubes and their use in nanocomposites. Cross-listed with CHBE 597, CHEM 597. Repeatable for Credit. Offered Spring. Instructor(s): Tour; Barrera.

MSCI 603 TECHNOLOGY MANAGEMENT FOR SCIENTISTS AND ENGINEERS (3)

This course is intended for graduate students in science and engineering who are interested in gaining an understanding of the business of technology. Particular emphasis is placed on the financial and human resources management, business strategy, patents, trademarks, and licenses, as well as new business start-up and development. Cross-listed with CHEM 603.

MSCI 609 FRACTURE MECHANICS (3)

Topics on the theory of linear and nonlinear fracture mechanics. Energetics of fracture, the J-integral, stress and strain fields near crack tips, R-curve behavior. Graduate/Undergraduate version: MECH 518. Instructor(s): Landis.

MSCI 610 CRYSTAL THERMODYNAMICS (3)

Discussion of potentials and third-order elastic constants. Includes the lattice dynamics of harmonic phonons and anharmonic perturbation expansion, as well as the contribution of electrons to the thermodynamics quantities. Not offered every year. Instructor(s): Yakobson.

MSCI 611 INDEPENDENT STUDY (1 TO 9)

Offered Fall.

MSCI 612 INDEPENDENT STUDY (1 TO 9)**MSCI 614 SPECIAL TOPICS (1 TO 9)**

Topics may vary. Please consult with the department for additional information. Offered Fall and Spring.

MSCI 615 SPECIAL TOPICS (1 TO 9)

Topics may vary. Please consult with the department for additional information. Offered Fall and Spring.

MSCI 616 AUTOMOTIVE ENGINEERING: MATERIALS AND DYNAMICS (1 TO 3)

Discussion of the engineering and materials technology that is involved in modern automotive design. Topics include: chasis design and construction; composite design and fabrication; aerodynamics and ground effects; suspension dynamics; performance technology. External expert speakers will provide a real-world perspective. Instructor(s): Barron.

MSCI 621 MMS RESEARCH PROJECT I (3)

This is the first part of the M.M.E. research project course. The faculty advisor, taking into account the background and research interests of the student as well as the research interests of the faculty advisor, will determine the contents. Course requirements will include a final report. Offered Fall and Spring.

MSCI 622 MMS RESEARCH PROJECT II (3)

This is the second part of the M.M.E. research project and continuation of MECH 621. Course requirements will include a final report. Offered Fall and Spring.

MSCI 623 ANALYTICAL SPECTROSCOPIES: TOOLS IN MATERIALS SCIENCE (3)

Exploration of concepts in vacuum technology, thin film metallization, x-ray photoelectron spectroscopy, Auger electron spectroscopy, and x-ray absorption fine structure. Includes lab sessions on XPS and EXAFS analysis. Not offered every year. Pre-requisite(s): MSCI 402 and MSCI 535.

MSCI 634 THERMODYNAMICS OF ALLOYS (3)

Examinations of relations between classical thermodynamics and statistical mechanics as applied to an understanding of solid and liquid alloys. Includes solid-solid, liquid-solid, and gas-solid equilibriums in metallurgy. Not offered every year. Instructor(s): McLellan.

MSCI 635 TRANSFORMATION IN ALLOYS (3)

Study of diffusion in metals and alloys. Includes the mechanism and phenomenology of diffusion-controlled transformations, precipitation from saturated alloys and liquid solutions, and transformations in heat-treated alloys. Not offered every year. Instructor(s): McLellan.

MSCI 666 CONDUCTION PHENOMENA IN SOLIDS (3)

Survey of fundamental aspects of electron and energy transport in conductors, semiconductors, and insulators. Not offered every year. Pre-requisite(s): MSCI 406. Recommended prerequisite(s): MSCI 406 or equivalent. Instructor(s): Brotzen.

MSCI 750 MANAGEMENT FOR SCIENTISTS AND ENGINEERS (3)

This course is designed for science and engineering students who want to understand the management of new and/or small technology based businesses. The course is taught in modular format to give students insights into how technology oriented firms manage intellectual property, marketing, organization behavior, strategy, accounting and finance. Concepts covered will be particularly relevant to students interested in careers in technology or entrepreneurial ventures. This course is part of a two-class sequence and provides the foundation for students taking "NEW VENTURE CREATION FOR SCIENCE AND ENGINEERING" which is offered in the spring. Cross-listed with CHEM 750, MGMT 750. Instructor(s): Barron.

MSCI 751 NEW VENTURE CREATION FOR SCIENCE AND ENGINEERING (3)

This course deals with the concepts and theories relevant to new venture creation. Our primary focus is the start-up process with particular emphasis being placed on market issues, intellectual property and entrepreneurial finance. As part of the course we will evaluate the commercial potential of a live technology drawn from the Rice engineering/science community. The concepts covered will be particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. Course is offered to senior and graduate students. Cross-listed with CHEM 751, MGMT 751. Instructor(s): Barron; Papadopoulos.

MUSI (MUSIC)**School of Music/Music****MUSI 111 MUSICAL LIVES (3)**

Musical biography tends to follow stereotypical patterns that depict composers as heroes who rebel against authority and live on the margins of society. This seminar will focus on the life stories and music of selected 18th and 19th century composers. No musical background necessary. Cross-listed with FSEM 111. Limited enrollment. Offered Fall. Instructor(s): Ferris.

MUSI 112 GREAT LITERATURE IN GREAT MUSIC (3)

A study of six famous literary works, from classical civilization to expressionism, and their incarnation in famous musical compositions. Authors include Vergil, Shakespeare, Beaumarchais, Pushkin, Goethe, and Buchner; paired pieces include operas by Berlioz, Verdi, Mozart, Tchaikovsky, Gounod, and Berg. No technical or reading knowledge of music is required. Cross-listed with FSEM 112. Limited enrollment. Offered Spring. Instructor(s): Citron.

MUSI 117 FUNDAMENTALS OF MUSIC I (3)

For nonmusic majors with minimal music preparation. Rudiments of pitch and duration. Study of scales, chord structure, tonality, and forms. Limited enrollment. Offered Fall and Spring.

MUSI 141 CLASSICAL GUITAR/NON-MAJOR (2)

Private instruction on guitar. Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Limited enrollment. Offered Fall & Spring. Instructor(s): Gaschen.

MUSI 151 FLUTE FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 153 OBOE FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 155 CLARINET FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 157 BASSOON FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 161 HORN FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 163 TRUMPET FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 165 TROMBONE FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 167 TUBA FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 171 PERCUSSION FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 173 VOICE FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Limited enrollment. Offered Fall and Spring.

MUSI 181 PIANO FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Limited enrollment. Offered Fall and Spring.

MUSI 183 ORGAN FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 187 HARP FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 191 VIOLIN FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 193 VIOLA FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 195 VIOLONCELLO FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 197 DOUBLE BASS FOR NON-MAJORS (2)

Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 211 THEORY I (3)

Intensive study of the fundamentals of pitch, rhythm, and timbre. Must be enrolled in one of the following Major(s): Music. Offered Fall. Instructor(s): Applebaum.

MUSI 212 THEORY II (3)

Harmony and counterpart in Baroque and Classical Eras. Must be enrolled in one of the following Major(s): Music. Offered Spring.

MUSI 222 MEDIEVAL AND RENAISSANCE ERAS (3)

Introduction to the study of Western music history, with emphasis on music before 1600. Score reading ability required. Cross-listed with MDST 222. Pre-requisite(s): MUSI 211 or MUSI 317, or permission of instructor. Offered Spring.

MUSI 231 AURAL SKILLS AND PERFORMANCE TECHNIQUE I (2)

Preliminary studies in ear-training, sight-singing, and dictation. Offered Fall.

MUSI 232 AURAL SKILLS AND PERFORMANCE TECHNIQUE II (2)

Continuation of MUSI 231. Offered Spring. Instructor(s): Applebaum.

MUSI 236 MUSIC HISTORY THROUGH TECHNOLOGY (3)

An exploration of music history and literature taught electronically. Limited enrollment. Offered Spring. Instructor(s): Gottschalk.

MUSI 251 SECONDARY FLUTE (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 253 SECONDARY OBOE (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 255 SECONDARY CLARINET (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 257 SECONDARY BASSOON (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 261 SECONDARY HORN (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 263 SECONDARY TRUMPET (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 265 SECONDARY TROMBONE (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 267 SECONDARY TUBA (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 271 SECONDARY PERCUSSION (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 273 SECONDARY VOICE (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 281 SECONDARY PIANO (2)

Fall offerings: Level 1 offered MWF 12:00-12:50, TR 9:25-10:40. Level 3 offered MWF 8:00-8:50, MWF 10:00-10:50, TR 8-9:15. Spring offerings: Level 2 offered MWF 1-1:50, TR 9:25-10:40. Level 4 offered MWF 8-8:50, MWF 10-10:50; TR 8:00-9:15. Repeatable for Credit. Offered Fall and Spring.

MUSI 283 SECONDARY ORGAN (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 285 SECONDARY HARPSICHORD (2)

Department permission required. Repeatable for Credit. Not offered Fall and Spring.

MUSI 287 SECONDARY HARP (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 291 SECONDARY VIOLIN (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 293 SECONDARY VIOLA (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 295 SECONDARY VIOLONCELLO (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 297 SECONDARY DOUBLE BASS (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 303 UNDERGRAD COMPOSITION SEMINAR (1)

Must be enrolled in one of the following Major(s): Music. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Gottschalk.

MUSI 305 COMPOSITION ELECTIVE (3)

Must be enrolled in one of the following Major(s): Music. Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 307 COMPOSITION FOR NON-MAJORS (3)

Creative composition employing 20th and 21st century vocabularies. Instructor permission required. Repeatable for Credit. Limited enrollment. Offered Fall and Spring.

MUSI 311 THEORETICAL STUDIES III (3)

An examination of music from the Classical Era through the late Nineteenth Century, with particular focus on phrase structure, form and chromatic harmony. Offered Fall. Instructor(s): Gottschalk.

MUSI 312 THEORETICAL STUDIES IV (3)

Analysis of music since 1900. Offered Spring. Instructor(s): Brandt.

MUSI 317 THEORY FOR NON-MAJORS I (3)

Study of harmony, melody, rhythm, and form. May not be enrolled in any of the following Major(s): Music. Instructor permission required. Limited enrollment. Offered Fall.

MUSI 318 THEORY FOR NON-MAJORS II (3)

Continuation of MUSI 317. May not be enrolled in any of the following Major(s): Music. Pre-requisite(s): MUSI 317. Limited enrollment. Offered Spring.

MUSI 321 BAROQUE AND EARLY CLASSICAL ERAS (3)

Advanced historical studies in music of the seventeenth and eighteenth centuries. Score reading ability required. Pre-requisite(s): (MUSI 212 or MUSI 317) and MUSI 222, or permission of instructor. Offered Fall. Instructor(s): Barnett.

MUSI 322 CLASSICAL AND ROMANTIC ERAS (3)

Advanced historical studies in the music of the eighteenth and nineteenth centuries. Score reading ability required. Pre-requisite(s): MUSI 321, or permission of instructor. Offered Spring. Instructor(s): Citron.

MUSI 323 ROMANTIC SYMPHONY (3)

Exploration of the genre of the symphony in the nineteenth century in the wake of Beethoven. Pre-requisite(s): MUSI 421, or permission of instructor. Not offered Fall and Spring. Instructor(s): Bailey.

MUSI 324 OPERA ON FILM (3)

Study of major treatments of cinematic and televised versions of opera, with a focus on aesthetics, interpretation, and representation. Limited enrollment. Offered Spring. Instructor(s): Citron.

MUSI 327 MUSIC LITERATURE FOR NON-MAJORS I (3)

Historical survey of music from the Middle Ages to 1750. Not offered Fall and Spring Instructor(s): Bailey.

MUSI 328 MUSIC LITERATURE FOR NON-MAJORS II (3)

Historical survey of music from 1750 to the present. Not offered Fall and Spring Instructor(s): Bailey.

MUSI 329 SPECIAL STUDIES IN MUSIC HISTORY (3)

Special studies in music history. Topics may vary. Please consult with the department for additional information. Repeatable for Credit. Not offered Fall and Spring.

MUSI 331 AURAL SKILLS AND PERFORMANCE TECHNIQUES III (2)

Continuation of MUSI 232. Offered Fall. Instructor(s): Chen.

MUSI 332 AURAL SKILLS AND PERFORMANCE TECHNIQUES IV (2)

Continuation of MUSI 331. Offered Spring. Instructor(s): Chen.

MUSI 334 CAMPANILE ORCHESTRA (1)

Registration is by audition only. Repeatable for Credit. Offered Fall and Spring.

MUSI 335 UNDERGRADUATE CHORUS (1)

Section 1, Shepherd Singers (by audition only); Section 2, Rice Chorale; Section 3, Sallyport. Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring Instructor(s): Jaber.

MUSI 337 UNDERGRADUATE ORCHESTRA (2)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rachleff.

MUSI 338 CHAMBER MUSIC (1)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring.

MUSI 340 CONCERT BAND (1)

Section 1: SYMPHONIC BAND; Section 2: CHAMBER WIND ENSEMBLE Repeatable for Credit. Offered Fall and Spring. Instructor(s): Throckmorton.

MUSI 341 JUNIOR RECITAL (0)

Department permission required. Offered Fall and Spring.

MUSI 342 JAZZ ENSEMBLE (1)

Section 1, Jazz Ensemble I; Section 2, Jazz Ensemble II. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Slezak.

MUSI 343 PROFESSIONAL DEVELOPMENT FOR MUSICIANS (2)

This course will explore the practical aspects of building and sustaining a career in music. Using networking, self-promotion, and presentation skills, students will create projects needed for pursuing their careers. Guest speakers will offer additional resources for students as they learn how to navigate the world of the Music Business. Must be in one of the following Classification(s): Graduate, Junior, Senior. Offered Spring. Instructor(s): Rarick.

MUSI 344 ACTING FOR SINGERS (1)**MUSI 345 APPLIED STUDIES IN JAZZ (2)**

Private lessons on specific advanced techniques in jazz improvisation. Must register with the Shepherd School and the Registrar's Office by the second week of classes. Department permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Slezak.

MUSI 351 CONCENTRATION FLUTE (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 352 CONCENTRATION FLUTE INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Buys.

MUSI 353 CONCENTRATION OBOE (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 354 CONCENTRATION OBOE INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Atherholt.

MUSI 355 CONCENTRATION CLARINET (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 356 CONCENTRATION CLARINET INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Webster.

MUSI 357 CONCENTRATION BASSOON (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 358 CONCENTRATION BASSOON INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Kamins.

MUSI 361 CONCENTRATION HORN (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 362 CONCENTRATION HORN INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): VerMeulen.

MUSI 363 CONCENTRATION TRUMPET (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 364 CONCENTRATION TRUMPET INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Speziale.

MUSI 365 CONCENTRATION TROMBONE (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 366 CONCENTRATION TROMBONE INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Waters.

MUSI 367 CONCENTRATION TUBA (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 368 CONCENTRATION TUBA INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Kirk.

MUSI 371 CONCENTRATION PERCUSSION (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 372 CONCENTRATION PERCUSSION INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Brown.

MUSI 373 CONCENTRATION VOICE (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 374 CONCENTRATION VOICE INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Kaun; King.

MUSI 381 CONCENTRATION PIANO (2)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 382 CONCENTRATION PIANO INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Fischer; Shank.

MUSI 383 CONCENTRATION ORGAN (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 384 CONCENTRATION ORGAN INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Holloway.

MUSI 387 CONCENTRATION HARP (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 388 CONCENTRATION HARP INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Page.

MUSI 389 COLLABORATIVE PIANO SKILLS (1 TO 2)

A practicum exploring the pianist as an ensemble player. 3 sessions weekly. Performance class for pianists in partnership with instrumentalists and singers-particular techniques discovered in balance, pedaling, articulation, style, etc.; Supervised sight-reading private appointment with instructor on individual repertoire-songs, sonatas, concerto reductions, etc. Repeatable for Credit. Offered Spring. Instructor(s): Fischer.

MUSI 391 CONCENTRATION VIOLIN (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 392 CONCENTRATION VIOLIN INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Goldsmith; Luca; Winkler.

MUSI 393 CONCENTRATION VIOLA (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 394 CONCENTRATION VIOLA INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Dunham; Ritscher.

MUSI 395 CONCENTRATION VIOLONCELLO (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 396 CONCENTRATION VIOLONCELLO INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Fischer; Harrell.

MUSI 397 CONCENTRATION DOUBLE BASS (2)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 398 CONCENTRATION DOUBLE BASS INTENSIVE (3)

Instructor permission required. Repeatable for Credit. Offered Fall and Spring Instructor(s): Ellison.

MUSI 401 COMPOSITION FOR MAJORS (3)

Must be enrolled in one of the following Major(s): Music. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Al-Zand; Brandt; Chen; Gottschalk; Jalbert; Lavenda; Stallmann.

MUSI 403 BASIC ELECTRONIC MUSIC (3)

Introduction to electronic and computer music. Limited enrollment. Offered Fall. Instructor(s): Stallmann.

MUSI 404 ELECTRONIC MUSIC COMPOSITION (3)

Continuation of MUSI 403. Pre-requisite(s): MUSI 403, or permission of instructor. Limited enrollment. Offered Spring. Instructor(s): Ochoa.

MUSI 405 MUSIC BUSINESS AND LAW (3)

Instructor permission required. Limited enrollment. Offered alternate years. Instructor(s): Gottschalk.

MUSI 406 CLASSICAL CONCERTO PERFORMANCE CLASS (1)

Study of concerto repertoire for a chosen instrument with emphasis on stylistically informed performance. Instructor permission required. Repeatable for Credit. Limited enrollment. Not offered Fall and Spring Instructor(s): Luca.

MUSI 407 CHAMBER MUSIC IN THE CLASSIC PERIOD (3)

Performance styles and rhetoric are examined and directed toward performance approaches to the music of Haydn, Mozart, and early Beethoven, and others. Practical application of dances, textures, and popular topics of the time as well as an understanding of harmonic and formal implications. String quartet majors only - other music majors may audit. Instructor(s): Goldsmith.

MUSI 408 UNACCOMPANIED BACH PERFORMANCE CLASS (1)

Performance with commentary about stylistic and historic aspects of the works for one unaccompanied instrument of J. S. Bach. Students will perform versions in original form or transcribed for their instrument when applicable. Instructor permission required. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Luca.

MUSI 409 SEMINAR IN CLASSICAL PERFORMANCE STYLE (1)

Haydn, Mozart, early Beethoven, CPE Bach and other repertoire of the period. You must belong to a group that has already been coached and is prepared to perform at least one movement. Instructor permission required. Not offered Fall and Spring. Instructor(s): Luca.

MUSI 414 PIANO CHAMBER MUSIC LITERATURE (3)

Survey of the classical era with a focus on 20th and 21st century chamber music with piano. Not offered Fall & Spring. Instructor(s): Connelly.

MUSI 415 BAND ARRANGING (1)

Creative band arranging for marching, jazz, and concert bands. Study of contemporary harmony, musical style, and scoring supported by practical performance and analysis of student projects. Instructor(s): Throckmorton.

MUSI 416 ORCHESTRATION (3)

Intensive study of the individual instruments of the orchestra and orchestrational techniques from the classical period through the present. Limited enrollment. Offered Fall. Instructor(s): Brandt.

MUSI 417 MUSIC FOR FILM (3)

Instructor permission required. Limited enrollment. Instructor(s): Gottschalk.

MUSI 421 THE MODERN ERA (3)

Twentieth century and contemporary. Advanced historical studies in music of the twentieth and twenty-first centuries. Score reading ability required. Pre-requisite(s): MUSI 322, or permission of instructor. Offered Fall. Instructor(s): Bailey.

MUSI 422 RENAISSANCE MUSIC (3)

A study of the major musical styles and composers of Western art and music between 1400 and 1600 and their historical, cultural, and sociological contexts. Not offered Fall and Spring.

MUSI 424 ORGAN LITERATURE I (3)

Offered Fall. Instructor(s): Holloway.

MUSI 425 ORGAN LITERATURE II (3)

Offered Spring. Instructor(s): Holloway.

MUSI 426 PIANO LITERATURE – SURVEY (3)

Offered Fall. Instructor(s): Fischer.

MUSI 427 ORGAN LITERATURE III (3)

Not offered Fall and Spring. Instructor(s): Holloway.

MUSI 428 ORGAN LITERATURE IV (3)

Not offered Fall and Spring. Instructor(s): Holloway.

MUSI 429 MUSIC OF THE MIDDLE AGES (3)

A study of the major musical styles and composers of western art music before 1400 and their historical, cultural, and sociological contexts. Cross-listed with MDST 429. Offered Fall.

MUSI 431 AURAL SKILLS AND PERFORMANCE TECHNIQUES V (2)

Continuation of MUSI 332. Offered Fall. Instructor(s): Gottschalk.

MUSI 432 GRADUATE AURAL SKILLS REVIEW (2)

Previously offered as MUSI 437, a remedial course in ear-training, sight-singing, and musical dictation. Not offered Fall and Spring. Instructor(s): Gottschalk.

MUSI 435 CONTEMPORARY MUSIC ENSEMBLE (1)

Note: Does not count as chamber music. Instructor permission required. Repeatable for Credit. Not offered Fall and Spring.

MUSI 436 COLLEGIUM (1)

Performance of music up to the early 17th century. Note: Does not count as chamber music. Instructor permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Barnett.

MUSI 437 SEMINAR IN CHURCH MUSIC (2)

A seminar in various aspects of church music. For organ majors only. Repeatable for Credit. Offered Fall & Spring. Instructor(s): Simpson.

MUSI 439 CHORAL CONDUCTING (3)

The fundamental skills of choral conducting, including baton techniques, score reading, and rehearsal procedures. Conducting materials will be selected from representative choral works. Not offered Fall and Spring. Instructor(s): Jaber.

MUSI 440 CHORAL CONDUCTING II (3)

Advanced techniques of choral conducting with emphasis on expressive gestures and phrasal conducting, interpretation and chironomy of chant, recitative conducting, repertoire selection, score preparation, and conducting of choral-instrumental works. Not offered Fall and Spring. Instructor(s): Jaber.

MUSI 441 SENIOR RECITAL (0)

Department permission required. Offered Fall and Spring.

MUSI 442 RECITAL ACCOMPANYING (1)

Accompanying a single student recital, including the preview, dress rehearsal, performance, their lessons with the soloist's teacher, and practice times mutually agreeable to soloist and accompanist. Instructor permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Connelly.

MUSI 443 STUDIO ACCOMPANYING (1)

Accompanying private lessons in studios as assigned for a total of four hours per week. Instructor permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Connelly.

MUSI 444 PRACTICUM IN CONTEMPORARY MUSIC (2)

Each student will write a piece for an ensemble formed within the class. The piece will be rehearsed and coached as it is being written, and will be performed on various recitals. Must be enrolled in one of the following Major(s): Music. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Lavenda.

MUSI 445 KEYBOARD SKILLS I (2)

For organ majors only. Not offered Fall and Spring. Instructor(s): Holloway.

MUSI 446 KEYBOARD SKILLS II (2)

For organ majors only. Not offered Fall and Spring. Instructor(s): Holloway.

MUSI 447 INTRODUCTION TO PIANO TECHNOLOGY (2)

Introduction to the tuning and maintenance of pianos. Includes the theory and acoustics of tuning, a brief history of the piano, and a general exposure to restoration, as well as "hands-on" experience. Not offered Fall and Spring. Instructor(s): Shank.

MUSI 448 PIANO TECHNOLOGY PRACTICUM FOR PIANISTS (2)

A practicum exploring the basic maintenance procedures of the modern pianoforte. Students will learn cleaning and unison tuning as well as basic action regulation. Not offered Fall and Spring. Instructor(s): Shank.

MUSI 449 UNDERGRADUATE INDEPENDENT STUDY (1 TO 3)

Department permission required. Repeatable for Credit. Offered Fall and Spring.

MUSI 450 QUALIFYING RECITAL (0)

Department permission required. Offered Fall and Spring.

MUSI 451 FLUTE FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Buyse.

MUSI 453 OBOE FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Atherholt.

MUSI 454 OBOE TECHNOLOGY (2)

A hands on study of the basic maintenance and regulation of the oboe, as well as an overview of available equipment for gonging and shaping. Recommended prerequisite(s): DMA enrollment in oboe performance. Instructor(s): Atherholt.

MUSI 455 CLARINET FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Webster.

MUSI 457 BASSOON FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Kamins.

MUSI 459 THEORY OF WOOD WIND PERFORMANCE TECHNIQUES (1)

Primarily for conductors and composers.

MUSI 461 HORN FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): VerMeulen

MUSI 463 TRUMPET FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Speziale.

MUSI 465 TROMBONE FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Waters.

MUSI 467 TUBA FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Kirk.

MUSI 469 THEORY OF BRASS PERFORMANCE TECHNIQUES (1)

Primarily for conductors and composers.

MUSI 471 PERCUSSION FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Brown.

MUSI 472 GENERAL PERCUSSION STUDIES (1)

A class that will address other issues of percussion playing to prepare for a job that is not related to regular classical studies, i.e. drumset, jazz kits, rudimental drumming, instrument building, playing shows, sight-reading, etc. The emphasis of the class will vary each semester. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Brown.

MUSI 473 VOICE FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Kaun; King.

MUSI 474 OPERA THEATER WORKSHOP (1)

Operatic techniques for the singer/actor: the cultivation, through study and performance, of free, expressive and significant movement on stage, and the development of musical, dramatic and muscular sensitivity as the basis of good opera theater. Participation, according to ability, in scenes recitals and major productions. Repeatable for Credit. Offered Fall and Spring.

MUSI 475 THEORY OF VOCAL PERFORMANCE TECHNIQUES (1)

Primarily for conductors and composers.

MUSI 479 THEORY OF PERCUSSION PERFORMANCE TECHNIQUES (1)

Primarily for conductors and composers.

MUSI 481 PIANO FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Connelly; JKFischer; Parker; Roux.

MUSI 483 ORGAN FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Holloway.

MUSI 487 HARP FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Page.

MUSI 491 VIOLIN FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Goldsmith; Luca; Winkler.

MUSI 492 STRING TECHNOLOGY (2)

An introduction and practicum in the maintenance and repair of string instruments. Instructor permission required. Offered alternate years.

MUSI 493 VIOLA FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Dunham; Ritscher.

MUSI 495 VIOLONCELLO FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): N. Fischer; Harrell.

MUSI 497 DOUBLE BASS FOR MAJORS (3)

Must be enrolled in one of the following Level(s): Undergraduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Ellison; Pitts.

MUSI 499 THEORY OF STRING PERFORMANCE TECHNIQUES (1)

Primarily for conductors and composers. Offered alternate years.

MUSI 503 ACOUSTICS (3)

An introduction to the physical acoustics of sound and its psychological perception. Intended for those interested in applying these principles towards the composition of music using computer software systems. Instructor(s): Gottschalk.

MUSI 504 COMPUTER ASSISTED MUSIC COMPOSITION (3)

Instructor permission required. Not offered Fall and Spring. Instructor(s): Stallmann.

MUSI 505 MULTIMEDIA AUTHORIZING (3)

Instructor permission required. Not offered Fall and Spring. Instructor(s): Stallmann.

MUSI 511 GRADUATE THEORY REVIEW (2)

Offered Fall. Instructor(s): Brandt.

MUSI 512 ANALYTICAL SYSTEMS (3)

Practical applications of principal analytical systems. Offered Spring. Instructor(s): Lavenda.

MUSI 513 MODAL COUNTERPOINT (3)

Contrapuntal techniques of the 16th century, and analysis of selected works. Limited enrollment. Offered Fall. Instructor(s): Gottschalk.

MUSI 514 SCORE READING AND THEORY AT THE KEYBOARD (3)

Advanced studies in reading an orchestral score at the keyboard. Limited enrollment. Offered Fall. Instructor(s): Jalbert.

MUSI 516 ADVANCED ORCHESTRATION (3)

Advanced studies in orchestration techniques from the classical era through the present day. Must be enrolled in one of the following Major(s): Music. Pre-requisite(s): MUSI 416, or permission of instructor. Limited enrollment. Offered Spring. Instructor(s): Jalbert.

MUSI 517 EARLY MODERN MASTERS (3)

Analysis of music from 1900-1950. Must be enrolled in one of the following Major(s): Music. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Chen.

MUSI 520 VERDI AND WAGNER (3)

In-depth explanation of two operas of each composer (recent choices are Rigoletto, Falstaff, Tristan und Isolde, & Parsifal), and comparison of the style & influence of the two figures. We also place these composers & works in cultural context, especially nationalism and the "music of the future" debate. Pre-requisite(s): MUSI 429. Limited enrollment. Not offered Fall and Spring. Instructor(s): Citron.

MUSI 521 GRADUATE REVIEW OF MUSIC HISTORY I (3)

Survey of Medieval, Renaissance, and Baroque music for graduate students. Assigned on the basis of placement exam only. Offered Fall. Instructor(s): Ferris.

MUSI 522 GRADUATE REVIEW OF MUSIC HISTORY II (3)

Survey of Classical, Romantic and 20th century music for graduate students. Assigned on the basis of placement exam only. Offered Spring. Instructor(s): Barnett.

MUSI 523 BIBLIOGRAPHY AND RESEARCH METHODS (3)

Study of bibliography methods and techniques in research methodology. Limited enrollment. Offered Fall. Instructor(s): Dumont.

MUSI 524 AMERICAN MUSIC (3)

Exploration of art music in the United States, ca. 1800-ca. 1940, with reference to earlier American and European styles. Pre-requisite(s): MUSI 421. Limited enrollment. Offered Spring. Instructor(s): Bailey.

MUSI 525 PERFORMANCE PRACTICES SEMINAR (3)

The study of performing practices of music prior to the Romantic era. Topics will range from pre-performance considerations of pitch and tuning systems to those of performance, such as basso continuo realization, improvisation, vibrato, and articulation. Limited enrollment. Offered Spring. Instructor(s): Barnett.

MUSI 526 WOMEN IN MUSIC (3)

Study of gender in music, including aesthetics and representation, and of the major roles women have assumed in music, especially as composers, performers and patrons. While the course emphasizes the western art tradition, other types of music are explored as well. Cross-listed with WGST 440. Limited enrollment. Offered Fall. Instructor(s): Citron

MUSI 527 TOPICS IN EARLY MUSIC (3)

Advanced study in selected topics in music history prior to 1600. Topics may vary. Please consult with the department for additional information. Repeatable for Credit. Offered Spring.

MUSI 528 TOPICS IN THE 17TH AND 18TH CENTURIES (3)

Topics in the 17th and 18th Centuries. Topics may vary. Please consult with the department for additional information. Repeatable for Credit. Limited enrollment. Not offered Fall and Spring Instructor(s): Barnett; Ferris; Staff.

MUSI 529 TOPICS IN 19TH AND 20TH CENTURIES (3)

Advanced study in selected topics in music history of the 19th and 20th centuries. Topics may vary. Please consult with the department for additional information. Repeatable for Credit. Limited enrollment. Offered Spring. Instructor(s): Bailey; Citron; Ferris.

MUSI 531 ORCHESTRAL REPERTOIRE (1)

Section 1: violin; Section 2: viola; Section 3: cello; Section 4: double bass; Section 5: woodwinds; Section 6: brass; Section 7: percussion; Section 8: harp. Repeatable for Credit. Offered Fall and Spring.

MUSI 533 GRADUATE CONDUCTING SEMINAR (1)

Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rachleff.

MUSI 545 SERVICE SKILLS I (2)

For organ majors only. Must be enrolled in one of the following Level(s): Graduate. Offered Fall. Instructor(s): Kloeckner.

MUSI 546 SERVICE SKILLS II (2)

For organ majors only. Offered Spring. Instructor(s): Holloway.

MUSI 547 ORGAN PEDAGOGY (2)

Not offered Fall and Spring. Instructor(s): Holloway.

MUSI 549 VOICE PEDAGOGY (2)

Introduction to anatomy, physiology and function of the singing voice. Must be enrolled in one of the following Level(s): Graduate. Limited enrollment. Offered alternate years.

MUSI 551 MUSIC OF RICHARD STRAUSS (3)

An examination of Strauss's musical style and professional reputation in the context of changing aesthetic and political perspectives from the 1880s to the 1940s. Analysis of selected lieder, symphonic poems, and operas, including "Salome" and "Der Rosenkavalier". Limited enrollment. Offered Fall. Instructor(s): Bailey.

MUSI 552 WORDS AND MUSIC (3)

A study of the relationship between text and music in non-operatic solo vocal repertory drawn from a wide historical range. Topics will include: correspondences between musical and poetic forms, how a song transforms the text that it sets, how text expression has led composers to experiment with musical style. Limited enrollment. Not offered Fall and Spring. Instructor(s): Ferris.

MUSI 559 WOODWIND PEDAGOGY (2)

Offered alternate years

MUSI 569 BRASS PEDAGOGY (2)

Offered alternate years.

MUSI 571 VOCAL COACHING (1)

Repeatable for Credit. Offered Fall and Spring. Instructor(s): deChambrier; Franciosi; Jaber.

MUSI 573 ITALIAN DICTION (1)

Instructor(s): Franciosi.

MUSI 574 GERMAN DICTION (1)**MUSI 575 VOICE REPERTOIRE I (2)**

Offered Fall. Instructor(s): N. Bailey.

MUSI 576 VOICE REPERTOIRE II (2)

Offered Spring. Instructor(s): N. Bailey.

MUSI 577 ENGLISH DICTION (1)**MUSI 578 FRENCH DICTION (1)****MUSI 579 PERCUSSION PEDAGOGY (2)****MUSI 583 INSTRUMENTAL ACCOMPANYING TECHNIQUES (2)**

A course for piano majors, emphasizing practical skills of accompanying strings and wind instruments in a wide variety of repertoire.

MUSI 584 VOCAL COACHING TECHNIQUES FOR PIANISTS (2)

A course for piano majors, to develop skills of accompanying and coaching singers. Topics will include basic vocal production and terminology, lieder, opera, and oratorio. Offered alternate years.

MUSI 588 PIANO PEDAGOGY I (2)

An overview of the group piano area which includes a comprehensive study of standard methods, in-depth discussion of group vs individual lessons, and a supervised student teaching practicum. Offered alternate years.

MUSI 589 PIANO PEDAGOGY II (2)

An intensive study of studio teaching with an overview of different methods as well as guidance in studio organization and management. Each student will participate in a private teaching practicum as well. Offered alternate years.

MUSI 599 STRING PEDAGOGY (2)

Section 1 Violin; Section 2 Viola; Section 3 Cello; Section 4 Double Bass. Offered alternate years.

MUSI 601 COMPOSITION FOR MAJORS ADVANCED AND GRADUATES (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Al-Zand; Brandt; Chen; Gottschalk; Jalbert; Lavenda; Stallmann.

MUSI 603 GRADUATE COMPOSITION SEMINAR (1)

Repeatable for Credit. Offered Fall and Spring. Instructor(s): Gottschalk.

MUSI 605 ADVANCED ELECTRONIC AND COMPUTER MUSIC SYSTEMS (3)

Advanced topics in computer and electronic music composition Instructor permission required. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Stallmann.

MUSI 606 ADVANCED COMPUTER SOUND SYNTHESIS (3)

Continuation of MUSI 605. Pre-requisite(s): MUSI 605, or permission of instructor. Repeatable for Credit. Limited enrollment. Offered Spring. Instructor(s): Ochoa.

MUSI 610 ADVANCED OPERA WORKSHOP (2)

For Doctoral students only. Provides singers with broad understanding of opera production. Lectures emphasize the exploration of music and text to develop the director's concept, the development of underlying themes through staging, technical aspects of opera production, and methods for coaching singing actors. Students will direct and perform in opera scenes. Repeatable for Credit.

MUSI 611 PEDAGOGY OF THEORY (3)

The practical application of various teaching methods, and an in depth study of college-level materials. Limited enrollment. Not offered Fall and Spring. Instructor(s): Lavenda.

MUSI 613 TONAL COUNTERPOINT (3)

18th Century counterpoint in the style of J.S. Bach. Limited enrollment. Offered Spring. Instructor(s): Al-Zand.

MUSI 614 SPECIAL TOPICS IN MUSIC THEORY (3)

Topics may vary. Please consult with the department for additional information.

MUSI 615 INTRODUCTION TO JAZZ (3)

Topics in jazz analysis and performance. Examination of important jazz recordings and a consideration of the music's historical development and social context. Open to both music and non-music majors and to both jazz and classical performers. Recommended prerequisite(s): Ability to read music well and some previous study in music theory. Offered alternate years. Instructor(s): Al-Zand.

MUSI 617 MUSIC SINCE 1950 (3)

Study and analysis of composers and music from Post- World War II to the present. Limited enrollment. Offered Spring. Instructor(s): Chen.

MUSI 621 SELECTED STUDIES IN MUSIC HISTORY (3)

Topics may vary. Please consult with the department for additional information. Limited enrollment. Offered Fall.

MUSI 622 EARLY OPERA (3)

A study of opera history from the beginning of the seventeenth Century through Mozart's early works of the 1770's. We will consider literary sources, versification, musical forms, and the periodic "reforms" within the first two centuries of opera. Limited enrollment. Not offered Fall and Spring. Instructor(s): Barnett.

MUSI 623 J.S. BACH: CAREER, WORKS, AND CRITICAL RECEPTION (3)

An examination of Bach's music and the social circumstances in which he created it. A substantial portion of the course will focus on issues and controversies in recent Bach scholarship. Limited enrollment. Offered Fall. Instructor(s): Barnett.

MUSI 624 SEMINAR ON A SELECTED COMPOSER (3)

Advanced study of the music of a single composer. Topics may vary. Please consult with the department for additional information. Repeatable for Credit. Limited enrollment. Not offered Fall and Spring.

MUSI 625 MOZART OPERAS (3)

Study of three or four of Mozart's operas in-depth, with a focus on how music shapes drama, interpretation, characterization, and meaning. Limited enrollment. Not offered Fall and Spring. Instructor(s): Citron.

MUSI 626 THE CLASSICAL STYLE (3)

A study of the way in which Haydn, Mozart, and Beethoven create large musical forms that have purely musical meaning which does not derive from a text. We will consider various approaches to understanding musical meaning including rhetoric, structure, and style. Limited enrollment. Not offered Fall and Spring. Instructor(s): Ferris.

- MUSI 627 ROMANTIC SONGS AND PIANO PIECES (3)**
Study of songs and piano character pieces of Shumann, Chopin, Mendelssohn, and Schubert from analytical and historical perspectives. Limited enrollment. Not offered Fall and Spring. Instructor(s): Ferris.
- MUSI 628 BRAHMS (3)**
Study of Brahms in the context of 19th-century music and culture. Selected works are analyzed in detail and interpreted in light of formative influences (Schumann and older music) and contemporary debates (Wagnerism and Viennese musical politics). Limited enrollment. Not offered Fall and Spring. Instructor(s): Citron.
- MUSI 629 OPERA 1875-1925 (3)**
In-depth study of Bizet's *carmen*, Verdi's *Otello*, Strauss's *Elektra*, and Berg's *Wozzeck*. The course emphasizes the role of music in shaping drama, characterization, and meaning. Limited enrollment. Offered Fall. Instructor(s): Citron.
- MUSI 630 GRADUATE CHORAL CONDUCTING SEMINAR (3)**
Repeatable for Credit. Offered Fall and Spring. Instructor(s): Jaber.
- MUSI 631 MOCK AUDITION (0)**
Department permission required. Offered Fall and Spring.
- MUSI 633 COMPREHENSIVE PRACTICUM IN PIANO TUNING (3)**
The complete restoration of a studio or performance piano under the scrutiny of the instructor. Areas of emphasis include restringing, the installation of new action parts and dampers, and the finish regulation and voicing of these parts. Not offered Fall and Spring. Instructor(s): Shank.
- MUSI 635 ADVANCED ORCHESTRA (2)**
Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rachleff.
- MUSI 636 CHAMBER MUSIC (1)**
Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
- MUSI 637 ADVANCED CONDUCTING FOR MAJORS (3)**
Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rachleff.
- MUSI 640 ADVANCED CHORUS (1)**
Section 1, Shepherd Singers (by audition only); Section 2, Rice Chorale; Section 3, Sallyport. Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring Instructor(s): Jaber.
- MUSI 641 MASTER'S RECITAL I (0)**
Department permission required. Offered Fall and Spring.
- MUSI 642 ACCOMPANYING INSTEAD OF ENSEMBLE (1)**
Taken in lieu of MUSI 635 or 640. Student to fulfill requirements of MUSI 442 or 443. Instructor permission required. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Connelly.
- MUSI 645 ORGAN CONSTRUCTION (2)**
Not offered Fall and Spring. Instructor(s): Visser.
- MUSI 647 MASTER'S THESIS (3)**
Repeatable for Credit. Offered Fall and Spring.
- MUSI 649 GRADUATE INDEPENDENT STUDY (1 TO 3)**
Department permission required. Repeatable for Credit. Offered Fall and Spring.
- MUSI 651 FLUTE FOR MAJORS-ADVANCED (3)**
Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Buyse.
- MUSI 653 OBOE FOR MAJORS-ADVANCED (3)**
Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Atherholt.
- MUSI 655 CLARINET FOR MAJORS-ADVANCED (3)**
Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Webster.
- MUSI 656 BASSOON FOR MAJORS-ADVANCED (3)**
Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Kamins.
- MUSI 661 HORN FOR MAJORS-ADVANCED (3)**
Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): VerMeulen.

MUSI 663 TRUMPET FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Speziale.

MUSI 665 TROMBONE FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Waters.

MUSI 667 TUBA FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Kirk.

MUSI 671 PERCUSSION FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Brown.

MUSI 673 VOICE FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Kaun; King.

MUSI 681 PIANO FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Connelly; Parker; Roux.

MUSI 683 ORGAN FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Holloway.

MUSI 686 APPLIED PIANO TECHNOLOGY (3)

The comprehensive study of tuning all important historical and modern temperaments; supervised work on action voicing, regulation, and restoration. Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Shank.

MUSI 687 HARP FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Page.

MUSI 689 PIANO FOR CHAMBER MUSIC AND ACCOMPANYING MAJORS, ADVANCED/GRADUATE (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Connelly.

MUSI 690 INDIVIDUAL INSTRUMENT COACHING FOR STRING QUARTET MAJORS (2)

Advanced individual instrumental coaching for students in the M.Mus. string quartet program. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Dunham; Fischer; Goldsmith.

MUSI 691 VIOLIN FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Goldsmith; Luca; Winkler.

MUSI 693 VIOLIN FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Dunham; Ritscher.

MUSI 695 VIOLONCELLO FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): N. Fischer; Harrell.

MUSI 697 DOUBLE BASS FOR MAJORS-ADVANCED (3)

Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring.
Instructor(s): Ellison; Pitts.

MUSI 698 ADVANCED STRING QUARTETS (4)

Private lessons for graduate students enrolled in the M.Mus. string quartet program. Must be enrolled in one of the following Level(s):Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Dunham.

MUSI 700 GRADUATE RESEARCH (1 TO 9)

Repeatable for Credit.

MUSI 707 DOCTORAL INDEPENDENT STUDY, COMPOSITION (3)

Independent project at the doctoral level.

MUSI 711 ANALYTICAL APPROACHES (3)

In depth exploration of tonal and post-tonal analytical procedures. Required of all doctoral students. Recommended prerequisite(s): MUSI 512 or equivalent. Offered Spring. Instructor(s): Al-Zand.

MUSI 712 SEMINAR IN ADVANCED ANALYSIS (3)

This class will build on the concept and materials presented in MUSI 711. Students will do in-depth analyses of significant pieces from several style periods. Pre-requisite(s): MUSI 711, or permission of instructor. Limited enrollment. Offered alternate years. Instructor(s): Lavenda.

MUSI 721 MUSIC OF SCHOENBERG (3)

Study of the music of Arnold Schoenberg in the context of the major musical centers and artistic movements that colored his works: Vienna, Berlin, romanticism, expressionism and the New Objectivity. Limited enrollment. Offered Spring. Instructor(s): Bailey.

MUSI 722 MUSIC OF STRAVINSKY (3)

Study of Igor Stravinsky's major works to ca.1925 in the context of his early training, commissions from Diaghilev, exile in Switzerland, and post-war prominence in Paris. Limited enrollment. Not offered Fall and Spring. Instructor(s): Bailey.

MUSI 723 AESTHETICS OF MUSIC (3)

An introduction to music aesthetics, focusing on contemporary theories and writings. Limited enrollment. Offered Fall. Instructor(s): Lavenda.

MUSI 736 SOLO, CHAMBER, AND CONCERTO REPERTOIRE (3)

Repeatable for Credit.

MUSI 741 MASTER'S RECITAL II (0)

Department permission required. Offered Fall and Spring.

MUSI 742 STRING QUARTET RECITAL (0)

Each recital will include a format chosen by the quartet and natural to them in which they relate to the general public in a meaningful, non-technical way (i.e., pre-concert question and answer session, etc.). These are not lecture-recitals in the traditional, academic sense: their aim is to give the quartet guidance and experience in how to impart substantive information that help non-musicians deepen their concert-going experience. Department permission required. Repeatable for Credit. Limited enrollment. Offered Fall and Spring.

MUSI 747 SURVEY-ORCHESTRAL REPERTOIRE (2)

A survey of the techniques of orchestral playing with emphasis on preparation of orchestral excerpts for professional auditions.

MUSI 748 DOCTORAL RECITAL RESEARCH (1 TO 6)

Repeatable for Credit.

MUSI 749 APPRENTICESHIP (1 TO 3)**MUSI 750 DOCTORAL DOCUMENT (3)**

Supervised research and writing of doctoral document. Repeatable for Credit.

MUSI 751 DOCTORAL RECITAL (0)

Section 1, solo; section 2, chamber; section 3, concerto; section 4, lecture. Department permission required. Repeatable for Credit.

MUSI 800 DISSERTATION (3)

Substantial original music composition. Instructor permission required. Repeatable for Credit.

NAVA (NAVAL SCIENCE)**No College Designated/Naval Science****NAVA 101 NAVAL ORIENTATION (3)**

An introduction to naval traditions and customs, seamanship, naval organization and missions, and the fundamental concepts of seapower. Offered Fall. Instructor(s): Neal.

NAVA 102 NAVAL ENGINEERING (3)

Ship propulsion systems, auxiliary systems, steering systems, electrical power distribution, ship design, ship stability and damage control measures. Offered Spring. Instructor(s): Mazat.

NAVA 201 NAVAL WEAPONS-NAVAL SHIP SYSTEMS II (3)

The theory and employment of weapons systems. The student explores the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. The physical aspects of radar and underwater sound are described in detail. Offered Fall. Instructor(s): Mazat.

NAVA 202 SEA POWER AND MARITIME AFFAIRS (2)

Readings, discussions, and research on selected topics related to the history, importance, and impact of seapower on modern civilization. Offered Spring. Instructor(s): Neal.

NAVA 301 NAVIGATION I (3)

Marine navigators and laws of vessel operations. Includes coastal piloting, navigational aids, nautical astronomy, satellite and inertial systems, and rules of the nautical road. Corequisite(s): NAVA 311. Offered Fall. Instructor(s): Neal.

NAVA 302 NAVAL OPERATIONS AND SEAMANSHIP (3)

An analysis of ship movements, formations, and fleet operations; includes Rules of the Road, maneuvering board, tactical publications and communications. Offered Spring. Instructor(s): Mazat.

NAVA 303 EVOLUTION OF WARFARE (2)

Historical survey of the evolution of the conduct of warfare. Strategy, tactics, weapons, organization, and military leaders/thinkers are studied. Repeatable for Credit. Offered Fall. Instructor(s): McKeel.

NAVA 311 NAVIGATION LAB (0)

Basic and advanced chart work for Marine Navigation. Corequisite(s): NAVA 301 Offered Fall. Instructor(s): Neal.

NAVA 401 LEADERSHIP MANAGEMENT I (3)

An introduction to the principles and concepts of management, organization, leadership, information systems, and decision making. Offered Fall. Instructor(s): Cerrillo.

NAVA 402 LEADERSHIP AND ETHICS (3)

Leadership principles, with particular emphasis on ethics, human resources management, military law and discipline, and administration. The Capstone course for NROTC seniors. Pre-requisite(s): NAVA 401. Recommended prerequisite(s): Spring semester of senior year. Offered Spring. Instructor(s): Watson.

NAVA 410 AMPHIBIOUS WARFARE (2)

Study of the history of amphibious warfare, using case studies to examine doctrine tactics, and the factors necessary for successful operations. Not offered Fall and Spring. Instructor(s): McKeel.

NEUR (NEUROSCIENCE)**No College Designated/Other/No Department****NEUR 415 THEORETICAL NEUROSCIENCE (3)**

Modeling of and computation by single neurons. Establish proficiency in the use of NEURON, a widely-used neurosimulation package, and so provide motivation and deliver a practical skill. From there, poke under NEURON's hood and derive the fundamental equations of neurodynamics and construct simple analytical and numerical procedures for their solution. Cross-listed with CAAM 415. URL: www.caam.rice.edu/~caam415. Instructor(s): Cox.

NEUR 501 COGNITIVE NEUROSCIENCE I (1 TO 15)

Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including sensation and perception, attention, motor control, and neuroplasticity. Other topics include basic neuroanatomy, experimental and clinical investigative methods and the historical and philosophical context of contemporary neuroscience. Cross-listed with PSYC 575. Limited enrollment. Offered Spring. URL: www.ruf.rice.edu/~neurosci. Instructor(s): Ro.

NEUR 502 COGNITIVE NEUROSCIENCE II (3)

Overview of neuropsychological and cognitive service approaches to higher mental functions including language, memory, executive functions, reasoning, and numerical processing. Cross-listed with PSYC 576. URL: www.ruf.rice.edu/~neurosci. Instructor(s): Martin.

NEUR 505 OPTICAL IMAGING (3)

This course includes a theoretical portion which will introduce the fundamentals of optical imaging of neural activity, present the devices that are employed, and review applications and discuss their results. In addition, in a practical part, students will design, set up, and perform simple in vitro experiments to gain practical experience with this exciting and powerful technology. Not offered Fall and Spring. URL: www.ruf.rice.edu/~neurosci. Instructor(s): Saggau.

NEUR 506 CONCEPTS OF LEARNING AND MEMORY (3)

This course is designed to introduce graduate students to the field of learning and memory. This field has exploded in the last few years with the introduction of new techniques, new approaches, and new concepts. The course will introduce the student to classical and modern concepts of learning and memory across all levels at which learning and memory is studied, including behavioral, anatomical, cellular, molecular and genetic levels of analysis. The basic concepts of learning and memory will also be related to known diseases of learning and memory. URL: www.ruf.rice.edu/~neurosci. Instructor(s): Davis; Sweatt.

NEUR 511 INTEGRATIVE NEUROSCIENCE CORE I (5)

A broad introductory survey covering all aspects of neuroscience, team-taught by faculty from Baylor College of Medicine. Includes a lab at Baylor. This is the entry level neuroscience course for all Rice students. Please contact Dr. James Pomerantz if you wish to enroll. Limited enrollment. Offered Fall. URL: neuro.neusc.bcm.tmc.edu. Instructor(s): Baylor faculty.

NEUR 512 INTEGRATIVE NEUROSCIENCE CORE II (5)

A broad introductory survey covering all aspects of neuroscience, team-taught by faculty from Baylor College of Medicine. A continuation of NEUR 511. Course taught at Baylor. Pre-requisite(s): NEUR 511. Limited enrollment. Offered Spring. URL: neuro.neusc.bcm.tmc.edu. Instructor(s): Baylor faculty.

NEUR 515 NEURAL DEVELOPMENT (3)

An advanced graduate course focusing on molecular genetic studies. Integrates molecular patterning of nervous system with developmental neuroscience using a cross-species approach, with an emphasis on the visual system. Topics include the biochemical and genetic basis for neural plasticity, neurotrophic factors in neural development, and the molecular mechanism of growth cone guidance and synapse formation. URL: www.ruf.rice.edu/~neurosci. Instructor(s): Crair.

NEUR 516 SENSORY SYSTEMS (3)

A two-part course covering sensory transduction in audition, touch, and the chemical senses, and a detailed coverage of the visual system, including retinal structures and central pathways, phototransduction, receptive fields, and functional organization in the cortex. Limited enrollment. Offered Spring. URL: www.ruf.rice.edu/~neurosci. Instructor(s): Eatock; Wu.

NEUR 520 TEN UNSOLVED QUESTIONS IN NEUROSCIENCE (3)

Neuroscience has yet to establish its general principles. This course introduces the major topics including memory, sleep, consciousness, information in neural activity, emotions, plasticity, and intelligence. Each week's lecture introduces a new problem, addressing why the question is important, its history, current thinking, and what we have learned. Limited enrollment. URL: www.ruf.rice.edu/~neurosci.

NEUR 577 INTRODUCTION TO FUNCTIONAL NEUROANATOMY (2)

Anatomy and function of components of the nervous system with an emphasis on the central nervous system. Must be enrolled in one of the following Level(s): Graduate. URL: www.ruf.rice.edu/~neurosci/neurocoursesmain.html. Instructor(s): from Baylor College of Medicine.

NSCI (NATURAL SCIENCES)**School of Natural Sciences/Natural Sciences Division****NSCI 111 SCIENCE TODAY I: CONCEPTS IN PHYSICS AND ASTRONOMY (3)**

This course is intended as an investigation of some of the major concepts in physics and astronomy that form the basis of our modern understanding of the universe. By focusing on scientific methodology and a few universal laws, the course will help students appreciate scientific discoveries and give them the conceptual understanding to form intelligent views of contemporary scientific issues. For non-science/engineering majors. Instructor(s): Toffoletto

NSCI 142 SCIENCE FOR CHANGING TIMES II (3)

This course is designed for nonscience and nonengineering majors. In it, we will explore topics having a direct impact on our lives right now and in the future. These will include nuclear medicine, global warming, water pollution, the chemical industry, cloning and genetic engineering, health and fitness, and drugs. Learn to be an active and informed citizen. Offered Spring. Instructor(s): Kinsey.

NSCI 203 ATMOSPHERE, WEATHER, AND CLIMATE (3)

This course emphasizes the fundamental science of the atmospheric system. Among the subjects to be covered quantitatively are climate changes, solar radiation and the Earth's energy budget, atmospheric motions and circulation, clouds and storms, and atmospheric environmental concerns. Cross-listed with PHYS 203. Instructor(s): Few.

NSCI 230 COMPUTATION SCIENCE AND ENGINEERING (3)

The course introduces basic techniques for problem solving and visualization using computational environments such as Mathematica. Class will consist of self-paced modules covering topics in science and engineering that will be completed in Symonds II Lab. No previous programming experience is required or expected. Cross-listed with COMP 110. Limited enrollment. Instructor(s): Goldman.

NSCI 305 NEW VENTURE COMMUNICATION FOR SCIENCE AND ENGINEERING (1)

Teaches students in science or engineering the skills needed to discover, communicate, and promote products and services based on technological innovation or scientific research. Students learn to innovate a product or service with social or commercial application, write an early-stage business plan, and give a 10-minute financing presentation.

NSCI 307 PREPARING FOR PROFESSIONAL COMMUNICATION IN FIVE COUNTRIES, MANY CULTURES (1)

Prepares students to anticipate the roles, situations, and expected communication practices they would encounter in engineering firms or other businesses in the United Kingdom, Germany, China, Mexico, and the Middle East. Cross-listed with ENGI 307. Limited enrollment.

NSCI 309 LEADERSHIP COMMUNICATION (2)

Leadership communication is a two-credit course that meets for three hours weekly for ten weeks. The course teaches writers and speakers how to explain ideas in the context of values for audiences with a variety of vested interests. The course covers organization and persuasive strategies as well as stylistic and delivery techniques. In addition to writing and presenting, students will discuss readings and learn to give one another feedback. Students will draw on projects in their course work or extracurricular activities in selecting topics for major assignments. Students will also develop a statement of career and life goals and practice explaining these as qualifications to promote themselves for leadership roles. Cross-listed with ENGI 309. Instructor(s): Driskill; Volz.

NSCI 501 PROFESSIONAL MASTER'S SEMINAR (1)

A weekly seminar which serves to provide exposure to local industry leaders from the areas of oil and gas exploration, nanotechnology, and environmental management; introduce career management and business relations tools; further develop written and oral communication skills; provide a forum for students to present internship project results.

NSCI 505 ENVIRONMENTAL LAB (1)

Laboratory module offered in conjunction with CAAM 353 that illustrates applications of numerical analysis in the solutions of common environmental science and engineering problems. Instructor permission required.

NSCI 506 ENVIRONMENTAL CASE STUDIES (1)

Seminar bringing in outside speakers from the community to address environmental issues.

NSCI 510 PROFESSIONAL MS INTERNSHIP (12)

Supervised internship or project associated with pursued degree. Exclusively for students in the Professional Master's Program. Repeatable for Credit.

NSCI 512 PROFESSIONAL MASTER'S PROJECT (1)

Professional master students present the results of their internship or independent project. Pre-requisite(s): NSCI 510.

NSCI 580 CONTEMPORARY TOPICS IN ELEMENTARY SCHOOL MATHEMATICS (1 TO 6)

Mathematical topics related to the elementary grades that include number and operations, geometry, probability and statistics, patterns and functions, and measurement. Hands-on experiences in innovative methods using manipulatives and technology, problem-solving techniques, and motivational strategies. Curriculum development using the RUSMP Learning Plan. Assessment for elementary school classrooms.

NSCI 585 CONTEMPORARY TOPICS IN MIDDLE SCHOOL MATHEMATICS (1 TO 6)

Mathematics topics related to middle school mathematics that include number concepts, ratio and proportion, geometry, measurement, probability and statistics, variables, and functions. A problem-solving approach to teaching mathematics with an emphasis on the use of manipulatives and technology. Curriculum development using the RUSMP Learning Plan. Assessment for middle school mathematics classrooms.

NSCI 586 CONTEMPORARY TOPICS IN K-12 SCIENCE AND MATHEMATICS (1 TO 6)

Contemporary topics in grades K-12 SCIENCE AND MATHEMATICS instruction - covers both content and pedagogy. Multiple sections are offered. Each section focuses on specific areas of instruction at specified grade levels. All sections include field studies, inquiry, curriculum development and implementation of instructional strategies in the classroom. Students may enroll in different sections for repeated credit. These courses do not count toward graduate degrees in Natural Science. Cross-listed with PFDV 586. Repeatable for Credit.

NSCI 590 CONTEMPORARY TOPICS IN SENIOR HIGH SCHOOL MATHEMATICS (1 TO 6)

Mathematical topics related to high school mathematics that include geometry, probability and statistics, functions, limits, sequences and series, and number theory. A problem-solving approach to teaching mathematics with an emphasis on the use of manipulatives and technology. Curriculum development using the RUSMP Learning Plan. Assessment for high school mathematics classrooms.

NSCI 595 TOPICS IN CONTEMPORARY ALGEBRA FOR IN-SERVICE TEACHERS (1 TO 6)

Teaching beginning algebra with an emphasis on mathematical models and representations, variables and functions, and symbolic reasoning. Foundation concepts for secondary mathematics, algebraic thinking and symbolic reasoning, function concepts, relationship between algebra and geometry, and underlying mathematical processes. Use of manipulatives and technology. Curriculum development using the RUSMP Learning Plan development and assessment strategies. These courses do not count toward graduate degrees in Natural Sciences.

PHIL (PHILOSOPHY)

School of Humanities/Philosophy

PHIL 100 PROBLEMS OF PHILOSOPHY (3)

An introduction to philosophy through such fundamental problems as the basis of morality, the foundation of state authority, determinism and freedom, and the possibility of knowledge. Offered Fall and Spring
Instructor(s): Sheinman; Sher.

PHIL 101 CONTEMPORARY MORAL ISSUES (3)

Examination of moral issues surrounding such topics as abortion, euthanasia, war, capital punishment, justice, and equality. Offered Fall and Spring. Instructor(s): Norcross; Sher.

PHIL 103 PHILOSOPHICAL ASPECTS OF COGNITIVE SCIENCE (3)

An examination of current research in cognitive science and its philosophical implications. Topics include whether the mind is a computational system, how the mind is organized, whether certain components of the mind are innate. Offered Fall. Instructor(s): Margolis.

PHIL 104 PHILOSOPHICAL PERSPECTIVES ON SCIENCE (3)

The nature, origins, and impact of scientific knowledge will be examined from a variety of disciplinary perspectives. In addition to works by some of the most relevant philosophers of the past, including Descartes and Hume, readings will include writings of scientists such as Newton, and from 20th-century philosophers, and historians. Normally offered every year. Offered Spring. Instructor(s): Roush.

PHIL 105 HISTORICAL INTRODUCTION TO PHILOSOPHY (3)

Study and discussion of central issues of Western philosophy as developed by its original thinkers from the ancient Greeks to the twentieth century. Enrollment will be limited in order to focus special attention on student writing. Limited enrollment. Offered Fall. Instructor(s): Burch.

PHIL 106 LOGIC (3)

Introduction to the formal theory of reasoning, which will be used to assess the validity of arguments in natural languages. Study of general properties of logical implication and logical truth. Offered Fall and Spring
Instructor(s): Roush.

PHIL 116 INTRODUCTION TO THE PHILOSOPHY OF LAW (3)

The course will discuss the nature of law in general as well as discrete topics in legal philosophy. How is a legal rule different from an order backed by a terrorist threat? Is retroactive legislation legal? What are legal rights? Is there a general moral duty to obey the law? Offered Spring. Instructor(s): Sheinman

PHIL 120 ETHICS OF LEADERSHIP (1)

This class explores the ethical implications of leadership. The course includes: a presentation of some main approaches to ethics; class discussion of the ethical dimensions of the very concept "leader"; and a series of case studies. The course has no pre-requisites. Limited enrollment. Offered Spring.

PHIL 201 HISTORY OF PHILOSOPHY I (3)

Survey of the major philosophers and philosophical systems of ancient Greece, from Parmenides to the Stoics. Cross-listed with CLAS 201, MDST 201. Offered Fall. Instructor(s): Morrison.

PHIL 202 HISTORY OF PHILOSOPHY II (3)

A survey of the history of philosophy from the 17th- to the 20th century. Offered Spring. Instructor(s): Kulstad.

PHIL 301 ANCIENT AND MEDIEVAL PHILOSOPHY (3)

Topics in the history of philosophy from the 4th century B.C. through the 14th century. Cross-listed with CLAS 301, MDST 301. Repeatable for Credit. Offered Spring. Instructor(s): Morrison.

PHIL 302 MODERN PHILOSOPHY (3)

Examination of themes or authors in 17th- and 18th- century philosophy. Topics vary from year to year. Repeatable for credit with consent of instructor. Normally offered every year. Recommended for majors that PHIL 202 be taken before PHIL 302. For non-majors one previous course in philosophy is recommended. Repeatable for Credit. Offered Fall. Instructor(s): Kulstad.

PHIL 303 THEORY OF KNOWLEDGE (3)

Topics: analysis of knowledge, foundations of knowledge, skepticism, perception, etc. Offered Fall. Instructor(s): Roush.

PHIL 304 METAPHYSICS (3)

Examination of metaphysical theories in the works of historical and contemporary thinkers. Topics may include: free will, the identity of persons over time, causation, possibility and necessity, design and chance, the nature of existence, the nature of time. Recommended prerequisite(s): A previous course in philosophy. Not offered Fall & Spring. URL: www.owl.net.rice.edu/~phil304. Instructor(s): Grandy.

PHIL 305 MATHEMATICAL LOGIC (3)

We study formal languages and methods for assessing correctness of arguments, including a brief look at modal and many-valued logics. We also consider their relations to natural languages and reflect on the techniques required to prove theorems about languages. A previous logic course is helpful, though the course is self-contained. Graduate/Undergraduate version: PHIL 505. Offered Fall. URL: www.owlnet.rice.edu/~phil305. Instructor(s): Grandy.

PHIL 306 ETHICS (3)

This course deals with fundamental questions of value and morality—questions such as: What sort of life is best? What kind of person is it best to be? What does morality require of us? It also deals with important second-order questions about these fundamental questions— for example: Can morality be justified? How can we know what's right or good? Is there moral truth? What is the relation between morality and self-interest? Readings are drawn from both classical and contemporary sources. Offered Spring. Instructor(s): Sheinman; Sher; Norcross.

PHIL 307 SOCIAL AND POLITICAL PHILOSOPHY (3)

What makes a society just? On what grounds may the liberty of individuals be legitimately limited? What social ends may a state legitimately pursue? Offered Spring. Instructor(s): Sheinman; Sher; Norcross.

PHIL 308 CONTINENTAL PHILOSOPHY (3)

An examination of philosophical movements in 20th-century European philosophy—including phenomenology, existentialism, hermeneutics, critical theory, deconstruction, and postmodernism. Repeatable for credit with consent of instructor. Graduate/Undergraduate version: PHIL 508. Repeatable for Credit. Offered Spring. Instructor(s): Crowell.

PHIL 309 AESTHETICS (3)

An introduction to the philosophy of art drawing upon traditional and contemporary philosophical theories, artist's manifestos, and reflection upon exemplary art works. Topics include: What is a work of art? What is artistic genius? What makes an artwork good? What is the place of art within morality and society. Recommended prerequisite(s): A previous course in philosophy. Offered Fall. Instructor(s): Crowell; Zuckert.

PHIL 311 PHILOSOPHY OF RELIGION (3)

Examination of God's existence, the problem of evil, the relation between faith and reason, and the varieties of religious experience. Normally offered every other year. Offered Spring. Instructor(s): Brody.

PHIL 312 PHILOSOPHY OF MIND (3)

Inquiry into the nature of mind, with emphasis on the mind/body problem. Recommended- Prerequisite(s): One course in philosophy or permission of the instructor. Offered Spring. Instructor(s): Margolis.

PHIL 313 PHILOSOPHY OF SCIENCE (3)

A study of contemporary issues in general philosophy of science. How do our observations provide support for scientific theories? Are simpler theories more likely to be true? Does the success of our scientific theories mean that they are true? Science needed will be taught, not presupposed. Normally offered every year. Offered Spring. Instructor(s): Grandy; Roush.

PHIL 314 THE PHILOSOPHY OF MEDICINE (3)

The biomedical sciences, the practice of medicine, and health care policy employ concepts of health, disease, disability, and defect in explanatory accounts, intermixing factual claims with moral and other evaluations. This course explores the interplay of evaluation and explanation in medicine's models of disease and health. Not offered Fall and Spring. Instructor(s): Engelhardt.

PHIL 315 ETHICS, MEDICINE, AND PUBLIC POLICY (3)

The relationship between theories of justice and accounts of the proper allocation of health care is explored. The first half examines Rawl's "Theory of Justice", Nozick's "Anarchy, State, and Utopia", and particular accounts of justice and health care. The second addresses specific problems in the allocation of health care resources. Offered Spring. Instructor(s): Englehardt.

PHIL 316 PHILOSOPHY OF LAW (3)

Examination of social control of private property, compensation in the law of torts, the right to privacy and bodily integrity, and justice through compensatory discrimination, etc. Offered Fall. Instructor(s): Sheinman.

PHIL 317 ETHICS AND EXISTENCE (3)

An examination of the concept of ethical obligation from an existential point of view. Readings from Kierkegaard, Husserl, Heidegger, Sartre, Derrida, Levinas, and Apel. Not offered Fall and Spring. Instructor(s): Crowell.

PHIL 319 FEMINIST PHILOSOPHY (3)

This course is an introduction to feminist philosophy, including texts by both historical and contemporary thinkers (e.g. Wollstonecraft, Mill, de Beauvoir, MacKinnon, Gilligan, Irigaray). We shall discuss both feminists' radical critiques of traditional values and beliefs, and feminist alternative views of justice, ethical judgment, and truth. Cross-listed with WGST 339. Offered Fall. Instructor(s): Zuckert.

PHIL 321 KANT AND 19TH CENTURY PHILOSOPHY (3)

An examination of Kant's philosophical revolution in his Critique of Pure Reason, and of the development and criticism of conceptions of self-consciousness, autonomy, sociality, and history in the later post-Kantian philosophical tradition, which may include works by Hegel, Schopenhauer, Marx, Kierkegaard, Nietzsche, or others. Recommended prerequisite(s): One previous course in philosophy. Not offered Fall and Spring. Instructor(s): Zuckert.

PHIL 322 REASON AND FAITH: PHILOSOPHY OF ENLIGHTENMENT (3)

This course will study the core texts from the European Enlightenment traditions (British, French, and German). Our goal will be to investigate the Enlightenment doctrines concerning the nature of reason and rationality, and the varying engagements—from conciliatory to antagonistic of the defenders of reason with faith and organized religions. Cross-listed with ENGL 334. Offered Spring. Instructor(s): Zuckert.

PHIL 326 HISTORY OF ETHICS (3)

An introduction to the major issues of ethical theory through the reading and discussion of such classical figures as Plato, Aristotle, the Stoics, the Epicureans, St. Augustine, St. Thomas, Maimonides, Bishop Butler, David Hume, Adam Smith, J.S. Mill, and I. Kant. Not offered Fall and Spring.

PHIL 327 HISTORY OF SOCIAL AND POLITICAL PHILOSOPHY (3)

A survey of classic texts in the history of social and political philosophy, from Plato to Machiavelli to Mill. Offered Fall. Instructor(s): Morrison.

PHIL 331 MORAL PSYCHOLOGY (3)

An examination of the role of intellect, emotion, and character as they contribute to the moral (and immoral) life, and as they pertain to rationality and moral responsibility. Not offered Fall and Spring. Instructor(s): Sher.

PHIL 332 ANIMAL RIGHTS (3)

Is it wrong to breed animals for food and experimentation? Do we have a moral obligation to eliminate meat from our diets and leather from our wardrobes? Do non-human animals have rights? This course will explore these questions. Offered Spring. Instructor(s): Norcross.

PHIL 335 ADVANCED TOPICS IN VALUE THEORY (3)

Intensive examination of a topic of contemporary or historical interest in ethics or social and political philosophy. Recommended prerequisite(s): One course in philosophy or permission of the instructor. Offered Fall. Instructor(s): Norcross.

PHIL 353 PHILOSOPHY OF LANGUAGE (3)

Philosophical investigation of relations among language, thought, and reality. Recommended prerequisite(s): One course in philosophy or permission of the instructor. Offered Spring. Instructor(s): Margolis; Grandy.

PHIL 355 PHILOSOPHICAL TOPICS IN ADVANCED LOGIC (3)

Various systems of formalization for modalities, tenses and other intensional concepts are studied syntactically and semantically. Students use and compare these systems and evaluate their strengths and limits. These provide examples for discussion of questions such as: What is a logical constant? What is the scope of logic? Pre-requisite(s): PHIL 305 or PHIL 505. Offered Spring. URL: www.owlnet.rice.edu/~phil355. Instructor(s): Grandy.

PHIL 357 INCOMPLETENESS, UNDECIDABILITY, AND COMPUTABILITY (3)

Proof of Godel's Incompleteness Theorems for number theory in several forms and by various methods, as well as development of several definitions of computability for number-theoretic functions, which are then shown to be equivalent. Includes proof of the unsolvability of the Halting Problem and analysis of Church's thesis, as well as exploration of the extension of the concept of computability to real-valued functions. Not offered Fall and Spring. URL: www.owlnet.rice.edu/~phil357. Instructor(s): Grandy.

PHIL 390 TOPICS IN PHILOSOPHY (3)

Topics may vary. Please consult with department for additional information. Repeatable for credit with consent of the instructor. Cross-listed with GERM 333. Repeatable for Credit. Not offered Fall and Spring.

PHIL 401 INDEPENDENT READING I (3)

Instructor permission required. Repeatable for Credit. Offered Fall.

PHIL 402 INDEPENDENT READING II (3)

See PHIL 401. Instructor permission required. Repeatable for Credit. Offered Spring.

PHIL 501 SEMINAR IN ANCIENT AND MEDIEVAL PHILOSOPHY (3)

Graduate/Undergraduate version: MDST 481. Offered Spring. Instructor(s): Morrison.

PHIL 502 SEMINAR IN MODERN PHILOSOPHY (3)

Graduate level examination of topics and figures of 17th and 18th century history of philosophy. Topics vary from year to year. Repeatable for credit with the consent of the instructor. Repeatable for Credit. Not offered Fall & Spring. Instructor(s): Kulstad.

PHIL 503 SEMINAR IN EPISTEMOLOGY (3)

Not offered Fall and Spring. Instructor(s): Roush.

PHIL 504 SEMINAR IN METAPHYSICS (3)

Not offered Fall and Spring. Instructor(s): Grandy; Roush.

PHIL 505 MATHEMATICAL LOGIC (3)

A version of PHIL 305 for philosophy graduate students. Graduate/Undergraduate version: PHIL 305. Offered Fall. URL: www.owl.net.rice.edu/~phil305. Instructor(s): Grandy.

PHIL 506 SEMINAR IN ETHICS (3)

Not offered Fall and Spring. Instructor(s): Norcross; Sher.

PHIL 507 SEMINAR IN SOCIAL AND POLITICAL PHILOSOPHY (3)

Offered Fall. Instructor(s): Sher.

PHIL 508 SEMINAR IN CONTINENTAL PHILOSOPHY (3)

The study of selected topics and figures in 20th century European philosophy. Repeatable for credit with consent of the instructor. Graduate/Undergraduate version: PHIL 308. Repeatable for Credit. Offered Spring. Instructor(s): Crowell.

PHIL 509 SEMINAR IN AESTHETICS (3)

A focused seminar on one aspect of aesthetics, either topical or historical; to include, e.g., the 18th century theories of taste, beauty and the sublime, environmental aesthetics, or the nature of artistic expression. Repeatable for credit with consent of the instructor. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Zuckert.

PHIL 512 SEMINAR PHILOSOPHY OF MIND (3)

Not offered Fall and Spring. Instructor(s): Margolis.

PHIL 513 SEMINAR IN PHILOSOPHY OF SCIENCE (3)

Focused consideration of either topics of perennial interest (e.g. explanation, experiment, the problem of induction, confirmation, the measurement problem of quantum mechanics, interpretation of probability, realism vs. anti-realism, the role of values in science) or topics currently popular in the field. Not offered Fall and Spring. Instructor(s): Roush.

PHIL 516 SEMINAR IN PHILOSOPHY OF LAW (3)

The seminar will concentrate on one or more of such central topics in the philosophy of law as the normative foundations of contracts, criminal responsibility, the debate over legal positivism, theories of corrective justice, and the duty to obey the law. Offered Spring. Instructor(s): Sheinman.

PHIL 522 TOPICS IN MODERN PHILOSOPHY (3)

Topics in early modern philosophy: a focused, more advanced seminar on select problems or figures in the 17th and 18th centuries. Repeatable for credit with consent of the instructor. Repeatable for Credit. Not offered Fall & Spring. Instructor(s): Kulstad.

PHIL 523 SEMINAR IN KANT (3)

Offered Fall. Instructor(s): Engelhardt.

PHIL 524 SEMINAR IN HEGEL (3)

Not offered Fall and Spring. Instructor(s): Engelhardt.

PHIL 525 SEMINAR IN 19TH CENTURY PHILOSOPHY (3)

An in-depth investigation of a central philosophical movement (eg. romanticism, German idealism) and/or of the works of one or more central philosophers in the 19th century, to include, e.g., Nietzsche, Schopenhauer, Marx, Kierkegaard, Schelling, and Fichte. Repeatable for credit with consent of the instructor. Repeatable for Credit. Offered Spring. Instructor(s): Zuckert.

PHIL 530 SEMINAR IN HISTORY OF ANALYTIC PHILOSOPHY (3)

Offered Spring. URL: www.owl.net.rice.edu/~phil530. Instructor(s): Grandy.

PHIL 532 SEMINAR IN METAETHICS (3)

Offered Fall. Instructor(s): Norcross.

PHIL 533 SEMINAR IN VIRTUE ETHICS (3)

The leading question of virtue ethics has been characterized as: "What kind of person is it best to be?" Topics to be discussed may include moral worth, virtues and vices, and feminist ethics. Not offered Fall and Spring

PHIL 534 LIBERALISM (3)

An examination of the philosophical foundations of liberalism, with emphasis on the thesis that government should be neutral toward competing conceptions of the good life. Course offered alternate years. Not offered Fall & Spring. Instructor(s): Sher.

PHIL 536 SEMINAR IN MEDICAL ETHICS (3)

An examination of the theoretical foundations of bioethics emphasizing principlism, utilitarianism, Kantianism, contractarianism, medicalism, post-modernism, and casuistry. Not offered Fall and Spring Instructor(s): Brody.

PHIL 537 SEMINAR IN RESEARCH ETHICS (3)

An examination of the major issues of research ethics, including informed consent and IRB review, involvement and protection of special groups of subjects, fetal tissue and stem cell research, and genetic research. Offered Fall. Instructor(s): Brody.

PHIL 542 TOPICS IN PHILOSOPHY OF MIND (3)

An in-depth look at different topics in contemporary philosophy of mind. Some sample topics: consciousness, mental representation, innateness, modularity, and the role of language in thought. Repeatable for credit with consent of the instructor. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Margolis.

PHIL 553 SEMINAR IN PHILOSOPHY OF LANGUAGE (3)

Not offered Fall and Spring. Instructor(s): Grandy; Margolis; Roush.

PHIL 590 TOPICS IN PHILOSOPHY (3)

Topics may vary: Please consult with the department for additional information. Repeatable for Credit. Offered Fall. Instructor(s): Kulstad; Margolis.

PHIL 598 ADVANCED INDEPENDENT READING (3)

Directed reading and research. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Fall. Instructor(s): Crowell.

PHIL 599 ADVANCED INDEPENDENT READING (3)

Directed reading and research. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Spring. Instructor(s): Crowell.

PHIL 601 RESEARCH PAPER (3)

Research course normally for second-year graduate students completing research paper requirement. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Offered Fall. Instructor(s): Crowell.

PHIL 602 RESEARCH PAPER (3)

Research course normally for second year graduate students completing research paper requirement. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Offered Spring. Instructor(s): Crowell.

PHIL 651 MASTERS THESIS RESEARCH (1 TO 15)

Research course for graduate students preparing a masters thesis. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Fall. Instructor(s): Crowell.

PHIL 652 MASTERS THESIS RESEARCH (1 TO 15)

Research course for graduate students preparing a Masters thesis. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Spring. Instructor(s): Crowell.

PHIL 701 READING AND RESEARCH FOR QUALIFYING EXAMINATION AND THESIS PROPOSAL (1 TO 15)

Reading course in preparation for the comprehensive examination and thesis proposal defense. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Fall. Instructor(s): Crowell.

PHIL 702 READING AND RESEARCH FOR QUALIFYING EXAMINATION AND THESIS PROPOSAL (1 TO 15)

Reading course in preparation for the comprehensive examination and thesis proposal defense. Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Spring. Instructor(s): Crowell.

PHIL 757 TEACHING WORKSHOP (2)

A highly participatory workshop for graduate students to improve their teaching abilities. Offered Fall. Instructor(s): Grandy.

PHIL 800 RESEARCH AND THESIS (1 TO 15)

Must be enrolled in one of the following Major(s): Philosophy. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Crowell.

PHYS (PHYSICS)**School of Natural Sciences/Physics and Astronomy****PHYS 101 MECHANICS (WITH LAB) (3)**

Calculus-based survey of physics. Includes classes and lab exercises on topics chosen from mechanics, electricity, and magnetism. Primarily for physical science and engineering students. May receive credit for only one of PHYS 101, 111, 125, AP Physics-B, and AP Physics-C (MECH)

PHYS 102 ELECTRICITY & MAGNETISM (WITH LAB) (4)

Continuation of PHYS 101. May receive credit for only one of PHYS 102, 112, 126, AP Physics-B, and AP Physics-C (E&M).

PHYS 111 MECHANICS (WITH LAB) (3)

Calculus-based survey of physics. Includes classes and lab exercises on topics chosen from mechanics, electricity, and magnetism. Primarily for physical science and engineering students with strong high school backgrounds in physics. May receive credit for only one of PHYS 101, 111, 125, AP Physics-B, and AP Physics-C (MECH).

PHYS 112 ELECTRICITY & MAGNETISM (WITH LAB) (4)

Continuation of PHYS 111. May receive credit for only one of PHYS 102, 112, 126, AP Physics-B, and AP Physics-C (E&M).

PHYS 125 GENERAL PHYSICS (WITH LAB) (4)

Calculus-based survey of physics. Includes classes and lab exercises on topics chosen from mechanics, waves, electricity, magnetism, optics, and modern physics. Primarily for bioscience and premedical students. May receive credit for only one of PHYS 101, 111, 125, AP Physics-B, and AP Physics-C (MECH).

PHYS 126 GENERAL PHYSICS II (WITH LAB) (4)

A continuation of PHYS 125. May receive credit for only one of PHYS 102, 112, 126, AP Physics B, and AP Physics-C (E&M). Pre-requisite(s): PHYS 125.

PHYS 141 CONCEPTS IN PHYSICS I (3)

Study of concepts in physics with emphasis on the nature of physical phenomena, the conceptual development of physics, and related cultural influences.

PHYS 142 CONCEPTS IN PHYSICS II (3)

For AP credit only.

PHYS 201 WAVES AND OPTICS (3)

Fundamentals of oscillations and waves and properties of electromagnetic waves. Basic principles of geometric optics, interference and diffraction, including Fourier methods.

PHYS 202 MODERN PHYSICS (3)

An introductory course in modern physics. Topics include special relativity, early quantum theory, quantum mechanics, atomic physics, statistical physics, nuclear and particle physics. The course is descriptive in nature with emphasis on phenomena rather than on calculations. Pre-requisite(s): PHYS 101 or PHYS 111 and PHYS 102 or PHYS 112.

PHYS 203 ATMOSPHERE, WEATHER, & CLIMATE (3)

This course emphasizes the fundamental science of the atmospheric system. Among the subjects to be covered quantitatively are climate changes, solar radiation and the Earth's energy budget, atmospheric motions and circulation, clouds and storms, and atmospheric environmental concerns. Cross-listed with NSCI 203.

PHYS 231 ELEMENTARY PHYSICS LAB II (1)

Laboratory on waves and optics.

PHYS 301 INTERMEDIATE MECHANICS (4)

Classical mechanics and appropriate mathematical methods. Emphasis on problem solving.

PHYS 302 INTERMEDIATE ELECTRODYNAMICS (4)

Classical electrodynamics and appropriate mathematical methods. Emphasis on problem solving.

PHYS 311 INTRODUCTION TO QUANTUM PHYSICS I (3)

Fundamentals of quantum mechanics and applications to atomic and molecular structure.

PHYS 312 INTRODUCTION TO QUANTUM PHYSICS II (3)

Continuation of PHYS 311.

PHYS 331 JUNIOR PHYSICS LAB I (2)

Lab exercises in electronics, noise reduction, statistics and particle counting.

PHYS 332 JUNIOR PHYSICS LAB II (2)

Lab exercises illustrating topics in the upper-division physics curriculum.

PHYS 401 PHYSICS OF HAM RADIO (3)

Amateur radio for middle-school science teaching. Fundamentals of electromagnetic waves and propagation, the ionosphere and space weather. Basic electronics, antenna design and safety. Provides information necessary to gain the technical level of ham radio license.

PHYS 411 INTRODUCTION TO NUCLEAR & PARTICLE PHYSICS (3)

A broad survey of history and current state of nuclear and particle physics. The emphasis is on experimental results and how they led to our current undertaking of the strong and electroweak interactions. Some recent advances are discussed in detail. Graduate/Undergraduate version: PHYS 542.

PHYS 412 SOLID STATE PHYSICS (3)

Introduction to topics in solid state physics, including crystal structure, lattice vibrations, electronic band structure and transport.

PHYS 416 COMPUTATIONAL PHYSICS (3)

Use of computational techniques to solve selected physics problems. Examine benefits and pitfalls of doing physics by computation.

PHYS 425 STATISTICAL & THERMAL PHYSICS (3)

Includes classical thermodynamics; classical & quantum statistical mechanics; Fermi, Bose, and classical gases; magnetic systems; and phase equilibria.

PHYS 443 ATMOSPHERIC SCIENCE (3)

Subjects studied include radiation, climate dynamics; energy balance models; structure and stability; water, cloud and precipitation physics; atmospheric dynamics; storms and special systems; and atmospheric electricity. Cross-listed with CEVE 443.

PHYS 461 INDEPENDENT RESEARCH (1 TO 6)

A reading course in special topics. Repeatable for Credit.

PHYS 462 INDEPENDENT RESEARCH (1 TO 6)

A reading course in special topics. Repeatable for Credit.

PHYS 480 INTRODUCTION TO PLASMA PHYSICS (3)

Fundamental processes in cosmic and laboratory plasmas: gas dynamics, kinetic theory, magnetohydrodynamics, wave and shocks, individual particle drifts, collisions and electrical conductivities, geometric and distribution instabilities. Pre-requisite(s): PHYS 302.

PHYS 491 UNDERGRADUATE RESEARCH (2)

Research projects conducted under supervision of departmentally approved faculty. Open to juniors and seniors majoring in physics and astronomy. May be repeated for credit. PHYS 493/494 must be taken concurrently with PHYS 491/492 when used in partial fulfillment of B.S. degree requirements. Must be enrolled in one of the following Major(s): Astronomy, Physics. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit.

PHYS 492 UNDERGRADUATE RESEARCH (2)

Research projects conducted under supervision of departmentally approved faculty. Open to juniors and seniors majoring in physics and astronomy. May be repeated for credit. PHYS 493/494 must be taken concurrently with PHYS 491/492 when used in partial fulfillment of B.S. degree requirements. Must be enrolled in one of the following Major(s): Astronomy, Physics. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit.

PHYS 493 UNDERGRADUATE RESEARCH SEMINAR (1)

Weekly seminar for juniors and seniors in which presentations on research topics and/or topics in the scientific literature will be given. Open to juniors and seniors majoring in physics and astronomy. Must be enrolled in one of the following Major(s): Astronomy, Physics. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit.

PHYS 494 UNDERGRADUATE RESEARCH SEMINAR (1)

Weekly seminar for juniors and seniors in which presentations on research topics and/or topics in the scientific literature will be given. Open to juniors and seniors majoring in physics and astronomy department. Must be enrolled in one of the following Major(s): Astronomy, Physics. Must be in one of the following Classification(s): Junior, Senior. Repeatable for Credit.

PHYS 510 MAGNETOSPHERIC PHYSICS (3)

Plasma physics of the earth's magnetosphere, including interactions of the magnetosphere with the solar wind, the ionosphere, and the neutral atmosphere. The emphasis is on large-scale physics, but small scale waves and instabilities are discussed in some detail in cases where they affect the large-scale phenomena.

PHYS 515 CLASSICAL DYNAMICS (3)

Lagrangian and Hamiltonian mechanics.

PHYS 516 MATHEMATICAL METHODS (3)

Survey of analytical and numerical methods used by research physicists and astronomers. Includes complex variables, the evaluation of integrals, variational calculus, ordinary and partial differential equations, special functions, and transform methods.

PHYS 519 PLASMA KINETIC THEORY (3)

Plasma kinetic equations (Klimontovich, Liouville, BBGKY, Balescu-Lenard, Fokker-Planck, Vlasov), Vlasov theory of waves and instabilities, connections to fluid plasma models.

PHYS 521 QUANTUM MECHANICS I (3)

Graduate level course on non-relativistic quantum mechanics. Topics include early quantum theory, one-dimensional systems, matrix formulation, quantum dynamics, symmetries and conservation laws, bound states, scattering, spin, and identical particles, perturbation theory.

PHYS 522 QUANTUM MECHANICS II (3)

Continuation of PHYS 521.

PHYS 526 STATISTICAL PHYSICS (3)

Selected topics in statistical mechanics, including phase transitions and transport phenomena.

PHYS 532 CLASSICAL ELECTRODYNAMICS (3)

Special relativity, covariant formulation of electrodynamics, wave phenomena and charged-particle radiation.

PHYS 533 NANOSTRUCTURE AND NANOTECHNOLOGY I (3)

Physics of structures and devices at the nanometer scale. After a review of solid state physics, topics include nanostructured materials, nanoelectronics, and nanomagnetism. Emphasis on relevance of nanophysics to current and future technologies.

PHYS 534 NANOSTRUCTURE AND NANOTECHNOLOGY II (3)

Physics of structures and devices at the nanometer scale. Topics include nanomechanics, bionanotechnology, advanced sensors and photonics. Continuation of PHYS 533.

PHYS 535 CRYSTALLOGRAPHY AND DIFFRACTION (3)

Cross-listed with MSCI 535.

PHYS 537 METHODS OF EXPERIMENTAL PHYSICS I (4)

This two-semester course will familiarize students with basic experimental techniques that are common to all academic and industrial research laboratories. Topics will include lab safety, mechanical design, computer-based data acquisition and experimental control, laboratory electronics, vacuum technology, optics, thermal measurement and control, cryogenics and charged particle optics.

PHYS 538 METHODS OF EXPERIMENTAL PHYSICS II (4)

Continuation of PHYS 537.

PHYS 539 CHARACTERIZATION AND FABRICATION AT THE NANOSCALE (3)

Introduction to study and creation of nanoscale structures, emphasizing relevant physical principles. Techniques covered include optical, X-ray, electron-based and scanned-probe characterization, as well as patterning, deposition and removal of material.

PHYS 541 RADIATIVE PROCESSES (3)

Radiation processes and their applications to astrophysical phenomena and space science. The course treats radiative transfer, radiation from moving charges, relativistic covariance and kinematics, bremsstrahlung, synchrotron radiation, Compton scattering, some plasma effects, and radiative transitions in atoms and molecules.

PHYS 542 INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS (3)

Graduate/Undergraduate version: PHYS 411.

PHYS 543 PHYSICS OF QUARKS AND LEPTONS (3)

A continuation of PHYS 542.

PHYS 551 BIOLOGICAL PHYSICS (3)

Introduction to biological physics. Review of basic physical concepts. Cells and their components. Diffusion and random walks. Entropy and energy concepts and their roles in biological systems. Modern experimental methods. Applications to biological macromolecules.

PHYS 552 MOLECULAR BIOPHYSICS (3)

This is an introductory course for physical sciences graduate students who have not taken college-level biology courses. We will examine biological systems such as DNA, proteins and membranes, first by giving a thorough description of their biological functions and then by analyzing their underlying physical principles.

PHYS 561 GENERAL RELATIVITY (3)

Study of Einstein's theory of gravitation, including cosmological models. Pre-requisite(s): PHYS 532.

PHYS 563 INTRODUCTION TO SOLID STATE PHYSICS I (3)

Fundamental concepts of crystalline solids, including crystal structure, band theory of electrons, and lattice vibration theory. Cross-listed with ELEC 563.

PHYS 564 INTRODUCTION TO SOLID STATE PHYSICS II (3)

Continuation of PHYS 563, including scattering of waves by crystals, transport theory, and magnetic phenomena. Cross-listed with ELEC 564.

PHYS 566 SURFACE PHYSICS (3)

An introduction to surface- and low-dimensional physics covering experimental surface physics and ultra-high vacuum technology, crystal structure, chemical analysis, epitaxy, nanoscale electronic and magnetic structures and devices, elementary excitations, optical properties and nanoscale sensitive magnetic and non-magnetic spectroscopies.

PHYS 568 QUANTUM PHASE TRANSITIONS (3)

Introductory course for graduate students. Topics include the concepts of classical and quantum phase transitions, mean field theory, renormalization group and quantum phase transitions in magnetic, fermionic, and bosonic systems.

PHYS 569 ULTRAFAST OPTICAL PHENOMENA (3)

Cross-listed with ELEC 569.

PHYS 571 MODERN ATOMIC PHYSICS (3)

This is an introductory course at the graduate level. Topics to be discussed include: atomic structure, principles of lasers, fundamental interactions of atoms with electro-magnetic radiation, including coherent effects, laser spectroscopy, quantum optics, and laser cooling and trapping of atoms, and Bose-Einstein condensation.

PHYS 572 FUNDAMENTALS OF QUANTUM OPTICS (3)

Discussion of quantization and statistical properties of light fields; interaction between atoms and light; non-classical states; basic laser theory; quantum effects of nonlinear optics; introduction to atom optics.

PHYS 600 ADVANCED TOPICS IN PHYSICS (3)

Lecture/seminars which treat topics of departmental interest. Repeatable for Credit.

PHYS 610 BIOLOGICAL AND MOLECULAR SIMULATION (3)

Modern simulation techniques for classical atomistic systems. Monte Carlo and molecular dynamic techniques, with extensions to various ensembles. Applications to simulations of large molecules. Advanced techniques for simulation of complex systems, including constraint satisfaction, cluster moves, biased sampling and random energy models. Cross-listed with BIOE 610. Pre-requisite(s): PHYS 526 or CHEM 520 or BIOE 589 or CHBE 611, or permission of instructor.

PHYS 622 ADVANCED QUANTUM MECHANICS II (3)

Study of QED, QCD, and unified theories.

PHYS 663 CONDENSED MATTER THEORY: APPLICATIONS (3)

Applications of techniques developed in PHYS 664.

PHYS 664 CONDENSED MATTER THEORY: MANY-BODY FORMALISM (3)

Formal structure of many-body theory as used in condensed matter physics.

PHYS 700 TEACHING PRACTICUM (3)

Supervised teaching for graduate students. Repeatable for Credit.

PHYS 800 GRADUATE RESEARCH (1 TO 15)

Thesis research under the supervision of department faculty. Repeatable for Credit.

PHYS 801 REU RESEARCH IN PHYSICS AND ASTRONOMY (1 TO 3)

Reu research in physics and astronomy

PLSH (POLISH)**School of Humanities/Center for Study of Languages****PLSH 101 INTRODUCTION TO POLISH LANGUAGE AND CULTURE I (5)**

Emphasis on speaking and reading. A selection of textbooks and other materials (audio, video, Internet) are used in this beginners' course in the language of Polanski and the Pope. Recommended prerequisite(s): No prior knowledge of Polish. Limited enrollment.

PLSH 102 INTRODUCTION TO POLISH LANGUAGE AND CULTURE II (5)

Continuation of PLSH 101. Introductory study of Polish with emphasis on speaking and reading. A selection of textbooks and other materials (audio, video, Internet) are used in this beginners' course in the language of Polanski and the Pope. Pre-requisite(s): PLSH 101, or permission of instructor. Offered Spring.

POLI (POLITICAL SCIENCE)

School of Social Sciences/Political Science

POLI 209 INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT (3)

Study of constitutionalism and authoritarianism from Machiavelli to Marx. Includes an introduction to contemporary ideologies. With POLI 210 meets state professional requirements for teachers. Limited enrollment.

POLI 210 AMERICAN GOVERNMENT AND POLITICS (3)

Major topics in American politics: public opinion, group politics, political parties, elections, congressional-presidential-bureaucratic politics, and judicial politics. Together with POLI 209 meets state professional requirements for teachers. Limited enrollment.

POLI 211 INTRODUCTION TO INTERNATIONAL RELATIONS (3)

An introduction to the study of international relations. The course examines topics from the role of individuals to the impact of the international system. Major issues, such as the causes of war and problems of development in the Third World are also discussed. Limited enrollment.

POLI 212 INTRODUCTION TO COMPARATIVE POLITICS (3)

An examination of political institutions and behavior in selected democratic, communist, and Third World countries. Limited enrollment.

POLI 250 INTERNATIONAL POLITICAL ECONOMY OF GENDER (3)

This course explores the relationship between women's lives, gender ideologies, and international and domestic politics and economics. We will examine women's experiences with and resistance to the sexual division of labor, imperialism, capitalism, consumerism, domestic service, war, slavery, and migration across different geographical and historical contexts. Cross-listed with WGST 250.

POLI 300 FEDERALISM AND INTERGOVERNMENTAL POLITICS (3)

An exploration of the politics, demographics, technology, and legal environment of twenty-first century legislative redistricting. In addition to lectures and readings, the course includes an introduction to a computer based geographical information system that the students will use to complete a redistricting simulation. Limited enrollment.

POLI 301 STATE POLITICS (3)

This course is organized around the themes of the constraints and influences on the adoption and implementation of public policies in the American states. Limited enrollment.

POLI 305 DIRECTED READING I (3)

Independent reading under the supervision of a member of the department. Open to junior majors in the honors program and to others in special cases with the permission of the instructor. Instructor permission required.

POLI 306 DIRECTED READING II (3)

See POLI 305. Instructor permission required.

POLI 307 POLITICAL SCIENCE INTERNSHIP I (2)

This course is the in-class component of the political science internship program. Students will read both a common set of materials and a set that is oriented to their forthcoming internship. A final paper is required. Instructor permission required.

POLI 308 POLITICAL SCIENCE INTERNSHIP II (1 TO 2)

This course is the work component of the political science internship program. Students will be required to submit weekly progress reports and a final portfolio. Pre-requisite(s): POLI 307. Instructor permission required.

POLI 315 ELECTIONS AND VOTING BEHAVIOR (3)

Exploration of voting behavior and elections. Includes consideration of both individual level behavior and aggregate level patterns of election results. Limited enrollment.

POLI 317 THE CONGRESS (3)

Examines the role of Congress in the American political system. Attention is given to the historical development of Congress, the current status of the Congress, and the functions of Congress in the American political system. Limited enrollment.

POLI 318 THE PRESIDENCY (3)

Analysis of presidential powers and behavior in the context of legal, electoral, personal, and other forces that shape and limit the actions of the President. Limited enrollment.

POLI 321 AMERICAN CONSTITUTIONAL LAW (3)

Interpretation of the Constitution by the Supreme Court. (Juniors and Seniors preferred). Limited enrollment.

POLI 330 MINORITY POLITICS (3)

Examination of the political and social position of minority groups (African Americans, Asian Americans, Native Americans, Latinos, and women) in the U.S. This course explores the political power and behavior of these groups. The key concepts include racism, discrimination, resources, political power, culture, leadership, class, and inequality. Limited enrollment.

POLI 331 ENVIRONMENTAL POLITICS AND POLICY (3)

This course considers the major issues in the increasingly important public policy area of the environment. It emphasizes the American experience, but also considers certain crucial international aspects of these issues.

POLI 332 URBAN POLITICS (3)

Exploration of issues of political behavior and public policy in urban and metropolitan areas. Includes urban decline, regional governance, revitalization, and issues of ethnic and racial conflict. Limited enrollment.

POLI 333 COMPARATIVE LEGISLATURES (3)

Examination of similarities and differences of legislatures in different countries. Includes the causes and consequences of these differences. Limited enrollment.

POLI 334 PARTIES AND INTEREST GROUP(3)

Examination of the organization and behavior of political parties and interest groups within the American political system, with emphasis on the extent to which these organizations operate differently across the national, state, and local levels of government. Limited enrollment.

POLI 335 POLITICAL ENVIRONMENT OF BUSINES(3)

Study of the foundation of government involvement in public policy and the institutional process guiding executive, legislative, and bureaucratic officials. Includes theories of collective action and their application in the political world. Limited enrollment.

POLI 336 POLITICS OF REGULATION (3)

This course will focus principally on government regulation of business and the political factors that shape its content. Limited enrollment.

POLI 337 PUBLIC POLICY AND BUREAUCRACY (3)

Exploration of the role that public bureaucracy plays in national policy making. Includes an examination of sources of agency power, which are linked to different policy outcomes. Limited enrollment.

POLI 338 POLICY ANALYSIS (3)

This class familiarizes students with the analytical tools necessary for evaluating and analyzing public policies. Cross-listed with SOSOC 301. Limited enrollment.

POLI 339 SOUTHERN POLITICS (3)

Examination of selected political patterns and trends in the modern South. Includes political developments within the region and the impact of the South on American politics generally. Limited enrollment.

POLI 341 GENDER AND POLITICS (3)

Examination of politics through the lens of gender hierarchy. Emphasis on how the constructions of masculinity and femininity shape and are shaped by interacting economic, political, and ideological practices. Limited enrollment.

POLI 342 POLITICS OF THE JUDICIARY (3)

Explores the role of courts and judges in American politics. Will illustrate major characteristics of judicial institutions in the U.S. and provide understanding of forces influencing judicial decisions. Will cover federal and state organization of trial and appellate courts, judicial selection methods, and the politics of judicial decision-making. Limited enrollment.

POLI 348 ORGANIZATIONAL DESIGN (3)

An introduction to the analysis design, and management of organizations with an emphasis on incentives and information. Principles from economics, political science, and game theory will be applied to problems in project and team management, in organizational computing, and in allocating and pricing share facilities. Cross-listed with ECON 348. Offered Fall. Instructor(s): Boylan.

POLI 354 LATIN AMERICAN POLITICS (3)

Study of the political process in contemporary Latin America, with emphasis on selected major countries. Limited enrollment.

POLI 355 GOVERNMENT AND POLITICS OF THE MIDDLE EAST (3)

Provides an introduction to politics in the Middle East. Brief historical overview is combined with detailed description of political systems in the area. The region is then used to examine empirically, critique and revise theories of comparative politics. Emphasis on whether the region would be considered unique or exceptional. Limited enrollment.

POLI 356 THE POLITICS OF LATIN AMERICAN ECONOMIC DEVELOPMENT (3)

This course examines the evolution of economic development in Latin America, focusing on its political foundations. Special attention will be given to the interaction between economic growth and the construction of democratic political institutions in Latin America. Limited enrollment.

POLI 357 DEMOCRACY AND DEMOCRATIZATION (3)

This course will examine the theoretical and practical idea of democracy. It will do so by trying to explore the following questions: What is democracy? How does democracy arise? How may democracy survive and consolidate? Limited enrollment.

POLI 360 WESTERN EUROPEAN DEMOCRACIES (3)

A survey of government and politics in Western European democracies, with primary emphasis on Great Britain, France, and Germany. Limited enrollment.

POLI 362 EUROPEAN INTEGRATION (3)

Examines the process of European integration since World War II. Special attention is given to the European Community (EC), its institutions and policy processes as well as the consequences of European Unity for the political process in European societies. Limited enrollment.

POLI 367 TRANSITIONS TO DEMOCRACY (3)

This course uses recent examples from East-Central Europe to illustrate a variety of transitions to democracy. Procedures which are vital to a successful transition, such as setting up electoral laws, economic reform, constitution-making, and transitional justice are discussed from an institutional design perspective. Limited enrollment. Offered Fall.

POLI 372 AMERICAN FOREIGN POLICY (3)

Examination of internal and external aspects of foreign policy leadership, presidential initiative, congressional control, press, public opinion, and crisis management. Not a Managerial Studies elective. Limited enrollment.

POLI 373 INTERNATIONAL CONFLICT (3)

Exploration of the theoretical basis of, and empirical evidence for, a number of explanations for interstate war. Includes contemporary theories dealing with dispute escalation, arms races, deterrence, crisis management, and low-intensity conflict. Limited enrollment.

POLI 374 STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS (3)

Introduction to the uses of game theory in the study of international relations. Limited enrollment.

POLI 375 INTERNATIONAL ORGANIZATION (3)

Study of the development and role of international organizations in world politics. Topics include the history and evolution of international organizations, the effects of international law on behavior, and the extent to which international cooperation has been effective at resolving global problems. Limited enrollment.

POLI 378 POLITICS OF AMERICAN NATIONAL SECURITY (3)

Examination of major issues of national security policy. Includes strategic doctrines, policy-making processes on defense issues, arms control, and the defense of Europe. Not a Managerial Studies elective. Limited enrollment.

POLI 379 PROBLEMS IN INTERNATIONAL RELATIONS (3)

Explores the relationship between politics and economics. The objective is to understand the historical development of trade and monetary relationships between the countries of the world. Pre-requisite(s): POLI 395. Repeatable for Credit. Limited enrollment.

POLI 380 POLITICAL BEHAVIOR (3)

Examines basic concepts in political behavior including political socialization, models of voting behavior, public opinion, and political participation.

POLI 395 INTRODUCTION TO STATISTICS (3)

Introduction to research design and quantitative methods used in contemporary political science research. Students will apply the tools of social science inquiry in a series of projects designed to examine political attitudes and behavior. Limited enrollment.

POLI 401 STATE POLITICS RESEARCH SEMINAR (3)

A research seminar in state politics and policy with an emphasis on state institutions.

POLI 405 SENIOR THESIS (3)

Open to senior honors majors with the permission of the department. Students must complete both POLI 405 and 406 to obtain credit. Instructor permission required. Offered Fall and Spring.

POLI 406 SENIOR THESIS (3)

See POLI 405. Instructor permission required. Offered Fall and Spring.

POLI 418 SEMINAR ON THE PRESIDENCY (3)

Provides students with a broad introduction to the presidency. Topics include a review of the executive's constitutional powers and their changes over time; processes and politics of presidential nomination and election; struggles between the president and other political elites and dynamics of White House decision-making. Limited enrollment.

POLI 422 AMERICAN POLITICAL DEVELOPMENT (3)

Examines the creation and evolution of American political institutions using new institutionalism as a theoretical perspective. New institutionalism focuses on how rules influence the behavior of individuals, having important consequences for political outcomes. Explores the impact of political preferences on congressional development, political parties, interest groups, and bureaucratic agencies. Limited enrollment.

POLI 425 POLITICAL SOCIOLOGY (3)

Can democracy survive its enemies: tyranny of ruling elites and classes, tyranny of the majority, ethnic and religious conflict, individualism, government secrecy, citizen apathy? Cross-listed with SOCI 425. Limited enrollment.

POLI 430 SEMINAR IN TEXAS POLITICS (3)

Research seminar in the history of Texas politics. Instructor permission required. Limited enrollment.

POLI 431 ELECTORAL CAMPAIGNS (3)

Examines the role of campaigns in determining the outcome of political races.

POLI 432 URBAN POLITICS (3)

Research seminar on political behavior and public policy in urban and metropolitan areas. Limited enrollment.

POLI 433 COMPARATIVE LEGISLATURES (3)

Research seminar comparing similarities and differences of legislatures in various countries.

POLI 434 PUBLIC POLICY AND METROPOLITAN AREA GOVERNANCE (3)

This course will examine the market-like relationship among metropolitan area governments. It will address questions of urban/suburban relationships as well as policy topics such as education and local service provision. Limited enrollment.

POLI 435 POLITICAL PARTICIPATION (3)

Seminar will consider normative issues, theories, and empirical evidence relating to the value, meaning, and consequences of political participation, with readings taken from American and comparative politics. Limited enrollment.

POLI 436 POLITICS OF REGULATION (3)

Study of the government's regulation of business and the political factors that shape its content. Limited enrollment.

POLI 437 EDUCATION POLICY (3)

Examines educational politics and policy from micro and macro perspectives. We will focus on school governance, structure, and finance at the federal, state, and local levels and examine the design, implementation and effects of various school reform initiatives in U.S., and to a more limited extent in other countries. Limited enrollment.

POLI 438 RACE AND PUBLIC POLICY (3)

Study of minority group politics and how race structures contemporary U.S. politics. Includes myths and realities of minority groups, symbolic politics and race, pluralism as a model of U.S. democracy, the intersection of class, race, and gender, civil rights movements, group consciousness, public opinion regarding minorities, and responses of national institutions to race issues. Limited enrollment.

POLI 439 RESEARCH SEMINAR ON SOUTHERN POLITICS (3)

Examination of political behavior and political institutions in the southern states, with emphasis on contemporary Texas politics. Limited enrollment.

POLI 441 COMMON PROPERTY RESOURCES (3)

Common Property Resources (CPRs), such as fisheries, aquifers, and the Internet, appear in many guises and pose a fundamental problem for governing. Exploration of theoretical underpinnings for CPRs, their growing literature, and the political and economic institutions mediating CPR dilemmas. Included is an original research project in conjunction with the instructor. Limited enrollment.

POLI 456 REGIME TRANSFORMATIONS AND TRANSITIONS (3)

Examines why political systems may change from democratic to authoritarian, or vice versa. Distinguishes between different regime types and explores the conditions promoting social movements, political unrest, and military coups. Examines factors that help to consolidate newly formed regimes. Examples are drawn from a variety of postcolonial states. Limited enrollment.

POLI 457 CONDITIONS OF DEMOCRACY (3)

This course starts with definitions and theories/preconditions of democracy and then looks at specific cases of democratic transition throughout the world, democratic consolidation, reaction, and the prospects for the future. Limited enrollment.

POLI 460 SEMINAR IN COMPARATIVE GOVERNMENT (3)

This seminar will analyze authoritarian regimes from a comparative perspective.

POLI 462 COMPARATIVE PUBLIC POLICY (3)

Seminar examining the process and substance of public policy across nations, with emphasis on social policy in industrialized democracies. Instructor permission required. Limited enrollment.

POLI 463 COMPARATIVE POLITICAL ECONOMY (3)

Seminar exploring the interrelationship of economics and politics in advanced industrial societies. Includes economic policy making, political behavior and economic conditions, and the role of institutions in channeling conflicts between democracy and capitalism. Limited enrollment.

POLI 464 POLITICAL ECONOMY OF DEVELOPING NATIONS (3)

A central priority developing nations face today concerns establishing economic growth. How best to achieve strong economic performance has both an economic and political dimension. This course seeks a rudimentary understanding of economic growth, concentrating on its political determinants.

POLI 466 WESTERN DEMOCRACIES (3)

This seminar will deal with the determinants of party systems, the structure and functions of parties, and theories of voting behavior in Western democracies. Limited enrollment.

POLI 470 INTERNATIONAL RELATIONS (3)

Topic varies from year to year. Repeatable for Credit. Limited enrollment.

POLI 472 AMERICAN FOREIGN POLICY (3)

The content of American foreign policy, its sources, and the process of policy formulation.

POLI 475 INTERNATIONAL COOPERATION (3)

Research seminar on theories and evidence of international cooperation. The course will explore conditions conducive to establishing and maintaining cooperation in international politics, the design of international agreements and institutions, and the influence of international agreements and institutions on international relations. Limited enrollment.

POLI 476 INTERNATIONAL POLITICAL ECONOMY (3)

This course is designed to survey the theoretical and empirical analysis of the politics of international economic relations. In particular, the course is designed to examine the interrelationships of economics and politics by applying economic theory to the study of politics. Limited enrollment.

POLI 477 DOMESTIC POLITICS AND INTERNATIONAL RELATIONS (3)

Seminar on the influence of domestic politics on international relations. The course will explore when, why, and how the political, economic, and social conditions within countries affect international political and economic relations. Limited enrollment.

POLI 479 SEMINAR IN QUANTITATIVE INTERNATIONAL RELATIONS (3)

Seminar exploring the quantitative study of international relations, with a focus on the study of international conflict. Students will be required to write a quantitative research paper. Instructor permission required. Repeatable for Credit. Limited enrollment.

POLI 480 SEMINAR IN POLITICAL BEHAVIOR (3)

Undergraduate research seminar covering the field of political behavior with special emphasis on the application of social and cognitive psychology to the study of mass political behavior. Topics include political socialization, models of voting behavior, and political participation. Limited enrollment.

POLI 490 MODERN POLITICAL THEORY AND INTERDISCIPLINARY FIELDS (3)

Study of the development of modern political theory and its relevance to contemporary problems. Limited enrollment.

POLI 500 SOCIAL SCIENTIFIC THINKING I (3)

This course introduces students to the practice of social science research including empirical description, theoretical development, and hypothesis generation and testing. It includes projects on the design and implementation of surveys, controlled experiments, archival data collection, fieldwork, case studies, and qualitative analysis. Limited enrollment.

POLI 501 SOCIAL SCIENTIFIC THINKING II (3)

This course is a continuation of POLI 500. Students will plan and execute an original research project and write a paper reporting the results. Pre-requisite(s): POLI 500. Limited enrollment.

POLI 502 INTRODUCTION TO STATISTICS (3)

This course aims at providing students with a working knowledge of statistics in political science. It involves the study of descriptive and inferential statistics, as well as hands-on experience with computer statistical packages. Limited enrollment.

POLI 503 TOPICS IN METHODS AND DATA ANALYSIS (3)

Applications of least squares and general linear mode. Cross-listed with STAT 503.

POLI 504 METHODOLOGY AND DATA ANALYSIS (3)

Study of applications of maximum likelihood estimation. Limited enrollment.

POLI 505 TOPICS IN POLITICAL METHODOLOGY (3)

Special topics in political methodology. Repeatable for Credit. Limited enrollment.

POLI 510 SCOPE AND METHODS (3)

Introduction to research in political science, problems of the discipline, and basic political concepts. Includes the history of political science as a discipline. Limited enrollment.

POLI 511 MEASUREMENT AND RESEARCH DESIGN (3)

Study of advanced topics in research design and measurement theory. Limited enrollment.

POLI 520 APPROACHES TO COMPARATIVE GOVERNMENT (3)

Core graduate course analyzing basic approaches to the study of comparative government. Limited enrollment.

POLI 527 INSTITUTIONAL ANALYSIS (3)

Theories of institutional analysis and design. Limited enrollment.

POLI 530 APPROACHES TO AMERICAN GOVERNMENT (3)

Core graduate course. Includes an analysis of basic approaches to the study of American politics. Limited enrollment.

POLI 531 STATE POLITICS (3)

Examines similarities and differences in the organization of state politics. Major issues include state legislative organization, state elite behavior, and policy implementation. Limited enrollment.

POLI 532 COMPARATIVE LEGISLATURES (3)

Provides the student with the basic concepts and theories necessary to understand the functions and organization of legislatures/parliaments/assemblies in democratic societies. This course takes a broad-based perspective, including research that focuses on national parliaments and U. S. state legislatures. Limited enrollment.

POLI 533 ADVANCED TOPICS IN POLITICAL BEHAVIOR (3)

Graduate research seminar in the subfield of political behavior. Content varies from year to year. Repeatable for Credit. Limited enrollment.

POLI 534 INTEREST GROUPS AND POLITICAL PARTIES (3)

Graduate research seminar in the subfields of interest groups and political behavior. Limited enrollment.

POLI 535 RACE, ETHNICITY, AND AMERICAN POLITICS (3)

Graduate seminar that examines the role of race and ethnicity in American politics. This course provides an examination of the behavioral and electoral implications of racial and ethnic diversity. Limited enrollment.

POLI 537 PUBLIC POLICY AND BUREAUCRACY (3)

Study of the administration and implementation of public policies across federal, state, and substate governments. Limited enrollment.

POLI 538 POLITICAL ECONOMY OF POLICY CHANGE (3)

This course will explore policy and political change primarily, but not exclusively, in the United States. Using a political economy approach, we will explore different models of change and identify the actors, institutions, and conditions that facilitate stability in change in state, local and national policymaking. Limited enrollment.

POLI 540 INTERNATIONAL RELATIONS (3)

Core graduate course. Includes an analysis of basic approaches to the study of international relations. Limited enrollment.

POLI 541 INTERNATIONAL COOPERATION (3)

Graduate seminar on theories and evidence of international cooperation. Discussion of the difficulties in establishing cooperation under anarchy and the conditions under which international cooperation is most likely to occur. Limited enrollment.

POLI 564 POLITICAL ECONOMY OF DEVELOPMENT (3)

A central priority developing nations face today concerns establishing economic growth; how best to achieve strong economic performance has both an economic and political dimension. This course seeks a rudimentary understanding of economic growth, concentrating on its political determinants. Limited enrollment.

POLI 565 POLITICAL PROTEST (3)

This course looks at various theories of collective action and social movements. It will examine theoretical debates about why individuals and groups occasionally redress their grievances through protest and more often endure hardships passively. It will evaluate the relative merit of these theories in explaining cases of protest and passivity worldwide. Limited enrollment.

POLI 567 COMPARATIVE POLITICAL BEHAVIOR (3)

In this course we will explore the nature and sources of cross-national differences in mass political behavior. Limited enrollment.

POLI 568 COMPARATIVE POLITICAL INSTITUTIONS (3)

Examines the design of political institutions in democracies, and their effect on elections, governance, and representation. Explores topics such as the presidential-parliamentary debate, electoral laws and party systems, political parties, electoral institutions and the election of women and minorities, institutional engineering, and U.S. experiences with alternative electoral systems. Limited enrollment.

POLI 570 SEMINAR IN INTERNATIONAL CONFLICT (3)

Seminar in international conflict. Emphasis on formal theories and quantitative analysis of the causes of war. Limited enrollment.

POLI 572 FOREIGN POLICY DECISION MAKING (3)

Study of foreign policy, its sources, and the process of policy formulation. Limited enrollment.

POLI 574 COLLECTIVE SOCIAL CHOICE (3)

Introduction to a growing body of literature on how and why individual preferences dominate those of others. Includes the relationship between decision-making structures and the nature of decisional outcomes. Limited enrollment.

POLI 575 GAME THEORY (3)

Examination of current developments in game theory with application to political science. Limited enrollment.

POLI 576 INTERNATIONAL POLITICAL ECONOMY (3)

Seminar surveying some of the primary theoretical perspectives and analytical approaches for studying international political economy. Includes a survey of contemporary literature, with special emphasis on theory and research, as well as instructions in how to critically evaluate research and set up a research project. Limited enrollment.

POLI 579 SEMINAR IN MODELING INTERNATIONAL RELATIONS (3)

Topic varies from year to year. Repeatable for Credit. Limited enrollment.

POLI 580 SEMINAR IN AMERICAN POLITICS (3)

Topics vary from year to year. Repeatable for Credit.

POLI 591 DIRECTED READING-METHODOLOGY (3)

Repeatable for Credit.

POLI 592 DIRECTED READING METHODOLOGY (3)

Repeatable for Credit.

POLI 593 DIRECTED READING-AMERICAN POLITICS (3)

Repeatable for Credit.

POLI 594 DIRECTED READING-AMERICAN POLITICS (3)

Repeatable for Credit.

POLI 595 DIRECTED READING-INTERNATIONAL RELATIONS (3)

Repeatable for Credit.

POLI 596 DIRECTED READING-INTERNATIONAL RELATIONS (3)

Repeatable for Credit.

POLI 597 DIRECTED READING-COMPARATIVE POLITICS (3)

Repeatable for Credit.

POLI 598 DIRECTED READING-COMPARATIVE POLITICS (3)

Repeatable for Credit.

POLI 599 TEACHING POLITICAL SCIENCE (1)

This course prepares graduate students to design and teach classes at the college level. Repeatable for Credit.

POLI 600 MA RESEARCH AND THESIS (1 TO 15)

Research and thesis for resident students. Instructor permission required. Repeatable for Credit.

POLI 800 PH.D. RESEARCH AND THESIS (1 TO 15)

Instructor permission required. Repeatable for Credit.

PORT (PORTUGUESE)**School of Humanities/Center for Study of Languages****PORT 101 INTRODUCTION TO PORTUGUESE LANGUAGE AND CULTURE I (5)**

Introduction to the study of the Portuguese language and culture with emphasis on the development of listening, speaking, reading and writing. This course uses textbooks as well as music, websites and videos for access to various kinds of cultural material and pretexts for communication. Includes one hour/wk of lab work. Recommended prerequisite(s): No prior knowledge of Portuguese. Limited enrollment. URL: lang.rice.edu/sbloem.

PORT 102 INTRODUCTION TO PORTUGUESE LANGUAGE AND CULTURE II (5)

Continuation of PORT 101. Pre-requisite(s): PORT 101, or placement test, or permission of instructor. Limited enrollment.

PORT 201 INTERMEDIATE PORTUGUESE LANGUAGE AND CULTURE I (4)

Students progress to more creative oral and written communicative activities. Texts, music, videos, and the internet will be used to address a wide variety of topics and real-life situations. Pre-requisite(s): PORT 102, or placement test, or permission of instructor. Limited enrollment.

PORT 202 INTERMEDIATE PORTUGUESE LANGUAGE AND CULTURE II (4)

Students will continue to develop communicative competence in oral and written Portuguese using texts, music, films, and the web as sources for authentic cultural material in diverse areas. Pre-requisite(s): PORT 201, or placement test, or permission of instructor. Limited enrollment.

PORT 400 INDEPENDENT STUDY (3)**PORT 401 INDEPENDENT STUDY (3)****PSYC (PSYCHOLOGY)****School of Social Sciences/Psychology****PSYC 101 INTRODUCTION TO PSYCHOLOGY (3)**

Survey of topics, problems, and approaches in contemporary psychology. Includes the biological basis of behavior, sensation, perception, attention, learning and memory, thinking, language, abnormal behavior and therapies, personality and individual differences. Required for psychology majors.

PSYC 102 READINGS IN INTRODUCTORY PSYCHOLOGY (1)

Discussion of articles and research reports in psychology. Corequisite(s): PSYC 101

PSYC 202 INTRODUCTION TO SOCIAL PSYCHOLOGY (3)

Overview of topics in social psychology. Includes conformity and social influence, attitude change and the mass media, aggression, altruism, relationships, liking and loving, prejudice and stereotyping, and socialization. Required for psychology majors. Pre-requisite(s): PSYC 101, or permission of instructor.

PSYC 203 INTRODUCTION TO COGNITIVE PSYCHOLOGY (3)

An introduction to topics in cognitive psychology including perception, memory, psycholinguistics, problem solving and decision making. Required for psychology majors. Pre-requisite(s): PSYC 101, or permission of instructor. URL: www.owl.net.rice.edu/~psyc203.

PSYC 231 INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY (3)

An overview of the principles, techniques, and theories of psychology applied in the industrial setting. Pre-requisite(s): PSYC 101, or permission of instructor.

PSYC 308 MEMORY (3)

Critical review of traditional and contemporary approaches to the study of remembering and forgetting. Recommended prerequisite(s): PSYC 101, PSYC 203.

PSYC 309 PSYCHOLOGY OF LANGUAGE (3)

Study of human and other animal communication. Includes the structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, and language errors and disorders. Cross-listed with LING 309. Pre-requisite(s): PSYC 101 and PSYC 203, or permission of instructor.

PSYC 315 SEMANTICS: INTRODUCTION TO THE STUDY OF MEANING (3)

Introduction to basic approaches to the study of meaning in linguistics and related fields. Includes the cognitive representation of meaning, lexical categorization, conceptual structures, metaphor/metonymy, meaning change, pragmatic inference, and the relation of language and mind. Cross-listed with LING 315. Pre-requisite(s): PSYC 101 and PSYC 203 and LING 200, or permission of instructor.

PSYC 321 DEVELOPMENTAL PSYCHOLOGY (3)

Study of behavioral changes with age and general laws in both human and nonhuman species. Pre-requisite(s): PSYC 101, or permission of instructor.

PSYC 329 PSYCHOLOGICAL TESTING (3)

Techniques for measuring individual differences and critical review of theories of individual differences in intelligence and personality. Pre-requisite(s): PSYC 339, or permission of instructor.

- PSYC 330 PERSONALITY THEORY AND RESEARCH (3)**
Examination of those aspects of personality emphasized by major theorists past and present. Pre-requisite(s): PSYC 101, or permission of instructor. Recommended prerequisite(s): PSYC 202, PSYC 340.
- PSYC 331 PSYCHOLOGY OF GENDER (3)**
Overview of research and theory on gender in psychology. Cross-listed with WGST 331.
- PSYC 332 ABNORMAL BEHAVIOR (3)**
Study of the diagnosis and treatment of mental disorders. Pre-requisite(s): PSYC 101, or permission of instructor.
- PSYC 339 STATISTICAL METHODS-PSYCHOLOGY (4)**
Introduction to quantitative and computer methods applicable to the analysis of experimental and correlational data. Required for psychology majors. Cross-listed with STAT 339. Pre-requisite(s): PSYC 101, or permission of instructor.
- PSYC 340 RESEARCH METHODS (4)**
A continuation of PSYC 339, with emphasis on individual student experiments and the writing of research reports. Required for psychology majors. Pre-requisite(s): PSYC 101 and PSYC 339, or permission of instructor.
- PSYC 342 COMPUTER APPLICATIONS (3)**
The use of computers in psychological research and in usability engineering. The emphasis will be on dynamic HTML and JavaScript. Topics will include designing and running psychology experiments to run on the web and the use of web-based video. Graduate/Undergraduate version: PSYC 504.
- PSYC 350 PSYCHOLOGY OF LEARNING (3)**
A consideration of historically important and modern perspectives on learning. Both human and animal research will be discussed. Pre-requisite(s): PSYC 101 and PSYC 203, or permission of instructor.
- PSYC 351 PSYCHOLOGY OF PERCEPTION (3)**
Overview of the sensory and cognitive processes involved in human vision and audition. Offered in alternate years. Pre-requisite(s): PSYC 101 and PSYC 203, or permission of instructor.
- PSYC 360 THINKING (3)**
Study of the higher mental processes. Includes problem solving, planning, decision making, and reasoning. Graduate/Undergraduate version: PSYC 527. Pre-requisite(s): PSYC 203 and PSYC 340, or permission of instructor.
- PSYC 362 BIOPSYCHOLOGY (3)**
Overview of the neurophysiological correlates of behavior. Pre-requisite(s): PSYC 101, or permission of instructor.
- PSYC 370 INTRODUCTION TO HUMAN FACTORS AND ERGONOMICS DESIGN (3)**
Application of principles of psychology and human performance to the design of modern systems. Pre-requisite(s): PSYC 101 and PSYC 203, or permission of instructor.
- PSYC 409 METHODS IN HUMAN-COMPUTER INTERACTION (3)**
Introduction to methods for developing and testing user interfaces to computer systems. The focus is on web-based applications. Graduate/Undergraduate version: PSYC 640. Pre-requisite(s): PSYC 101 and PSYC 203, or permission of instructor.
- PSYC 411 HISTORY OF PSYCHOLOGY (3)**
Survey of evolution of psychological theory from the Greeks to the present. Includes development of scientific approaches to the study of human thought and behavior. Graduate/Undergraduate version: PSYC 511. Pre-requisite(s): PSYC 101, or permission of instructor.
- PSYC 430 COMPUTATIONAL MODELING COGNITIVE PROCESSES (3)**
A survey of computational approaches to cognitive processes. The emphasis will be on recent production system models, but other approaches will also be covered. The course will involve evaluation of existing models and hands-on experience in modeling. Graduate/Undergraduate version: PSYC 543. Recommended prerequisite(s): PSYC 203, COMP 200 (or equivalent), or permission of instructor.
- PSYC 431 ADVANCED INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY SEMINAR (3)**
An emphasis on reading original published research. Topics covered include personnel selection, training, motivation, job attitudes, and groups. Pre-requisite(s): PSYC 231, or permission of instructor.
- PSYC 432 BRAIN AND BEHAVIOR (3)**
The neural basis of higher mental functions in humans such as perception, attention, memory, motor skill, and language will be examined. Claims and controversies from neuropsychology will be examined. Cross-listed with CSCI 420. Pre-requisite(s): PSYC 101 and PSYC 203 and PSYC 362, or permission of instructor. URL: www.owl.net.rice.edu/~psyc432.
- PSYC 440 ADVANCED SEMINAR IN GENERAL PSYCHOLOGY (3)**
Extensive reading and thorough discussion of empirically oriented issues drawn from various areas of psychology. Pre-requisite(s): PSYC 101 and PSYC 202 and PSYC 203, or permission of instructor.

PSYC 441 HUMAN-COMPUTER INTERACTION (3)

Study of the design and evaluation of interactive computing systems for human use and the major phenomena surrounding them. Graduate/Undergraduate version: PSYC 541. Pre-requisite(s): PSYC 101 and PSYC 203, or permission of instructor.

PSYC 445 BELIEFS AND HEALTH (3)

Consideration of the research on psychological factors and health with special consideration to the role of health beliefs in people's practice and nonpractice of health, illness, and sick-role behaviors. Pre-requisite(s): PSYC 340. Limited enrollment. Instructor(s): Burnett; Diddel

PSYC 455 CLINICAL PSYCHOLOGY (3)

This course involves applications of psychology in clinical and counseling settings, including the theory and practice of psychotherapy, approaches to working with clinical populations, practice issues and career opportunities as a mental health professional. Pre-requisite(s): PSYC 101 and PSYC 332, or permission of instructor. Limited enrollment. Offered Fall. Instructor(s): Diddel.

PSYC 460 PSYCHOLOGY OF EMOTION AND MOTIVATION (3)

Study of motives and emotions as causes of human behavior. Includes biological motives, aggression, emotions and emotional expression, and individual differences in motivation.

PSYC 465 OLFACTORY PERCEPTION (3)

Overview theories and research related to olfaction. Special topics include olfactory memory, the effect of emotion and cognition on olfaction, olfaction as a channel of communication, sensory integration, and ERP and fMRI studies on olfaction and its relationship with other sensory systems.

PSYC 470 ENGINEERING PSYCHOLOGY (3)

Principles of psychology and human performance applied to the design of modern systems.

PSYC 475 STEREOTYPING AND PREJUDICE (3)

Consideration of modern research on stereotypes of, prejudice against, and discrimination toward racial, gender, and stigmatized groups. Pre-requisite(s): PSYC 202. Recommended prerequisite(s): PSYC 203 and 340. Limited enrollment. Offered Spring. Instructor(s): Schneider; Beal.

PSYC 480 ADVANCED TOPICS IN PSYCHOLOGY (3)

Topic will vary. Pre-requisite(s): PSYC 202 and PSYC 203, or permission of instructor. Repeatable for Credit.

PSYC 485 SUPERVISED RESEARCH (1 TO 6)

Supervised empirical research. Research paper required. Sponsorship by faculty member required. Recommended prerequisite(s): PSYC 339, PSYC 340. Repeatable for Credit.

PSYC 488 SUPERVISED READING (1 TO 6)

Supervised reading of books and empirical papers on a topic of mutual interest to students and faculty. Term paper required. Sponsorship by faculty member required. Must be enrolled in one of the following Major(s): Psychology. Pre-requisite(s): PSYC 339 and PSYC 340. Instructor permission required. Repeatable for Credit.

PSYC 495 SUMMER INTERNSHIP (3)

Provides enrollment for various department summer internship. Instructor permission required. Repeatable for Credit.

PSYC 499 HONORS THESIS (1 TO 6)

Sponsorship by faculty member required. Pre-requisite(s): PSYC 339 and PSYC 340, or permission of instructor. Repeatable for Credit.

PSYC 502 ADVANCED PSYCHOLOGICAL STATISTICS I (3)

Introduction to inferential statistics with emphasis on analysis of variance and multiple regression. Cross-listed with STAT 509.

PSYC 503 ADVANCED PSYCHOLOGICAL STATISTICS II (3)

A continuation of PSYC 502, focusing on multiple regression. Other multivariate techniques and distribution-free statistics are also covered. Cross-listed with STAT 510. Pre-requisite(s): PSYC 502, or permission of instructor.

PSYC 504 COMPUTER APPLICATIONS IN PSYCHOLOGY (3)

The use of computers in psychological research and in usability engineering. The emphasis will be on dynamic HTML and JavaScript. Topics will include designing and running psychology experiments to run on the web and the use of web-based video. Graduate/Undergraduate version: PSYC 342.

PSYC 507 RESEARCH METHODS (3)

Graduate-level treatment of a wide range of laboratory and field research methodologies. Repeatable for Credit.

PSYC 511 HISTORY AND SYSTEMS OF PSYCHOLOGY (3)

Study of the philosophical foundations of psychology, the development of scientific models in the 19th century, 20th-century schools of psychology, and the growth of fields of modern psychology. Graduate/Undergraduate version: PSYC 411.

PSYC 520 FOUNDATIONS OF COGNITIVE PSYCHOLOGY (3)

An introduction to the basic topics in cognitive psychology, including perception, memory, psycholinguistics, concept formation, problem solving, and decision making.

PSYC 521 PSYCHOLOGY OF PERCEPTION (3)

An overview of the sensory and cognitive processes involved in human vision and audition.

PSYC 522 INFORMATION PROCESSING AND ATTENTION (3)

The study of such problems as information overload, selective attention, response conflict, and automatic and controlled processing.

PSYC 524 MEMORY (3)

Overview issues and research in remembering and forgetting.

PSYC 525 PSYCHOLINGUISTICS (3)

Study of the psychology of language. Includes the study of speech perception, reading, syntax, meaning, bilingualism, language and thought, and language errors and disorders.

PSYC 526 ARTIFICIAL INTELLIGENCE (3)

The study of cognitive processes from the vantage point of the human as a computer, with an emphasis on expert systems and their development, parallel distributed processing models, and connectionism.

PSYC 527 THINKING (3)

The study of higher mental processes includes problem solving, planning, decision making, and reasoning. Graduate/Undergraduate version: PSYC 360.

PSYC 529 COGNITIVE RESEARCH SEMINAR (1 TO 3)

A weekly student-staff seminar on current and recent research about mental phenomena. Repeatable for Credit.

PSYC 530 FOUNDATIONS OF I/O PSYCHOLOGY (3)

Graduate-level introduction to the study of human behavior in the work setting.

PSYC 533 I/O PSYCHOLOGY RESEARCH SEMINAR (1 TO 3)

A weekly student-staff seminar on various industrial- organizational psychology topics. Repeatable for Credit.

PSYC 540 FOUNDATIONS OF HUMAN FACTORS (3)

An introduction to the basic topics in engineering psychology including basic methods of systems analysis, display-control design, mental and physical workload analysis, and environmental factors in human performance.

PSYC 541 HUMAN COMPUTER INTERACTION (3)

Study of the design and evaluation of interactive computing systems for human use and the major phenomena surrounding them. Graduate/Undergraduate version: PSYC 441.

PSYC 542 HUMAN RELIABILITY AND SAFETY (3)

Topics covered include human reliability in systems, accident analysis techniques, hazard and risk perception, and safety communications.

PSYC 543 COMPUTATIONAL MODELING COGNITIVE PROCESSES (3)

A survey of computational approaches to modeling cognitive processes. The emphasis will be on recent production system models, but other approaches will also be covered. The course will involve evaluation of existing models and hands-on experience in modeling. Graduate/Undergraduate version: PSYC 430.

PSYC 550 FOUNDATIONS OF SOCIAL PSYCHOLOGY (3)

Review of theories of social psychology with an emphasis on current empirical research.

PSYC 560 PSYCHOLOGY PRESENTATIONS (3)

Practicum on oral psychology presentation.

PSYC 561 TEACHING IN PSYCHOLOGY (1 TO 3)

Assistance in the teaching of undergraduate and occasionally graduate courses in psychology. Repeatable for Credit.

PSYC 563 INTERNSHIP (1 TO 3)

Repeatable for Credit.

PSYC 565 HUMAN OLFACTION (3)

Overview theories and research to olfaction. Special topics include olfactory memory, the effect of emotion and cognition on olfaction, olfaction as a channel of communication, sensory integration, and ERP and fMRI studies on olfaction and its relationship with other sensory systems.

PSYC 571 FIRST YEAR PROJECT (1 TO 3)

Individual research project undertaken in the first year of the graduate program. Repeatable for Credit.

PSYC 572 SECOND YEAR PROJECT (1 TO 3)

Individual research project undertaken during the second year of the graduate program. Repeatable for Credit.

PSYC 573 NON-THESIS GRADUATE RESEARCH (1 TO 6)

Individual research not for first- or second-year project or thesis. Repeatable for Credit.

PSYC 575 COGNITIVE NEUROSCIENCE I (1 TO 15)

Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including sensation and perception, attention, motor control, and neuroplasticity. Other topics include basic neuroanatomy, experimental and clinical investigative methods and the historical and philosophical context of contemporary neuroscience. Cross-listed with NEUR 501.

PSYC 576 COGNITIVE NEUROSCIENCE II (3)

Overview of neuropsychological and cognitive neuroscience approaches to higher mental functions including language, memory, executive functions, reasoning, and numerical processing. Cross-listed with NEUR 502.

PSYC 577 INTRODUCTION TO FUNCTIONAL NEUROANATOMY (2)

Anatomy and function of components of the nervous system with an emphasis on the central nervous system.

PSYC 580 DEVELOPMENTAL COGNITIVE NEUROSCIENCE (3)

Seminar focusing on the neural/biological bases of both normal and abnormal human development through a survey of recent research in developmental cognitive neuroscience. Topics include perceptual, motive, cognitive, and language development as well as experimental research methods for studying the developing brain.

PSYC 581 VISION SCIENCE (3)

Advanced graduate seminar in the psychology of vision covering the neural, psychophysical, and phenomenological approaches to visual perception.

PSYC 582 EARLY SENSORY, PERCEPTUAL AND ATTENTIONAL DEVELOPMENT (3)

This is a survey course for graduate students interested in the development of sensory systems, perception, and attention. There will be original empirical and theoretical readings from the literature on the development of these functions primarily during infancy. Neurobiological underpinnings for these functions will be debated and discussed.

PSYC 602 PSYCHOMETRICS (3)

Test theory including reliability, validity, norms, sampling, and factor analysis.

PSYC 620 ADVANCED TOPICS IN COGNITIVE PSYCHOLOGY (1 TO 3)

Topics will vary. Repeatable for Credit.

PSYC 621 TOPICS IN MEMORY (3)

Topics will vary. Repeatable for Credit.

PSYC 628 MEMORY RESEARCH SEMINAR (1)

Weekly seminar to discuss recent research in human memory. Repeatable for Credit.

PSYC 629 PSYCHOLINGUISTICS RESEARCH SEMINAR (1)

Weekly seminar to discuss recent research in psycholinguistics. Repeatable for Credit.

PSYC 630 ADVANCED TOPICS IN I/O (3)

Topics will vary. Repeatable for Credit.

PSYC 632 LEADERSHIP (3)

Examination of the major psychological approaches to the study of leadership. Emphasis is on theory and practice in formal organizations.

PSYC 634 PERSONNEL SELECTION (3)

Examination of the theory, research and applications in personnel selection including job analysis, job performance, evaluation of performance, and validation of selection methods.

PSYC 639 I/O PSYCHOLOGY INTERNSHIP (1 TO 3)

Supervised internship in organizational and/or personnel psychology. Repeatable for Credit.

PSYC 640 TOPICS IN HUMAN-COMPUTER INTERACTION (3)

Topics will vary. Graduate/Undergraduate version: PSYC 409. Repeatable for Credit.

PSYC 649 ENGINEERING PSYCHOLOGY INTERNSHIP (1 TO 3)

Supervised internship in engineering psychology. Repeatable for Credit.

PSYC 651 TOPICS IN SOCIAL PSYCHOLOGY (3)

Topics will vary. Repeatable for Credit.

PSYC 660 PROFESSIONAL ISSUES (3)

Discussion of selected topics on professional matters. Includes grant writing, licensing, and ethics in psychology.

PSYC 671 METHODS IN COGNITIVE NEUROSCIENCE (3)

Explores issues in functional neuroimaging and provides hands-on experience with experimental design, data acquisition, and analysis. Examines hemodynamic (PET, fMRI), electrophysiologic (EEG, MEG), and other (e.g. neural stimulation, event-related optical) methods of measuring functional activation in the human brain related to cognitive operations. Instructor(s): Potts.

PSYC 700 THESIS RESEARCH (1 TO 15)

Research for the master's thesis. Repeatable for Credit.

PSYC 800 DISSERTATION RESEARCH (1 TO 15)

Research for the doctoral dissertation. Repeatable for Credit.

RELI (RELIGIOUS STUDIES)**School of Humanities/Religious Studies****RELI 101 INTRODUCTION TO THE STUDY OF RELIGION (3)**

Comparative and interdisciplinary analysis of key elements (including scripture, religious experience, ideas of the divine, religious art and practices) of two Western and two non-Western religions, of the scholarly study of religion, and of the role of religion in the contemporary world. Offered Spring. Instructor(s): Parsons; Carroll.

RELI 111 INTRODUCTION TO AFRICAN RELIGIONS (3)

Introduction to the structures of African religions through readings. Topics include community, cosmology, ritual, ethical values, magic, witchcraft, spirit possession, contribution to nationalism, social change, religion and art, and transplantation of African Religions in the Americas. Offered Fall. Instructor(s): Bongmba.

RELI 113 INTRODUCTION TO CHRISTIANITY IN AFRICA (3)

An introductory reading course examining the dynamics of African Christianity from the early church to the present. Course will include studying the African church during the Patristic era, the Colonial period, Prophetic Movements, nationalism, racial tensions, the role of women, and the emergence of a distinct theological voice. Not offered Fall and Spring. Instructor(s): Bongmba.

RELI 122 THE BIBLE AND ITS INTERPRETERS (3)

An introduction to the Hebrew Bible/Old Testament. Compares modern-critical reading with early Jewish and Christian, often fanciful interpretations. Not offered Fall and Spring. Instructor(s): Henze.

RELI 125 INTRODUCTION TO BIBLICAL HEBREW I (3)

An introduction to Biblical Hebrew (two semesters) with emphasis on grammar and vocabulary. Cross-listed with HEBR 125. Not offered Fall and Spring. Instructor(s): Henze.

RELI 126 INTRODUCTION TO BIBLICAL HEBREW II (3)

Continuation of RELI 125. Emphasis on grammar and vocabulary, with selected readings from the Hebrew Bible. Cross-listed with HEBR 126. Not offered Fall and Spring. Instructor(s): Henze.

RELI 127 INTERMEDIATE BIBLICAL HEBREW I (3)

Readings in the Hebrew Bible as well as in some unvocalized texts from the Dead Sea Scrolls. Review of grammar and vocabulary. Pre-requisite(s): RELI 125 and RELI 126. Not offered Fall and Spring Instructor(s): Henze.

RELI 128 INTERMEDIATE BIBLICAL HEBREW II (3)

Continuation of RELI 127 (RELI 127 is not a prerequisite). Cross-listed with HEBR 128. Not offered Fall & Spring. Instructor(s): Henze.

RELI 132 TIBETAN LANGUAGE AND CULTURE I (4)

Readings in Tibetan Bon and Buddhist religious texts. Cross-listed with TIBT 132. Not offered Fall and Spring. Instructor(s): Klein.

RELI 133 TIBETAN LANGUAGE & CULTURE II (3)

Continuation of first semester. Knowledge of Tibetan alphabet & pronunciation. Cross-listed with TIBT 133. Graduate/Undergraduate version: RELI 533. Instructor permission required. Not offered Fall and Spring. Instructor(s): Klein.

RELI 140 INTRODUCTION TO CHINESE RELIGIONS (3)

Surveys the major Chinese religious traditions of Confucianism, Daoism and Buddhism. Readings will include both philosophical texts, historical and anthropological studies, as well as popular literature. Cross-listed with ASIA 140. Not offered Fall and Spring.

RELI 141 INTRODUCTION TO ISLAM (3)

A historical survey of the Muslim religious tradition, from the time of the Prophet Muhammad until the present day. Focus on development of Sunni and Shiite Islam, Sufism, and modern Islam. Not offered Fall and Spring. Instructor(s): Cook.

RELI 158 LIBERATION THEOLOGIES (3)

This course seeks to acquaint students with examples of liberation theology, as they relate to the following issues: racism, sexism, classism, and environmental destruction. Attention is given to the context, construction, form, and aims of Latin American liberation theology, Black theology, Feminist theology, and Theology in the Intersections. Graduate/Undergraduate version: RELI 548. Limited enrollment. Not offered Fall and Spring. Instructor(s): Pinn.

RELI 200 THE BIBLE IN WESTERN TRADITION (3)

Explores multiple roles the Bible has played in Western culture. Emphasis will be on the Bible in media history, as generator of the artistic imagination and as catalyst of ideas and as shaper of religious and political history. Cross-listed with HUMA 107. Not offered Fall and Spring. Instructor(s): Kelber.

RELI 205 VIOLENCE, SACRIFICE, AND RELIGION (3)

This course examines the sources of interhuman violence, from murder to man-made mass death. It asks whether (and if so, how) religious belief and practice has got to do with it. It addresses questions raised by sacrifice--human, animal, environmental, spiritual--in anthropological, psychological, literary, political, and philosophical terms. Offered Fall. Instructor(s): Kaplan.

RELI 207 WHO IS (NOT) A JEW? (3)

Explore problems with identity--ethnic, political, spiritual --in the case of the other Jew. Consider themes of anti-semitism and philo-semitism, insider and outsider, tradition and innovation. Examine competing views purveyed through diverse media such as literature, film, art, and music. Selected texts from St. Paul, Shakespeare, Dickens, Marx, George Eliot, Freud, Chagall, Cynthia Ozick, Bob Dylan, and Woody Allen. Limited enrollment. Offered Fall. Instructor(s): Kaplan.

RELI 209 INTRODUCTION TO JUDAISM (3)

Post-biblical Judaism reflected in ancient rabbinical (legal space and non-legal) literature, feminism, medieval Jewish philosophy with special emphasis on Maimonides, and modern developments such as Hasidism, Musar, liberal Judaism, and Zionism. Limited enrollment. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 210 ETHICS IN JUDAISM (3)

What-if anything-is right, good, and just about our intentions and actions? The course surveys urgent questions raised in Jewish philosophy concerning law, morality, and politics. Topics include freedom and frailty, gender and government, emotions and reasons, suffering and hope. Readings in translation ancient, medieval, modern, and contemporary writings. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 221 THE LIFE OF THE PROPHET MUHAMMAD (3)

This course will examine the life of the Prophet Muhammad, focusing on its significance for Muslims and for non-Muslims. Readings in The Qur'an, Ibn Hisham, and Haykal. Cross-listed with ASIA 221. Offered Fall. Instructor(s): Cook.

RELI 223 QUR'AN AND COMMENTARY (3)

Survey of the major themes of the Qur'an and selected types of commentary on it from the early Islamic period until the present day. Not offered Fall and Spring. Instructor(s): Cook.

RELI 225 REVOLUTIONARY ISLAM: SHI'ISM (3)

This course will cover Shi'ism at an introductory level, focusing upon the Imami (Twelve) and Ismai'ili branches of Shi'ism but also including the so-called Ghulat sects. Not offered Fall and Spring Instructor(s): Cook.

RELI 231 THE ENLIGHTENMENT OF THE BODY (3)

Beginning with a historical survey of the American metaphysical tradition, this course turns to a close study of the Esalen Institute in Big Sur, California, as a unique window into some of the different ways the tradition has appropriated Asian religions, psychological models of the unconscious, and contemporary scientific paradigms. Cross-listed with ASIA 231. Offered Spring. Instructor(s): Kripal.

RELI 232 RELIGIONS OF INDIA (3)

This course will survey the religions of India, namely Hinduism, Buddhism, Jainism, Christianity, Islam, and Sikhism. Emphasis will be placed on the study of scriptures of these traditions and their continuing global relevance, particularly in American history and culture. Cross-listed with ASIA 232. Graduate/Undergraduate version: RELI 500. Not offered Fall and Spring. Instructor(s): Kripal.

RELI 234 INTRODUCTION TO INDIAN PHILOSOPHY (3)

This course will survey the major schools of Indian philosophy, beginning with the ancient period of Vedic speculation, the formation of the distinct schools during the classical period, and their medieval developments. While the function will be primarily on Hindu and Buddhist schools, Jain philosophy will also be covered. Cross-listed with ASIA 234. Graduate/Undergraduate version: RELI 504. Not offered Fall and Spring.

RELI 235 INTRODUCTION TO TAOISM (3)

Beginning with a survey of religious trends in ancient China, we will explore the development of the Taoist philosophy. We will then focus on religious Taoism, particularly the mystical and alchemical traditions. We will conclude by examining the fate of Taoism in post-Mao China and its international legacy. Cross-listed with ASIA 235. Graduate/Undergraduate version: RELI 503. Not offered Fall and Spring.

RELI 240 BLACK RELIGIOUS THOUGHT (3)

This course will examine 20th century Black religious thought and its influence on Black life and praxis. The course is structured thematically. The themes are: Black Nationalism, Christianity Inspired Praxis, Black Existentialism and Humanism. We will explore central themes such as evil, suffering, scriptural imagery, and liberation. Graduate/Undergraduate version: RELI 550. Limited enrollment. Not offered Fall and Spring. Instructor(s): Pinn.

RELI 243 THE BOOK OF GENESIS (3)

A critical reading in English of the Book of Genesis with close attention to the narrative artistry and theological dimensions of the text. Compares pre-modern modes of interpretation and modern historical criticism. Not offered Fall and Spring. Instructor(s): Henze.

RELI 247 RELIGION & REVOLUTION: BLACK THEOLOGY FROM 1969 TO PRESENT (3)

Beginning in the 1960s, Black theology combined the best of the Christian Tradition and the energy of Black Power. And, giving religious importance to "Black is beautiful," Black theology changed theological discourse. Through readings and group discussions, students will explore the history, sources, and define elements of Black theology. Graduate/Undergraduate version: RELI 547. Limited enrollment. Not offered Fall and Spring. Instructor(s): Pinn.

RELI 250 MEDITATION, MYSTICISM, AND MAGIC (3)

The course moves between Buddhist religious and Western psychological literature, analyzing these as models of human development, as guides to a meditative life or critiques of it, and above all as expressions of deeply rooted cultural proclivities. Reading Freud, Milarepa, Norbu, Obeyesekere, Sutric and Tantric literature, Taylor and Wangyal. Cross-listed with ASIA 250. Not offered Fall and Spring. Instructor(s): Klein; Parsons.

RELI 260 RELIGION & THE SOCIAL SCIENCES (3)

Designed to introduce the student to classic and contemporary texts in the social scientific study of religion. Topics include: mysticism, the social construction of gender, the guru-disciple relationship, secularization, healing traditions East and West, cross-cultural debates. Limited enrollment. Offered Spring. Instructor(s): Parsons.

RELI 262 INTRODUCTION TO MYSTICISM (3)

Familiarize the student with diverse texts (secular and religious, East and West) found in mystical literature. Emphasis will be placed on psychological, philosophical and comparative methods. Graduate/Undergraduate version: RELI 582. Limited enrollment. Not offered Fall and Spring. Instructor(s): Parsons.

RELI 270 INTRODUCTION TO THE BLACK CHURCH IN THE UNITED STATES (3)

Much of what has historically taken place within Black communities has been shaped by Black Christian churches. These churches are resources for those interested in understanding religious expression and activism within the Black community. This course provides an introduction into the history, thought, and worship of the major Black denominations. Not offered Fall and Spring. Instructor(s): Pinn.

RELI 280 GOD IN THE POSTMODERN WORLD (3)

Explore forms of theistic religious experience, concentrating on the Western Christian tradition; past and present cultural and philosophical challenges to traditional religious belief; the possibility of Christian faith and the struggle for justice and meaning. Offered Fall. Instructor(s): Stroup.

RELI 282 INTRODUCTION TO CHRISTIANITY (3)

Multidisciplinary exploration of Christian religious experience, belief, and social reality with examples from Africa, the Americas, Asia, and Europe during the last two thousand years. Themes include search for lasting marks of identity amid change and diversity as well as the issue of Christianity's relation to processes of modernization and secularization. No prior background in religious studies required. Not offered Fall and Spring. Instructor(s): Bongmba; Stroup.

RELI 286 THE REFORMATION & ITS RESULTS (3)

Theology and church-state issues from 16th-century Reformation to 17th century; medieval background; Luther and Calvin, the Catholic Reformation; religious wars; Protestant orthodoxy; Pietist spirituality; Puritanism; and calls for toleration. Offered Fall. Instructor(s): Stroup.

RELI 294 RELIGION IN FICTION AND FILM (3)

The sacred in interreligious, international, and interdisciplinary encounter, approached via social sciences, theology, theories of literature and mythology. Authors and directors can include Waugh, Mishima, Mann, Proust, Hesse, Percy, Gardner, Updike, Gibson, Sterling, Coupland, Ray, Resnais, Fellini, Bergman, Anderson, Bunnell, and Nutley. Graduate/Undergraduate version: RELI 514. Offered Spring. Instructor(s): Stroup.

RELI 301 NIETZSCHE AND RELIGIOUS THOUGHT (3)

Nietzsche's thought and background: his impact on religious thinkers and cultural critics; his influence on understanding of God, faith, values, society; his connection with Schopenhauer, Wagner, Tillich, Mann, Barth, Buber, Freud, Jung, D.H. Lawrence, Heidegger, antibourgeois cultural criticism, environmentalism, feminism, and postmodernism. Graduate/Undergraduate version: RELI 515. Not offered Fall and Spring. Instructor(s): Stroup.

RELI 307 HISTORY OF CHRISTIANITY: THE FIRST FOUR CENTURIES (3)

Study of early Christianity in the context of ancient Mediterranean civilizations. Not offered Fall and Spring.

RELI 308 GOSPEL AND TRADITION (3)

An examination of the Synoptic Problem--one of the major unresolved issues in the study of ancient, Western textual traditions! Exploration of orality, narrativity and memorial arbitration exposes the inadequacies of the present historical model, and suggests a reconceptualization of the issue of the genesis of the Christian foundation stories. Graduate/Undergraduate version: RELI 506. Not offered Fall and Spring.

RELI 309 CANONICAL GOSPELS: NARRATIVE AND SOCIAL SETTING (3)

Exploration of the narrative patterns and plot constructions of the synoptic gospels (Mark, Matthew, Luke), and exploration of the historical circumstances that give rise to each gospel composition. Limited enrollment. Not offered Fall and Spring.

RELI 312 THE RELIGIOUS THOUGHT OF MARTIN L. KING, JR. AND MALCOLM X (3)

Although many figures played a prominent role during the Civil Rights Movement, Martin L. King, Jr. and Malcolm X made unique contributions. Their work sparked important conversation concerning the methods, goals, and consequences of struggle toward liberation. This course examines their religiosity, theological sensibilities, and the major themes which surface in their writings and public work. Graduate/Undergraduate version: RELI 546. Not offered Fall and Spring. Instructor(s): Pinn.

RELI 315 GENDER AND ISLAM (3)

Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyze constructions of gender in the Islamic world over time, the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states, as well as movements and individuals within the Muslim world. Cross-listed with WGST 315. Limited enrollment. Offered Fall. Instructor(s): Shehabuddin.

RELI 316 THE INVENTION OF PAGANISM IN THE ROMAN EMPIRE (3)

This interdisciplinary course examines the development of the concept of paganism during the Roman Empire, during the first through seventh centuries A.D. We will examine the mutually tolerant character of the many religions of the Roman world and see how the category of paganism was invented and applied by Christians to all the polytheists of the empire and beyond. Cross-listed with CLAS 318, HIST 316. Not offered Fall and Spring. Instructor(s): Maas; McGill.

RELI 320 RELIGION IN EASTERN EUROPE UNDER COMMUNISM (3)

Interdisciplinary course examining religion, politics, and society in Eastern Europe in the communist period. Topics include: Marxism-Leninism and religion; Soviet atheism; religion and dissident movements; Catholicism and Solidarity in Poland; religious minorities in the region; religion and nationalism, and the role of churches in the collapse of communism. Cross-listed with SLAV 303. Limited enrollment. Offered Spring. Instructor(s): Knox.

RELI 321 RELIGION IN POST-SOVIET RUSSIA (3)

Examines religious life in Russia since the collapse of the USSR in 1991. Emphasis placed on the Russian Orthodox church and its relations with the state and with other religions and denominations. Topics include: the Soviet legacy, orthodoxy and national identity, religious legislation, church-state issues and religious pluralism. Offered Fall. Instructor(s): Knox.

RELI 322 INTRODUCTION TO BUDDHISM (3)

Exploration of the Buddhist traditions of India, Tibet, China, and Japan, emphasizing the relationship between styles of meditation, their philosophical perspectives, cultural context, and classic Buddhist texts. Graduate/Undergraduate version: RELI 572. Not offered Fall and Spring. Instructor(s): Klein.

RELI 323 THE KNOWING BODY: BUDDHISM, GENDER AND THE SOCIAL WORLD (3)

Western thought tends to regard mind and body dualistically, a view with significant impact on religious cultural, gendered and social processes. This course juxtaposes received Western assumptions with Buddhist perspectives (especially Tibetan Buddhist), mapping Western and Buddhist categories onto each other to better understand the implications of each. Cross-listed with ASIA 323, WGST 323. Graduate/Undergraduate version: RELI 577. Not offered Fall and Spring. Instructor(s): Klein.

RELI 328 TANTRA IN COMPARATIVE PERSPECTIVE (3)

Examine the development of Hindu and Buddhist Tantric traditions in India, and explore their dissemination to Tibet and East Asia. Focus on the issues of power, gender, and sexuality as negotiated by these traditions. Also explore their modern transmissions to the West. Graduate/Undergraduate version: RELI 528. Repeatable for Credit. Not offered Fall and Spring.

- RELI 331 ADVANCED TIBETAN LANGUAGE AND CULTURE I (3)**
Building upon the foundation of RELI 132 & 133, this course further develops language skills through reading and engagement with a wider range of Tibetan religious and historical literature. This course also explores the history and special features of Tibetan cultures, and encourages conversational ability in modern Tibetan. Cross-listed with TIBT 331. Graduate/Undergraduate version: RELI 531. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Klein.
- RELI 332 ADVANCED TIBETAN LANGUAGE & CULTURE II (3 TO 4)**
Continuation of RELI 331. This course further develops language skills and cultural understanding through reading and engagement with a wide range of Tibetan religious and historical literature. It also explores the history and special features of Tibetan cultures and encourages conversational ability in modern Tibetan. Cross-listed with TIBT 332. Graduate/Undergraduate version: RELI 532. Pre-requisite(s): RELI 132 or TIBT 132. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Klein.
- RELI 333 KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS (3)**
Buddhism is a performing art engaging both mind and body. Our course investigates Buddhist and other literature, epistemology and rituals with an eye to how they speak to contemplative practice. Contemplative practice itself, in class and out, supplements our exploration of the interplay between traditional Asian and contemporary Western perspectives. Graduate/Undergraduate version: RELI 573. Recommended prerequisite(s): 1 course in Buddhism. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Klein.
- RELI 334 PSYCHOLOGY OF RELIGION (3)**
An overview of the basic approaches in the psychological understanding of religious belief and practice. Topics to be addressed in religious systems East and West include: sex, religious experience, ritual, myth, saintliness, guilt, God and meditation. Not offered Fall and Spring. Instructor(s): Parsons.
- RELI 338 THE CHURCH OF AFRICA (3)**
A reading course designed to examine Christianity in Africa. Course materials and readings will address the development of the church from the Patristic era to the present, paying attention to theological developments, missionization, colonialism, nationalism, prophetic movements, race relations, the role of women, and social issues. Graduate/Undergraduate version: RELI 540. Limited enrollment. Not offered Fall and Spring. Instructor(s): Bongmba
- RELI 340 THEOLOGY IN AFRICA (3)**
Introductory readings to theological thinking in Africa from the Patristic period to the present. Course will address methodological issues as well as constructive theological work on inculturation and liberation. Not offered Fall and Spring. Instructor(s): Bongmba.
- RELI 342 NEW RELIGIOUS MOVEMENTS IN AFRICA (3)**
Discusses new religious movements and the religious, sociological, and political factors leading to their rise, also missionary and colonial reactions to them. Examines their relationship to indigenous religions, political praxis, their focus on this-worldly salvation in the wake of political and economic marginality. Cross-listed with ANTH 343. Not offered Fall and Spring. Instructor(s): Bongmba.
- RELI 346 LIBERATION THEOLOGIES II: A GLOBAL PERSPECTIVE (3)**
Through readings, lectures, and class discussions, this course provides a survey of liberation theologies outside the United States. Primary attention is given to liberation theologies in Africa, Asia, South America, and the United Kingdom. Graduate/Undergraduate version: RELI 549. Offered Spring. Instructor(s): Pinn; Bongmba.
- RELI 348 CHRISTIANITY AND ISLAM IN AFRICA (3)**
This course will focus upon the history and conflict of Christianity and Islam in Africa, with emphasis placed upon indigenous African developments, cultural and artistic themes, and conversion narratives as well as exploring the co-existence and conflict of the two major faiths of the continent. Graduate/Undergraduate version: RELI 536. Offered Spring. Instructor(s): Bongmba; Cook.
- RELI 350 SACRED SCRIPTURES IN MONOTHEISTIC FAITHS (3)**
This course will examine the approaches to Sacred Scriptures (the Hebrew Bible, the New Testament and the Qur'an) in Judaism, Christianity, and Islam. We will discuss themes of holy language and translation, authority, written and oral traditions, prophecy and scriptural commentary. Not offered Fall and Spring. Instructor(s): Kaplan.
- RELI 352 JIHAD AND THE END OF THE WORLD (3)**
The course will explore the connections between Jihad (both aggressive and non-aggressive) and apocalyptic beliefs in the Muslim tradition from the time of the Prophet Muhammad until the present day. Readings from the Qur'an, Bukhari, Ayatullah al-Khumayni, and Sayyid Qutb. Not offered Fall and Spring. Instructor(s): Cook.
- RELI 354 ASIAN APOCALYPTIC MOVEMENTS (3)**
This course will focus upon the rich and neglected apocalyptic and millenarian tradition of Asia, discussing Hinduism, Buddhism, Zoroasterianism, Manichaeism and Eastern Christianity as each of these faiths interact with and react to each other. Readings will be from scriptures and translations covering approximately the period between the first and nineteenth centuries. Cross-listed with ASIA 354. Not offered Fall and Spring. Instructor(s): Cook.

RELI 355 RELIGION AND SOCIAL CHANGE IN SOUTH ASIA (3)

The course will explore connections between religion and social and historical change in Colonial and Post-Colonial South Asia, with a focus on Hindu, Buddhist and Shia Muslim communities in India, Sri Lanka and Nepal. Particular attention will be given to issues of religious identity and inter-religious conflict. Cross-listed with ASIA 355. Not offered Fall and Spring. Instructor(s): Cook.

RELI 356 MAJOR ISSUES IN CONTEMPORARY ISLAM (3)

This course will focus on the major issues confronting contemporary Islam including Islamic unity, the place of the Qur'an and traditions, human rights, Islamic feminism, da'wa, education, science and Islam, globalization and medical ethics. Not offered Fall and Spring. Instructor(s): Cook.

RELI 358 HUMOR AND ENTERTAINMENT IN ISLAMIC SOCIETIES (3)

This course investigates humor and entertainment in Islamic societies from the early Islamic period to the 20th century. We will read and discuss texts from the Arabic, Persian, and Turkish literary traditions, and analyze their genres and entertainment values. Cross-listed with HIST 359. Offered Spring. Instructor(s): Cook; Sanders.

RELI 361 THE ORIENTAL RENAISSANCE (3)

This course will explore the European and American encounters with India from 17th-century France to 20th-century America. Particular attention will be given to the translation of texts, the English and German Romantic traditions, the depth psychology of C.G. Jung, and the American New Age. Cross-listed with ASIA 361. Not offered Fall and Spring. Instructor(s): Kripal.

RELI 362 AESTHETICS AND HERMENEUTICS: MODERN ART, MYSTICAL EXPERIENCE, AND TEXTUAL INTERPRETATION (3)

Sacred texts and the visual arts have contributed immeasurably to shaping individual and collective conceptions of the spiritual in modern and postmodern culture. This course will examine a range of aesthetic and hermeneutic traditions, including mystical texts, modernist artworks and related museum exhibitions, in order to consider the ways in which the experiences of reading, writing, and viewing can serve as powerful acts of self-creation. Cross-listed with HART 393. Graduate/Undergraduate version: RELI 502. Limited enrollment. Offered Spring. Instructor(s): Brennan; Kripal.

RELI 363 THE MARRIAGE OF HEAVEN AND HELL (3)

The history of mysticism is marked by symbolic systems and ritual practices suffused with erotic and ethical paradoxes. This course examines such themes in a wide variety of historical contexts, from Plato's dialogues and Blake's poetry to Christian mysticism, Hindu, and Buddhist Tantric traditions, and the modern study of religion. Cross-listed with ASIA 363. Not offered Fall and Spring. Instructor(s): Kripal.

RELI 370 MEDICINE, MEANING, & MORALITY (3)

Introduce students to the medical humanities -- a relatively new field which addresses moral, legal, spiritual and religious problems spawned by the rise of high-tech medicine and high-stakes biomedical research. Materials include clinical case studies, film, and reader's theatre as well as historical, philosophical, literary, and theological writings. Graduate/Undergraduate version: RELI 542. Limited enrollment. Offered Spring. Instructor(s): Cole.

RELI 371 MODERN JEWISH THOUGHT (3)

What is the role of God and spirituality in the modern world? How do modern Jewish thinkers reinterpret traditional religious concepts? Explore debates on textual criticism, historical representation, existentialism, and political theology in writings by Spinoza, Buber, Rosenzweig, Kook, Levinas, and Adler. Graduate/Undergraduate version: RELI 561. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 381 THE MESSIAH (3)

Examines the historical origins of Messianism. The Hebrew Bible, the Dead Sea Scrolls, and other ancient texts reflect a surprising diversity of Messianic expectations in early Judaism. These form the background of early Christian depictions of Jesus of Nazareth. Limited enrollment. Offered Fall. Instructor(s): Henze.

RELI 383 THE DEAD SEA SCROLLS (3)

A survey of the Dead Sea Scrolls as a window into the Second Temple period. A close reading of the scrolls will lead to a discussion of the theological and historical issues of the time, a period pivotal for the formation of Rabbinic Judaism and Early Christianity. Graduate/Undergraduate version: RELI 553. Not offered Fall & Spring. Instructor(s): Henze.

RELI 385 GOD, TIME AND HISTORY (3)

How is the passage of time given meaning, and what role--if any--is assigned to divinity in shaping the direction of events? Course explores various forms of recording and interpreting events, drawing from ancient Mesopotamia, Israel, and the Greco-Roman world--the cultures in which modern ideas of history began. Not offered Fall and Spring. Instructor(s): Henze.

RELI 401 INDEPENDENT STUDY (1 TO 6)

Multiple sections of this course are offered. Repeatable for Credit. Offered Fall.

RELI 402 INDEPENDENT STUDY (1 TO 6)

Multiple sections of this course are offered. Repeatable for Credit. Offered Spring.

RELI 403 READINGS IN SANSKRIT TEXTS (3)

This course will involve intensive reading of classical Sanskrit texts, in order to develop mastery of the language, building from the foundation of first year Sanskrit. We will read texts from several genres of literature, such as epics, story collections, and sutras. Graduate/Undergraduate version: RELI 530. Pre-requisite(s): SANS 302. Not offered Fall and Spring.

RELI 410 APOCALYPSE THEN AND NOW (3)

A close reading and discussion of three apocalypses from the biblical period: 1 Enoch, 2 Baruch, and Revelation. Concludes with a discussion of contemporary forms of apocalypticism. Graduate/Undergraduate version: RELI 510. Not offered Fall and Spring. Instructor(s): Henze.

RELI 423 AFRICAN MYTHS & RITUALS (3)

Explore and analyze specific myths and rituals which provide legitimation for community ceremonies and which serve as basis for the negotiation of power and ideology for members within that community. Readings from classic theorist: Gennap & Turner; and contemporary theorists: Werbner, Heusch, Comaroff and Ray. Cross-listed with ANTH 423. Graduate/Undergraduate version: RELI 537. Offered Spring. Instructor(s): Bongmba.

RELI 424 RELIGION AND POLITICS IN AFRICA (3)

Explores religion and politics in Africa focusing on indigenous religions, Christianity, Islam, etc. Readings highlight historical developments, key documents in religion and politics, contemporary issues such as: religious freedom, separation of religion and politics, human rights, violence, race, gender, class, and the role of religion in reconstruction of public praxis. Graduate/Undergraduate version: RELI 534. Limited enrollment. Offered Spring. Instructor(s): Bongmba.

RELI 426 RELIGION AND LITERATURE IN AFRICA (3)

Analysis of the religious imagination and gender issues in postcolonial literature in Africa focusing on Islam, Christianity, indigenous religions and African Initiated Churches. Religious and gender issues addressed include identity crises, power, class of cultures, modernity, cosmology, community, and socio-religious conflicts in a postcolonial world. Graduate/Undergraduate version: RELI 538. Not offered Fall and Spring. Instructor(s): Bongmba.

RELI 429 DEPARTMENT SEMINAR (3)

The team-taught Department Seminar critically examines the methodological questions and interpretive paradigms that have been central to the academic study of religion. Philosophical, ethical, textual, psychological, comparative and gender issues, among others, will be considered. Instructors and topics vary. Mandatory for graduate students; majors by invitation. Graduate/Undergraduate version: RELI 529. Repeatable for Credit. Offered Fall. Instructor(s): Kaplan.

RELI 430 RELIGION & MODERN THERAPIES (3)

A survey of the historical development of the psychology of religion and its conversation with theology, comparative studies, gender studies, sociology, and anthropology. Topics include: mysticism, eroticism, conversion, feminism, psychobiography. Examples drawn from a variety of religious traditions. Readings include: Freud, Jung, Tillich, Erikson, Kristeva, Kakar. Graduate/Undergraduate version: RELI 584. Instructor permission required. Not offered Fall and Spring. Instructor(s): Parsons.

RELI 433 TIBETAN LANGUAGE AND CULTURE (3)

Readings in Tibetan texts -- debates, philosophical treatises of various kinds, meditation texts for contemplative practice -- accompanied by supportive readings in English and discussion of the thematic issues raised by the material, with an emphasis on cultural awareness. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Klein.

RELI 440 ISLAM'S MYSTICAL AND ESOTERIC TRADITION (3)

Explores the ascetic and Sufi aspects of Islam from the middle Islamic period until the present day. Readings from al-Ghazali, Ibn al-Arabi, Sa'di, Hafiz and Rumi. Graduate/Undergraduate version: RELI 522. Not offered Fall and Spring. Instructor(s): Cook.

RELI 441 POPULAR RELIGION IN THE MIDDLE EAST (3)

This course will examine the popular religion in the Middle East from Late Antiquity until the 19th century, focusing on healing practices, astrology, protection, amulets, seasoned/life-cycle rituals, and other popular beliefs common to Islam, Judaism and Christianity. Cross-listed with ASIA 441. Graduate/Undergraduate version: RELI 525. Offered Spring. Instructor(s): Cook.

RELI 443 MAIMONIDES "GUIDE FOR THE PERPLEXED" (3)

This course will closely read the classic text of Judeo-Muslim thought, Maimonides Guide for the Perplexed, in its historical philosophical and literary context. It will draw upon additional Jewish and Muslim sources as well. Graduate/Undergraduate version: RELI 565. Not offered Fall and Spring. Instructor(s): Cook.

RELI 451 PHILOSOPHIES & THEOLOGIES OF HISTORY (3)

Modern thought on meaning, direction of history; roots in eschatology; Augustine; flowering in progress, historicism: Hegel, Ranke, Burckhardt, Nietzsche, Troeltsch, Spengler, Heidegger, Toynbee; cultural echo (de Chirico, Proust, Mann, Robbe-Grillet, Bu[^]uel, Bergman, Fellini). Graduate/Undergraduate version: RELI 517. Offered Spring. Instructor(s): Stroup.

RELI 456 HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT (3)

Spirituality, sociopolitical movements, and intellectual life in the West. Includes Luther, Calvin, Kierkegaard, Bonhoeffer, Barth, C.S. Lewis, Tillich, Marx, Nietzsche, and Jung. Graduate/Undergraduate version: RELI 520. Not offered Fall and Spring. Instructor(s): Stroup.

RELI 457 MODERNITY, ANTI- AND POSTMODERNITY (3)

Modernity, Antimodernity, & Postmodernity as Styles of Religiosity. Exploration of the problem of defining "modernity" and concepts. Includes contemporary sociological, political, and cultural theory (e.g. Baudrillard) in connection with typologies of religious experience and grouping from mainline through New Age. Graduate/Undergraduate version: RELI 519. Not offered Fall and Spring. Instructor(s): Stroup.

RELI 462 MEDICAL ETHICS AND AMERICAN VALUES I (3)

Readings and discussion of the principles and priorities of medical ethics, with attention to historical development. Taught in conjunction with University of Texas-Houston Health Science Center. Classes meet at UT School of Public Health. Intended only for highly qualified undergraduates. Graduate/Undergraduate version: RELI 543. Limited enrollment. Offered Fall. Instructor(s): Reiser; Slomka.

RELI 463 MEDICAL ETHICS-AMERICAN VALUES II (4)

Continuation of RELI 462, with attention to clinical experience. Taught in conjunction with University of Texas-Houston Health Science Center. Classes meet at UT School of Public Health. Intended only for highly qualified undergraduates. Graduate/Undergraduate version: RELI 544. Pre-requisite(s): RELI 462. Not offered Fall & Spring. Instructor(s): Resier.

RELI 464 REPRESENTING EVIL (3)

This course explores myriad ways evil has gotten represented in arts and letters, through history and around the globe, concentrating on literary fiction but also considering other media. It addresses how human cultures shape and are shaped by appeal to God or gods for the justification of suffering. Graduate/Undergraduate version: RELI 564. Offered Spring. Instructor(s): Kaplan; Pinn.

RELI 466 CLASSICAL PROBLEMS: PHILOSOPHY OF RELIGION (3)

This seminar treats select advanced topics in the philosophy of religion. Since the topic changes regularly, the course may be repeated for credit. Spring 2005 topic: divine transcendence and immanence in continental philosophy. Graduate/Undergraduate version: RELI 566. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 468 GERMAN-JEWISH IDEALISM AND ITS CRITICS (3)

From the 18th century until 1933, writers imagined a symbiosis of Judaic and German philosophical and cultural ideas. Were they tragically deluded or guardedly optimistic? Discuss skepticism, romanticism, historicism, ethical monotheism, critical theory, and neo-conservatism. Readings selected from Mendelssohn, Spinoza, Cohen, Buber, Rosenzweig, Scholem, Benjamin, Arendt, and Strauss. Graduate/Undergraduate version: RELI 568. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 470 BUDDHIST WISDOM TEXTS (3)

Indo-Tibetan analyses of the mind and its functions, especially differing views on the role of reasoning and the nature of the "ultimate" in major philosophical schools of Tibet and India. Graduate/Undergraduate version: RELI 570. Not offered Fall and Spring. Instructor(s): Klein.

RELI 480 SEXUALITY, SANCTITY, AND PSYCHOANALYSIS (3)

An advanced mapping of the psychoanalytic study of religion through a close reading of psychoanalytically informed studies of saints, founding figures, and charismatic teachers, with a particular focus on sexuality and gender and their relationship to the expression and representation of holiness in the history of religions. Cross-listed with WGST 470. Graduate/Undergraduate version: RELI 580. Limited enrollment. Not offered Fall & Spring. Instructor(s): Kripal; Parsons.

RELI 491 THEORY AND METHOD IN THE STUDY OF BLACK RELIGION (3)

Through an intense reading and analysis of select text, this seminar will give attention to "tools" for the study of Black religion made available through, for example, History of Religions, Philosophy of Religion (Pragmatism and the "Prophetic"), Phenomenology, Constructive Theology, Process Studies, and Social/Cultural History, Sociology of Religion. Graduate/Undergraduate version: RELI 545. Limited enrollment. Offered Fall. Instructor(s): Pinn.

RELI 500 RELIGIONS OF INDIA (3)

Graduate/Undergraduate version: RELI 232. Not offered Fall and Spring. Instructor(s): Kripal.

RELI 501 THE ORIENTAL RENAISSANCE (3)

This course will explore the European and American encounters with India from 17th-century France to twentieth-century America. Particular attention will be given to the translation of Sanskrit texts, the English and German Romantic traditions, the depth psychology of C.G. Jung, and the American New Age. Not offered Fall and Spring. Instructor(s): Kripal.

- RELI 502 AESTHETICS AND HERMENEUTICS: MODERN ART, MYSTICAL EXPERIENCE, AND TEXTURAL INTERPRETATION (3)**
Graduate/Undergraduate version: RELI 362. Instructor(s): Brennan; Kripal.
- RELI 503 INTRODUCTION TO TAOISM (3)**
Graduate/Undergraduate version: RELI 235. Not offered Fall and Spring.
- RELI 504 INTRODUCTION TO INDIAN PHILOSOPHY (3)**
Graduate/Undergraduate version: RELI 234. Not offered Fall and Spring.
- RELI 506 GOSPEL AND TRADITION (3)**
Graduate/Undergraduate version: RELI 308. Not offered Fall and Spring.
- RELI 509 NEW TESTAMENT & HERMENEUTICS (3)**
Models of Christian Origins: Modernity's perception of Early Christianity from the perspectives of methodology, hermeneutics, and philosophy of history. Not offered Fall and Spring.
- RELI 510 APOCALYPSE THEN AND NOW (3)**
Graduate/Undergraduate version: RELI 410. Not offered Fall and Spring. Instructor(s): Henze.
- RELI 514 RELIGION IN FICTION AND FILM (3)**
Graduate/Undergraduate version: RELI 294. Offered Spring. Instructor(s): Stroup.
- RELI 515 NIETZSCHE AND RELIGIOUS THOUGHT (3)**
Graduate/Undergraduate version: RELI 301. Not offered Fall and Spring. Instructor(s): Stroup.
- RELI 517 PHILOSOPHIES AND THEOLOGIES OF HISTORY (3)**
Graduate/Undergraduate version: RELI 451. Offered Spring. Instructor(s): Stroup.
- RELI 519 MODERNITY, ANTIMODERNITY & POSTMODERNITY AS STYLES OF RELIGIOSITY (3)**
Graduate/Undergraduate version: RELI 457. Not offered Fall and Spring. Instructor(s): Stroup.
- RELI 520 HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT (3)**
Graduate/Undergraduate version: RELI 456. Not offered Fall and Spring. Instructor(s): Stroup.
- RELI 522 ISLAM'S MYSTICAL AND ESOTERIC TRADITION (3)**
Graduate/Undergraduate version: RELI 440. Not offered Fall and Spring. Instructor(s): Cook.
- RELI 523 INDEPENDENT STUDY (1 TO 15)**
Offered Spring.
- RELI 524 INDEPENDENT STUDY (1 TO 9)**
Offered Spring.
- RELI 525 POPULAR RELIGION IN THE MIDDLE EAST (3)**
Graduate/Undergraduate version: RELI 441. Offered Spring. Instructor(s): Cook.
- RELI 528 TANTRA IN COMPARATIVE PERSPECTIVES(3)**
Graduate/Undergraduate version: RELI 328. Not offered Fall and Spring.
- RELI 529 DEPARTMENT SEMINAR (3)**
Graduate/Undergraduate version: RELI 429. Repeatable for Credit. Offered Fall.
- RELI 530 READINGS IN SANSKRIT TEXTS (3)**
Graduate/Undergraduate version: RELI 403 Not offered Fall and Spring.
- RELI 531 ADVANCED TIBETAN LANGUAGE AND CULTURE (3)**
Graduate/Undergraduate version: RELI 331. Not offered Fall and Spring.
- RELI 532 ADVANCED TIBETAN LANGUAGE AND CULTURE II (3)**
Graduate/Undergraduate version: RELI 332. Recommended: Basic reading ability in Tibetan. Not offered Fall & Spring.
- RELI 533 TIBETAN LANGUAGE AND CULTURE (3)**
Graduate/Undergraduate version: RELI 133. Not offered Fall and Spring.
- RELI 536 CHRISTIANITY AND ISLAM IN AFRICA (3)**
Graduate/Undergraduate version: RELI 348. Offered Fall. Instructor(s): Bongmba; Cook.
- RELI 537 AFRICAN MYTHS AND RITUALS (3)**
Graduate/Undergraduate version: RELI 423. Offered Spring. Instructor(s): Bongmba.
- RELI 538 RELIGION AND LITERATURE IN AFRICA (3)**
Graduate/Undergraduate version: RELI 426. Not offered Fall and Spring. Instructor(s): Bongmba.

RELI 540 THE CHURCH OF AFRICA (3)

Graduate/Undergraduate version: RELI 338. Not offered Fall and Spring. Instructor(s): Bongmba.

RELI 542 MEDICINE, MEANING, AND MORALITY (3)

Introduce students to the medical humanities -- a relatively new field which addresses moral, legal, spiritual and religious problems spawned by the rise of high-tech medicine and high-stakes biomedical research. Materials include clinical case studies, film, and reader's theatre as well as historical, philosophical, literary, and theological writings. Graduate/Undergraduate version: RELI 370. Limited enrollment. Offered Spring. Instructor(s): Cole.

RELI 543 MEDICAL ETHICS AND AMERICAN VALUES I (3)

Taught in conjunction with University of Texas-Houston Health Science Center. Classes meet at UT School of Public Health. Graduate/Undergraduate version: RELI 462. Limited enrollment. Offered Fall. Instructor(s): Reiser.

RELI 544 MEDICAL ETHICS AND AMERICAN VALUES II (4)

Taught in conjunction with University of Texas-Houston Health Science Center. Classes meet at UT School of Public Health. Intended only for highly qualified undergraduates. Graduate/Undergraduate version: RELI 463. Not offered Fall and Spring. Instructor(s): Reiser.

RELI 545 THEORY AND METHOD IN THE STUDY OF BLACK RELIGION (3)

Through an intense reading and analysis of select text, this seminar will give attention to "tools" for the study of Black religion made available through, for example, History of Religions, Philosophy of Religion (Pragmatism and the "Prophetic"), Phenomenology, Constructive Theology, Process Studies, and Social/Cultural History, Sociology of Religion. Graduate/Undergraduate version: RELI 491. Limited enrollment. Offered Fall. Instructor(s): Pinn.

RELI 546 THE RELIGIOUS THOUGHT OF MARTIN L. KING, JR. AND MALCOLM X (3)

Graduate/Undergraduate version: RELI 312. Not offered Fall and Spring. Instructor(s): Pinn.

RELI 547 RELIGION AND REVOLUTION: BLACK THEOLOGY FROM 1969 TO PRESENT (3)

Graduate/Undergraduate version: RELI 247. Limited enrollment. Not offered Fall and Spring Instructor(s): Pinn.

RELI 548 LIBERATION THEOLOGIES (3)

Graduate/Undergraduate version: RELI 158. Limited enrollment. Not offered Fall and Spring Instructor(s): Pinn.

RELI 549 LIBERATION THEOLOGIES II: A GLOBAL PERSPECTIVE (3)

Graduate/Undergraduate version: RELI 346. Offered Spring. Instructor(s): Pinn; Bongmba.

RELI 550 BLACK RELIGIOUS THOUGHT (3)

Graduate/Undergraduate version: RELI 240. Limited enrollment. Not offered Fall and Spring Instructor(s): Pinn.

RELI 553 THE DEAD SEA SCROLLS (3)

Graduate/Undergraduate version: RELI 383. Not offered Fall and Spring. Instructor(s): Henze.

RELI 561 MODERN JEWISH THOUGHT (3)

Graduate/Undergraduate version: RELI 371. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 564 REPRESENTING EVIL (3)

Graduate/Undergraduate version: RELI 464. Offered Spring. Instructor(s): Kaplan; Pinn.

RELI 565 MAIMONIDES "GUIDE FOR THE PERPLEXED" (3)

Graduate/Undergraduate version: RELI 443. Not offered Fall and Spring. Instructor(s): Cook.

RELI 566 CLASSICAL PROBLEMS: PHILOSOPHY OF RELIGION (3)

This seminar treats select advanced topics in the philosophy of religion. Since the topic changes regularly, the course may be repeated for credit. Spring 2005 topic: divine transcendence and immanence in continental philosophy. Graduate/Undergraduate version: RELI 466. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 568 GERMAN-JEWISH IDEALISM AND ITS CRITICS (3)

Graduate/Undergraduate version: RELI 468. Not offered Fall and Spring. Instructor(s): Kaplan.

RELI 570 BUDDHIST WISDOM TEXTS (3)

Graduate/Undergraduate version: RELI 470. Not offered Fall and Spring. Instructor(s): Klein.

RELI 572 INTRODUCTION TO BUDDHISM (3)

Graduate/Undergraduate version: RELI 322. Not offered Fall and Spring. Instructor(s): Klein.

RELI 573 KNOWING BODY/GLOWING MIND: BUDDHIST ARTS OF CONTEMPLATION AND ANALYSIS (3)

Buddhism is a performing art engaging both mind and body. Our course investigates Buddhist and other literature, epistemology and rituals with an eye to how they speak to contemplative practice. Contemplative practice itself, in class and out, supplements our exploration of the interplay between traditional Asian and contemporary Western perspectives. Graduate/Undergraduate version: RELI 333. Recommended prerequisite(s): One course in Buddhism. Repeatable for Credit. Limited enrollment. Offered Fall. Instructor(s): Klein.

RELI 577 THE KNOWING BODY: BUDDHISM, GENDER, AND THE SOCIAL WORLD (3)

Cross-listed with WGST 577. Graduate/Undergraduate version: RELI 323. Not offered Fall and Spring. Instructor(s): Klein.

RELI 580 SEXUALITY, SANCTITY, AND PSYCHOANALYSIS (3)

Cross-listed with WGST 580. Graduate/Undergraduate version: RELI 480. Limited enrollment. Not offered Fall and Spring. Instructor(s): Kripal; Parsons.

RELI 582 INTRODUCTION TO MYSTICISM (3)

Graduate/Undergraduate version: RELI 262. Not offered Fall and Spring. Instructor(s): Parsons.

RELI 584 RELIGION & MODERN THERAPIES (3)

Graduate/Undergraduate version: RELI 430. Not offered Fall and Spring. Instructor(s): Parsons.

RELI 585 GOD, TIME AND HISTORY (3)

Graduate/Undergraduate version: RELI 123. Not offered Fall and Spring. Instructor(s): Henze; Maas.

RELI 700 GRADUATE RESEARCH (1 TO 12)

Repeatable for Credit. Offered Spring.

RELI 800 RESEARCH AND THESIS (9)

Repeatable for Credit. Offered Fall and Spring.

RUSS (RUSSIAN)**School of Humanities/Center for Study of Languages****RUSS 101 INTRODUCTION TO RUSSIAN I (5)**

An introduction to the fundamentals of Russian grammar and basic conversation topics. Includes pronunciation, reading, oral, aural, and translation practice. Also includes a basic introduction to Russian culture. Recommended prerequisite(s): No prior knowledge of Russian. Offered Fall.

URL: lang.rice.edu/Ludwig/russian101/Russian101.html.

RUSS 102 INTRODUCTION TO RUSSIAN II (5)

Continuation of RUSS 101. Pre-requisite(s): RUSS 101, or permission of instructor. Offered Spring.

URL: lang.rice.edu/Ludwig/russian102/Russian102.html.

RUSS 201 INTERMEDIATE RUSSIAN I (4)

A continuation of the fundamentals of Russian grammar and conversation topics. Includes oral, aural, composition, translation, and reading practice. Attention is also given to Russian cultural topics and current events. Pre-requisite(s): RUSS 102, or permission of instructor. Offered Fall. URL: lang.rice.edu/Ludwig/russian201/Russian201.html.

RUSS 202 INTERMEDIATE RUSSIAN II (4)

Continuation of RUSS 201. Pre-requisite(s): RUSS 201, or permission of instructor.

URL: lang.rice.edu/Ludwig/russian202/Russian202.html.

RUSS 301 CONVERSATION AND COMPOSITION I (3)

Focus on reading, listening comprehension and spoken Russian. Also includes discussion of advanced grammar topics. Pre-requisite(s): RUSS 202, or permission of instructor. Offered Fall.

URL: lang.rice.edu/Ludwig/russian301/Russian301.html.

RUSS 302 CONVERSATION AND COMPOSITION II (3)

Continuation of RUSS 301. Pre-requisite(s): RUSS 301, or permission of instructor.

URL: lang.rice.edu/Ludwig/russian302/Russian302.html.

RUSS 303 SPECIAL TOPICS (3)

Instructor permission required.

RUSS 311 INTRODUCTION TO RUSSIAN CULTURE (3)

Contents vary from year to year. Repeatable for Credit. Not offered Fall and Spring Instructor(s): Thompson.

RUSS 312 SURVEY OF RUSSIAN LITERATURE (3)

The course acquaints the student with writers who have been important to the development of Russian culture. Emphasis on the modern period. Taught in English. Not offered Fall and Spring. Instructor(s): Thompson.

RUSS 331 RUSSIAN LITERATURE AND COLONIALISM (3)

This course includes a broad survey of postcolonial theories starting with Edward Said. This course is based on Ewa M. Thompson's "Imperial Knowledge: Russian Literature and Colonialism". Readings include Leo Tolstoy, Alexander Pushkin, Valentine Rasputin, Anatoly Rybakov, Alexander Solzhenitsyn, Ludmila Petrushevskaya, Tatiana Tolstaia and Valejya Novodvorskaya. Cross-listed with HUMA 331. Repeatable for Credit. Offered Fall.

Instructor(s): Thompson.

RUSS 351 TOLSTOY (3)

Study of major works of Tolstoy. Novels and stories discussed include "War and Peace"; "Anna Karenina"; "The Kreutzer Sonata"; "Family Happiness"; "The Cossacks"; "The Devil"; "The Death of Ivan Ilych"; "Father Sergius"; "The Confessions" and "Hadji Murad". Taught in English. Cross-listed with HUMA 382. Not offered Fall and Spring. Instructor(s): Thompson.

RUSS 352 DOSTOEVSKY (3)

Study of the major works of Dostoevsky. No knowledge of Russian required. Novels discussed include "The Brothers Karamazov"; "Crime and Punishment"; "The Idiot"; "The Possessed"; "Notes from the Dead House"; "Notes from the Underground". Taught in English. Cross-listed with HUMA 381. Offered Fall. Instructor(s): Thompson.

RUSS 420 WOMEN IN RUSSIAN LITERATURE I (3)

The portrayal of women in major works of Russian literature, with particular attention paid to the women writers' presentation of women. No knowledge of Russian required. Cross-listed with WGST 442. Not offered Fall & Spring. Instructor(s): Thompson.

RUSS 450 INDEPENDENT STUDY (3)

Content varies depending on student interests and the availability of instructors. Repeatable for Credit. Not offered Fall and Spring.

SANS (SANSKRIT)**School of Humanities/Linguistics****SANS 301 INTRODUCTION TO SANSKRIT (3)**

Cross-listed with LING 351. Repeatable for Credit. Offered Fall. Instructor(s): Mitchell.

SANS 302 INTRODUCTION TO SANSKRIT II (3)

Cross-listed with LING 352. Instructor(s): Mitchell.

SANS 401 ADVANCED SANSKRIT I (3)

Review of the nominal declensions and the classes of verbs to be followed by a series of readings from Lanman. Special attention will be given to the study of compounds and to Sanskrit verse forms. Cross-listed with LING 451. Instructor(s): Mitchell.

SANS 402 ADVANCED SANSKRIT II (3)

Continuation of SANS 401. Cross-listed with LING 452. Instructor(s): Mitchell.

SANS 492 DIRECTED READING (3)

Independent work for students seeking upper level study. Repeatable for Credit. Instructor(s): Mitchell.

SLAV (SLAVIC STUDIES)**School of Humanities/German and Slavic Studies****SLAV 242 POLISH DRAMA I (3)**

The reading of Polish 19th- and 20th-century plays with a view to improving student's comprehension of Polish. Equivalent to Second Year Polish. Taught in Polish. Recommended prerequisite(s): PLSH 102 or equivalent. Repeatable for Credit. Not offered Fall and Spring.

SLAV 243 POLISH DRAMA II (3)

The reading of Polish nineteenth- and twentieth-century plays with a view to improving student's comprehension of Polish. Equivalent to Second Year Polish. Taught in Polish. Not offered Fall and Spring.

SLAV 303 SPECIAL TOPICS (3)

Topics change from year to year. Cross-listed with RELI 320. Repeatable for Credit. Not offered Fall and Spring.

SLAV 309 SLAVIC CULTURES (3)

Interdisciplinary introduction to the main currents of Russian, Czech, and Polish cultures. Key moments in history, social trends, music and the arts, the construction of national mythologies through literature. Offered Fall.

SLAV 320 CONTEMPORARY POLISH AND CENTRAL EUROPEAN POLITICS AND CULTURE (3)

Intensive study of Polish and Central European popular culture, literature, and the changing tides of politics. Emphasis on the post-communist period. Taught in English. Not offered Fall and Spring.

SLAV 332 SOVIET AND POST-SOVIET LITERATURE (3)

The course will provide students with an introduction to 20th century Russian, Soviet, and post-Soviet literature and culture by reading works by authors such as Bulgakov, Zamiatin, Akhmatova, Yetushenko, and Pelevin. Some attention will be paid to 20th-Century film and popular music. Not offered Fall and Spring. Instructor(s): Ludwig.

SLAV 411 MODERN POLISH POETRY IN TRANSLATION (3)

This course presents the living poets of Poland, from Nobel Prize winners Czeslaw Milosz (1980) and Wislawa Szymborska (1996) to their youngest competitors, Krzysztof Koehler and Maciej Swietlicki. The course explores how resistance and collaboration, Catholicism and Communism, have shaped and continued a major literary tradition of Europe based on a selection of poetry in English translations. Offered Fall.

SLAV 412 CENTRAL AND EAST EUROPEAN FILM (3)

Based on a selection of the best films by the best directors of the region (Forman, Holland, Kieslowski, Polanski, Szabo, Wajda), this course presents Central-Eastern European filmmaking against a background of a totalitarian political system. Offered Spring.

SLAV 450 INDEPENDENT STUDY (3)

Content varies depending on student interests and availability of instructors. Repeatable for Credit. Not offered Fall and Spring.

SOCI (SOCIOLOGY)**School of Social Sciences/Sociology****SOCI 203 INTRODUCTION TO SOCIOLOGY (3)**

Introduction to the principal concepts, theories, and methods of sociology. Required (normally) for sociology majors. Must be in one of the following Classification(s): Freshman, Sophomore. Limited enrollment. Offered Fall. Instructor(s): Emerson.

SOCI 301 SOCIAL INEQUALITY (3)

A survey of US inequalities of wealth, status, and power. The situation of various minority groups and social classes. What kinds of inequality are unjustifiable? Can they be abolished? If so, how? The trade-off between equality and such valued goods as freedom and efficiency. Limited enrollment. Not offered Fall and Spring.

SOCI 306 SOCIOLOGY OF GENDER (3)

Relationship between gender and social role. Development of the contemporary sexual division of labor and process of socialization with reference to family, education, media, and occupations. Cross-listed with WGST 324. Limited enrollment. Not offered Fall and Spring. Instructor(s): Long.

SOCI 308 HOUSTON: THE SOCIOLOGY OF A CITY (3)

Houston as an exemplar of contemporary urban change. The "golden buckle of the sunbelt"; recovery from the oil boom collapse of the 1980s into a reconstructional economy and a demographic revolution; the changing politics of education, quality-of-life issues, and interethnic relations, as they interact to shape the urban future. Guest lectures, field trips. Limited enrollment. Offered Spring. Instructor(s): Klineberg.

SOCI 309 RACE AND ETHNIC RELATIONS (3)

Historical and contemporary issues and theories of race and ethnic relations in the United States. The key groups covered will be European Americans, African Americans, Native Americans, Asian Americans, and Mexican Americans. Group patterns of assimilation and conflict inform a basic tenet that race and ethnicity are organizing features of society. Limited enrollment. Not offered Fall and Spring.

SOCI 310 URBAN SOCIOLOGY (3)

Study of urban development, form, and heterogeneity; and the conditions of life associated with living in cities. Examines the rise of cities, their growth and purposes in the U.S. and internationally. Examines behavioral adaptations required by city life, and considers urban subcultures. Not offered Fall and Spring.

SOCI 313 DEMOGRAPHY (3)

Introduction to the study of the dynamics of population change. Includes demographic data sources, components of population change, mortality patterns, family planning, the measurement of migration flows, and population-economic models. Limited enrollment. Offered Spring. Instructor(s): Heard.

SOCI 317 CONTEMPORARY SOCIOLOGICAL THEORY (3)

Discussion course on major recent trends in sociological theory, especially in the writings of Goffman, Habermas, Bourdieu, Foucault, and Smith. Includes symbolic interactionism, critical theory, cultural studies, text/discourse/semiotic analyses, feminist theory, and postmodern sociology. Not offered Fall and Spring.

SOCI 321 CRIMINOLOGY (3)

Study of criminal behavior. Includes social construction of crime, elementary forms of crime, empirical patterns of crime, and theories of crime. Field work required. Pre-requisite(s): SOCI 203, or placement test. Limited enrollment. Not offered Fall and Spring.

SOCI 325 SOCIOLOGY OF LAW (3)

Introduction to Sociological theories of law. Examines central question in the field: Do the social characteristics of legal actors influence legal outcomes? Focuses on the role of race, sex, and social status. Field work required. Limited enrollment. Not offered Fall and Spring.

SOCI 334 SOCIOLOGY OF THE FAMILY (3)

This course will teach students the important influences and consequences of American family life. We will consider issues as dating, marriage and cohabitation, divorce, family structure, gay marriage, domestic violence, and household labor. We will also examine the role of society in shaping family norms and constraints on family behaviors. Cross-listed with WGST 325. Limited enrollment. Offered Fall. Instructor(s): Heard.

SOCI 340 CONTEMPORARY MEXICAN SOCIETY (3)

In this course, we seek a sociological understanding of contemporary Mexican society. After reviewing the historical roots of the modern Mexican state, we will examine how economic, political, and social institutions operate in Mexico, their formal and informal structures, and then consider their consequences. Limited enrollment. Offered Fall. Instructor(s): Donato.

SOCI 345 INTRODUCTION TO MEDICAL SOCIOLOGY (3)

This course will explore the relationship between social factors and health, illness, and mortality. Topics include the stratification of health by race/ethnicity, gender, and social class; environmental context and illness; lifestyle and behavioral risks (smoking, drinking, drugs, and sexual behavior); STD's and cross-national comparisons of health and patterns of disease. Limited enrollment. Offered Fall. Instructor(s): Gorman.

SOCI 361 TELEVISION IN AMERICAN CULTURE (3)

Analysis of the development and current structure of the television industry in this country, and of the ways in which television is shaped by American culture, class interests, relevant professions, production and broadcast organizations, technological innovation, audience ratings, economic considerations, interest groups, and governmental actions. Recent criticism and theory will be presented as well. Not offered Fall and Spring. Instructor(s): Gordon.

SOCI 367 ENVIRONMENTAL SOCIOLOGY (3)

Applications of research and theory in the social sciences to an understanding of the attitudes and behaviors that contribute both to environmental problems and to their remediation; examination of the interactions between population pressures and human appetites, technological developments and ecological constraints as they combine to shape the human prospect. Limited enrollment. Not offered Fall and Spring. Instructor(s): Klineberg.

SOCI 386 AFRICAN AMERICANS IN SOCIETY (3)

Contemporary life of Blacks (African-Americans) in society. The meaning and significance of race, prejudice and discrimination; social institutions such as the economy, education, and family; and potential strategies such as affirmative action and reparations. Limited enrollment. Offered Spring. Instructor(s): Heard.

SOCI 390 RESEARCH METHODS (3)

An introduction to the methods sociologists use to study human societies and their members. Hypothesis formulation and research design; qualitative studies through observation and interviews; historical and comparative approaches; sample surveys and the statistical analysis of quantitative data; political and ethical issues in social research. Limited enrollment. Offered Spring. Instructor(s): Emerson.

SOCI 395 FEMINIST SOCIAL THOUGHT (3)

Study of feminist theory as critique and reconstruction. Includes Wollstonecraft and de Beauvoir, as well as contemporary debates about equity, difference, knowledge, sexuality, and power. Cross-listed with WGST 460. Instructor permission required. Limited enrollment. Offered Spring. Instructor(s): Long.

SOCI 398 SOCIAL STATISTICS (3)

Emphasizes the practical uses of statistics to answer the types of questions sociologists ask. We learn sample description, sampling and probability, sampling theory, and how to make inferences from samples to populations. We study and apply common univariate, bivariate, and multivariate statistics. Because most statistical analysis is done with the aid of computers, we also learn how to use a common statistical package. Limited enrollment. Offered Fall. Instructor(s): Donato.

SOCI 399 IMMIGRATION AND PUBLIC HEALTH (3)

This course explores the relationship between international migration and public health both historically and in the contemporary period. We will discuss the substantive and methodological complexities of the health-migration relationship and their implications for public policy debates worldwide. This course is taught at the UT School of Public Health and cross-listed as PHYS 3998. Limited enrollment. Not offered Fall and Spring.

SOCI 403 INDEPENDENT STUDY (1 TO 6)

Directed reading and written papers on subjects not regularly offered; advanced study of subjects on which courses are offered. Instructor permission required. Repeatable for Credit. Offered Fall.

SOCI 404 INDEPENDENT STUDY (1 TO 3)

Directed readings and essay writing on special subjects. Includes advanced study in subjects from other courses, if desired. Instructor permission required. Repeatable for Credit. Offered Spring.

SOCI 405 ETHNOGRAPHIC RESEARCH (3)

Beginning with the theoretical frameworks for ethnographic and other qualitative research methods, the course will cover ethics, entry, observation, field notes, interviewing, data analysis, and writing reports. It will offer a hands-on approach combining lectures, research through lectures, readings, and fieldwork. Field projects can be conducted in group, classroom, campus, or community settings. Limited enrollment. Offered Fall. Instructor(s): Smith.

SOCI 410 TRANSLATING RESEARCH INTO POLICY (2)

Research efforts seldom take into account the practical consequences of findings, particularly, how they might best be put to use by whom. Consequently results may never find their way into practice, either because of their technical complexities or because they never reach the people who need them the most. Translation deals with getting the results into a form that meets users' needs in language they can understand. Dissemination deals with the issue of getting those results to the right users. Reaching the diverse users of prevention and population health research with results in a form that they can use presents new challenges. The purpose of this course is to examine these challenges and consider strategies for bridging the gap between research and practice. Course taught at the UT School of Public Health. Not offered Fall and Spring. Instructor(s): Linder; Rosenau.

SOCI 411 SOCIAL CHANGE (3)

Analysis of accelerating trends that have transformed human societies during the past thirty years, with particular reference to ongoing transformations in the economic foundations and ethnic composition of the United States, and in threats to the global environment and capitalist world system; individual and collective responses to the challenges of our time. Not offered Fall and Spring. Instructor(s): Klineberg.

SOCI 421 THE CRAFT OF SOCIOLOGY (3)

Exploration of work of sociology. Includes its historical and social origins and development, and its shifting philosophical foundations, methodological refinements, and ethical and political implications, as well as discussion of classic and controversial sociological studies. Not offered Fall and Spring.

SOCI 425 POLITICAL SOCIOLOGY (3)

Can democracy survive its enemies: tyranny of ruling elites and classes, tyranny of the majority, ethnic and religious conflict, individualism, government secrecy, citizen apathy? Cross-listed with POLI 425. Limited enrollment. Not offered Fall and Spring.

SOCI 430 SOCIOLOGY OF RELIGION (3)

Study of religious beliefs, symbols, actions, organizations, roles, and various interrelationships between religion and society. Includes new religious movements, secularization, and fundamentalism. Field work required. Limited enrollment. Offered Fall. Instructor(s): Emerson.

SOCI 431 THE CRIMINAL JUSTICE SYSTEM (3)

Examination of the major components of the criminal justice system: 1) Police role and culture, contemporary approaches; 2) Courts (judges, prosecutors, defense attorneys, plea bargaining, juries, appeals, pre-sentence investigation, and sentencing); and 3) Corrections, with attention to responsibility and punishment, prisons, probation, parole, and alternatives. Limited enrollment. Offered Spring. Instructor(s): Jablecki.

SOCI 433 SOCIOLOGY OF THE LIFE CYCLE: DEATH AND DYING (3)

Analysis of various cultures' "death systems" (beliefs, values, conceptions). Religious, legal, medical and other approaches to death; analysis of funerary practices and various trajectories of the dying self; "near death experiences", social management of dying in various organizational settings (homes, hospitals, nursing homes, hospices, prisons, battlefields, streets, etc.); changing causes and modes of death (accident, natural disaster, illness, "old age", suicide, homicide, genocide, and war). A field trip to Houston's Glenwood Cemetery, and special consideration of terrorism and the recent tsunami in Southeast Asia. Offered Fall. Instructor(s): Gordon.

SOCI 436 ADVANCED RESEARCH SEMINAR: THE 2004 HOUSTON AREA SURVEY (4)

Continuation of the series of annual surveys on how Houston residents are reacting to changes in American society. Includes sampling procedures, questionnaire construction, interviewing, data analysis, and the logic and skills of survey research. Culminates in a research report that develops empirical hypotheses and tests their validity with survey findings. Limited enrollment. Not offered Fall and Spring. Instructor(s): Klineberg.

SOCI 440 FAMILY INEQUALITY (3)

This is an intense, upper-level seminar focused on aspects of inequality concerning American families. We will discuss how well-known modes of inequality, such as race/ethnicity, gender, and social class, affect individual families, as well as how families serve as agents of inequality along these lines. Cross-listed with WGST 444. Pre-requisite(s): SOCI 334. Limited enrollment. Not offered Fall and Spring. Instructor(s): Heard.

SOCI 445 SOCIOLOGY OF CULTURE (3)

This course surveys the different sociological approaches to studying culture. Part I focuses on the relationships between culture and social structure, including various theoretical approaches. Part II examines different perspectives on modern culture. Limited enrollment. Offered Fall. Instructor(s): Long.

SOCI 460 INEQUALITY AND HEALTH ACROSS THE LIFE COURSE (3)

This course focuses on the relationship between health and social inequality at multiple points across the life course—in utero, early childhood, adolescence, adulthood, and old age. Three forms of inequality, and their importance for health, are examined in depth; socioeconomic, racial/ethnic, and gender. This will be taught at UT SPH and cross-listed with PH 1498L. Pre-requisite(s): SOCI 345. Instructor permission required. Not offered Fall and Spring. Instructor(s): Gorman.

SOCI 465 GENDER AND HEALTH (3)

This course will examine the relationship between gender and health, both physical and mental. We will begin the semester by examining issues related to gender and health in the U.S. We will spend the second half of the semester examining gender and health in an international context. Cross-listed with WGST 465. Instructor permission required. Not offered Fall and Spring. Instructor(s): Gorman.

SOCI 492 DIRECTED HONORS RESEARCH (3)

Sociological research under faculty supervision. Includes first-semester review of relevant literature and the preparation of an outline for planned research, followed by second-semester research and the writing of an honors thesis. Open only to students in sociology honors program. Instructor permission required. Offered Spring.

SOCI 493 DIRECTED HONORS RESEARCH (3)

Sociological research under faculty supervision. Includes first-semester review of relevant literature and preparation of outline for planned research, followed by second-semester research and the writing of an honors thesis. Open only to students in sociology honors program. Instructor permission required. Offered Fall.

SOSC (SOCIAL SCIENCES)

School of Social Sciences/Social Sciences Division

SOSC 100 AP HUMAN GEOGRAPHY (3)

AP Credit.

SOSC 102 INTELLECTUAL FOUNDATIONS OF THE SOCIAL SCIENCES (3)

A survey of fundamental ideas, theories and approaches that have shaped the intellectual heritage of the social sciences. A foundation course. Not offered Fall and Spring.

SOSC 300 SOCIAL SCIENCE AND PUBLIC POLICY (3)

Survey of how different disciplines in the social sciences treat public policy. Includes specific policy questions as a means of highlighting each discipline's approach to the study of public policy.

SOSC 301 POLICY ANALYSIS (3)

Familiarizes students with the analytical tools necessary for evaluating and analyzing public policies. Cross-listed with POLI 338. Repeatable for Credit.

SOSC 305 CONTEMPORARY PALESTINIAN ISSUES: TRANS TOWARDS NATION BUILDING (3)**SOSC 330 HEALTH CARE REFORM IN THE 50 STATES (3)**

Examination of those states that have undertaken comprehensive health system reform, have carried out more limited revisions, or have failed to even begin the process, assessing successes and failures. Includes general theories of state-federal relationships and the role of the federal government in state health reform.

SOSC 400 POLICY STUDIES RESEARCH SEMINAR (1 TO 6)

Advanced research in public policy. Students will complete a policy study or policy analysis in a substantive policy area. Repeatable for Credit.

SOSC 420 HEALTH CARE: COMPETITION AND MANAGED CARE (3)

Introduction to managed care and its distinguished characteristics. Includes managed care and market competition and impact on science in general and medical science in particular, as well as evaluation of how competition and regulation influence the development, assessment, and diffusion of new health technologies within the managed care framework.

SOSC 430 THE SHAPING OF HEALTH POLICY (3)

Study of how health-care policy decisions are made and implemented, using an interdisciplinary approach involving government, law, ethics, economics, and history. Includes case discussions of major policy problems by faculty experts in these disciplines and guest speakers who are leading national figures in the shaping of public policy. Class meets at an off-campus location. For information, call (713) 500-9491.

SPAN (SPANISH)

School of Humanities/Center for Study of Languages

SPAN 101 INTRODUCTION TO SPANISH LANGUAGE AND CULTURE I (5)

Based on a task-oriented approach to language and culture learning, Spanish 101 allows students to develop the abilities to communicate satisfactorily in Spanish in everyday situations. Students are expected to be active participants in this process. Class meetings are primarily based on student interaction. No prior knowledge of Spanish. Limited enrollment. Offered Fall and Spring. URL: lang.rice.edu/impresiones/.

SPAN 102 INTRODUCTION TO SPANISH LANGUAGE AND CULTURE II (5)

Continuation of SPAN 101. Pre-requisite(s): SPAN 101, or placement test, or permission of instructor. Limited enrollment. URL: lang.rice.edu/impresiones/.

SPAN 150 FRESHMAN SEMINAR: LATIN AMERICAN SHORT FICTION (EMPHASIS ON BORGES AND CORTAZAR) (3)

Readings of classic works of short fiction by modern Latin American masters, with special emphasis on the stories of Jorge Luis Borges and Julio Cortazar. Close reading, interpretation and appreciation of stories (in English translation) will be the focus of class discussion, presentations and short interpretative essays. Taught in English. Open to first-year students only, except by permission of the instructor. Cross-listed with FSEM 150. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Kauffmann.

SPAN 152 FRESHMAN SEMINAR: THE HISPANIC ESSAY (3)

Readings in English from modern Spanish and Latin-American essayists, including Miguel de Unamuno, Jose Marti, Jose Ortega y Gasset, Victoria Ocampo, Maria Zambrano, Alphonso Reyes, Jorge Luis Borges, Fernando Savater, Ariel Dorfman, Roger Bartra, et al. Close reading, discussion, short interpretive papers. Taught in English. Open to first-year students only, except by permission of the instructor. Cross-listed with FSEM 152. Must be in one of the following Classification(s): Freshman. Not offered Fall and Spring. Instructor(s): Kauffmann.

SPAN 201 INTERMEDIATE SPANISH I (4)

Based on a task-oriented approach to learning language and culture, Spanish 201 allows the intermediate students to improve and expand their communicative skills. Students are expected to be active participants in the learning process. Class meetings are not based on lectures, but rely heavily on student interaction. Pre-requisite(s): SPAN 102, or placement test, or permission of instructor. Limited enrollment.

SPAN 202 INTERMEDIATE SPANISH II (4)

Continuation of SPAN 201 based on a task-based approach to language learning. Proficiency-based instruction focused on expanding vocabulary and further developing the four communicative skills (reading, writing, speaking, listening). Pre-requisite(s): SPAN 201, or placement test, or permission of instructor. Offered Fall & Spring.

SPAN 203 SPANISH I FOR BI-CULTURAL STUDENTS (4)

This course is intended for students who have been exposed to Spanish at home, through relatives and/or in the community and who wish to improve their confidence and fluency by expanding their formal knowledge of the language and of Hispanic cultures. Authentic materials such as short stories, poetry, films and articles will be used to develop reading, writing, speaking and listening skills. No previous formal instruction is required. Limited enrollment. Offered Fall.

SPAN 204 INTERMEDIATE SPANISH FOR BI-CULTURAL STUDENTS (4)

Continuation of SPAN 203. This course is for students who have been exposed to Spanish at home, through relatives and/or in the community and who wish to improve their confidence and fluency by expanding their formal knowledge of the language and of Hispanic cultures. Authentic materials such as short stories, poetry, films and articles will be used to develop reading, writing, speaking and listening skills. Pre-requisite(s): SPAN 203, or placement test, or permission of instructor. Recommended prerequisite(s): Significant exposure to Spanish. Limited enrollment. Offered Spring.

SPAN 301 ADVANCED SPANISH I (3)

This course aims to bring students from an intermediate towards an advanced level of proficiency in Spanish. Students will develop fluency and communicative competence through exposure to literary texts, newspaper and web articles, films and videos, in their cultural context. Emphasis will be on conversation strategies, vocabulary expansion and the writing of essays. Pre-requisite(s): SPAN 202, or placement test, or permission of instructor. Limited enrollment.

SPAN 302 ADVANCED SPANISH II (3)

Continuation of SPAN 301. Pre-requisite(s): SPAN 301, or placement test, or permission of instructor. Limited enrollment.

SPAN 303 ADVANCED SPANISH FOR BI-CULTURAL STUDENTS (3)

SPAN 303 aims to bring students to advanced proficiency in Spanish, enabling them to interact confidently in a wide variety of contexts, while providing them with cultural insights about the Hispanic world. It is designed for students who come with bi-cultural exposure and at least intermediate proficiency in Spanish.

SPAN 304 LANGUAGE AND CULTURE OF HISPANICS IN THE UNITED STATES (3)

The aim of this course is to achieve advanced level of proficiency. The course will explore issues of the cultural identity of Spanish speakers by studying Hispanic culture in the U.S. Based on the study of Hispanic culture in the U.S. from three different viewpoints: historical, literary, and sociolinguistic. Pre-requisite(s): SPAN 303, or placement test, or permission of instructor. Limited enrollment.

SPAN 305 COMMERCIAL SPANISH I (3)

This course will familiarize students with the world of business in Spanish through activities dealing with current socio-economic events in Latin America and Spain, commercial correspondence, cross cultural awareness issues presentations. Supranational organizations in the area will be topic of a final project for the class. URL: lang.rice.edu/janv/Span305/Span305_Mainpage.html.

SPAN 306 COMMERCIAL SPANISH II (3)

Further development of SPAN 305 goals: vocabulary, concepts, language and cultural skills necessary to communicate successfully in the socio-economic and cultural milieu of contemporary Hispanic countries. A practical case of marketing will be the final project for the class. SPAN 305 is not required for the class. Limited enrollment.

SPAN 307 THE LANGUAGE AND CULTURE OF MEDICINE AND HEALTH CARE (3)

An exploration of the differences between Anglo-American and Latin-American cultures of medicine. This course will explore socioeconomic and cultural difference between Anglo-American medical institutions and rural Latin-American conceptions of the role of doctors, medicine, and health care. Limited enrollment.

SPAN 308 THE LANGUAGE OF MEDICINE AND HEALTH CARE (4)

Students will continue to study the body's major organ systems and apply their knowledge to the translation of patient education materials, case reports, and other clinical documents. Students enrolled in this course will be required to volunteer 40 clock-hours as clinical interpreters. Limited enrollment.

SPAN 309 SPANISH PRACTICAL PHONETICS (3)

The Phonetics presented in this course will help students improve their Spanish pronunciation. We discuss specific problems that English speakers have in learning to produce Spanish sounds. Students will learn about the regional Spanish spoken in different countries. They learn to describe Spanish sounds and write phonetic transcriptions. Taught in Spanish. Pre-requisite(s): SPAN 201. Offered Spring.

SPAN 310 THE LANGUAGE OF MEDICINE AND HEALTHCARE PRACTICUM (1 TO 3)

The number of credits is based on the number of internship hours. Instructor permission required.

SPAN 313 SCIENTIFIC SPANISH I (3)

Content-based course in Spanish in which the student will be familiarized with uses of the language necessary to deal with scientific issues in the Spanish-speaking world. Activities in class will include reading current scientific texts, presentations and special issues concerning the fields in which the student is interested. Limited enrollment. URL: lang.rice.edu/janv/Span313/Mainpage.html.

SPAN 314 SCIENTIFIC SPANISH II (3)

Continuation of SPAN 313. Content-based course in Spanish dealing with vocabulary and scientific issues in the Spanish-speaking world. Activities in class will include reading current scientific texts, presentations, authentic tasks and special issues concerning the fields in which the student is interested. SPAN 313 is not required. Limited enrollment.

SPAN 315 THE ART AND MECHANICS OF TRANSLATION I (3)

Working with various of texts in English and Spanish, students will begin to acquire the theoretical, linguistic, and research tools to solve common translation problems. This course will improve Spanish proficiency, broaden cross-cultural understanding. Pre-requisite(s): SPAN 302 or SPAN 303, or placement test, or permission of instructor.

SPAN 316 THE ART AND MECHANICS OF TRANSLATION II (3)

Continuing the aims and methods of SPAN 315, this course takes into account that effective translators are first good readers, critically aware of the rhetorical strategies and cultural assumptions of writers. Pre-requisite(s): SPAN 315, or permission of instructor.

SPAN 340 SPANISH CULTURE AND CIVILIZATION (3)

Topics relating to Spain's history and the development of social, political and economic institutions form the basis for extensive conversation, discussion, and composition. Recommended prerequisite(s): Third-year Spanish or permission of the instructor. Offered Fall. Instructor(s): Castaneda.

SPAN 341 MASTER WORKS OF SPANISH ART AND LITERATURE (3)

Selected masterpieces of Spanish art and literature; emphasis on specific aesthetic achievement of each work in its European and Spanish contexts, and on how the work reflects important cultural, social, and ideological issues of its times. Exemplary pairs (an author and an artist) from key historical moments will be studied. Recommended prerequisite(s): Third-year Spanish or permission of instructor; no prerequisite when course offered in English. Repeatable for Credit. Not offered Fall and Spring. Instructor(s): Kauffmann.

SPAN 342 WRITING WORKSHOP (3)

Course designed to develop students' competence in written expression through close readings of poems, short stories, plays and newspaper articles. Students will learn the functions and strategies of different writing styles. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Fall. Instructor(s): Perez.

SPAN 345 MAPPING LATIN AMERICAN CULTURE (3)

Explores key issues in Latin American culture. Important aspects of the contemporary situation in Latin America are also studied, including phenomena such as globalization, the rise of mega-cities, migration, authoritarianism, the impact of colonization and the rise of national states. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Spring. Instructor(s): Gonzalez-Stephan.

SPAN 346 CONTEMPORARY MEXICO (3)

Topics discussed include: the Mexican political system, the debate on national identity, border culture, urbanization, regionalism, and indigenous cultures. Uses a wide range of texts to introduce students to the richness and complexity of contemporary Mexican culture. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): van Delden; Gaytan.

SPAN 347 CONTEMPORARY MEXICO: STUDY TRIP (1)

A one-week study trip to Zacatecas, Mexico intended as cultural immersion program. Course objectives are: perfecting effective communicative skills, learning about the institutions, culture and traditions of Mexico and doing research and field work in Spanish. Taught in conjunction with SPAN 346. Pre-requisite(s): SPAN 346 or SPAN 311, or permission of instructor. Limited enrollment. Not offered Fall and Spring. Instructor(s): Gaytan.

SPAN 350 SOCIOLINGUISTICS OF SPANISH (3)

Analysis of the modern varieties of Spanish covering phonetics, vocabulary, morphosyntax, and pragmatics. The course requires the completion of a research project with an empirical database. Cross-listed with LING 421. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Spring. Instructor(s): Salaberry.

SPAN 365 SPAIN'S GOLDEN AGE (3)

This course will deal with the history, politics, culture, art, and literature which justify the use of the term Golden Age for the period of the Hapsburg Dynasty (1517-1700). Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Spring. Instructor(s): Castaneda.

SPAN 366 GOLDEN AGE DRAMA (3)

Emphasis on the birth of the modern Spanish theater and the primary role played by Lope de Vega. Other dramatists to be studied are Guillen de Castro, Tirso de Molina, Mira de Amescua, and Ruiz de Alarcon. Taught in English. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall & Spring. Instructor(s): Castaneda.

SPAN 368 THE DON JUAN THEME (3)

Studies the impressive trajectory of one of the world's most popular and intriguing legends. Works by Tirso de Molina, Moliere, Mozart, Lord Byron, George Bernard Shaw, and others. Several film versions of the Don Juan story will also be shown. Taught in English. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Spring. Instructor(s): Castaneda.

SPAN 370 SURVEY OF SPANISH LITERATURE (3)

A genre-based (poetry, narrative fiction, drama, essay) survey of the main movements in Spanish literature from medieval times to the present. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Perez.

SPAN 372 FROM EL GRECO TO PICASSO: PAINTING IN SPAIN 1561-1974 (3)

This course explores the extraordinary development of the art of painting in Spain from its emergence as a world power in the 16th century to its reintegration into the European community in the 20th century. The course will examine works by El Greco, Zurbaran, Velazquez, Ribera, Murillo, Goya, Picasso, Gris, Miro, Dali, Tapies among others. Taught in English. Offered Fall. Instructor(s): Casas.

SPAN 375 THE SPANISH CIVIL WAR (3)

Prelude to World War II and culmination of perennial struggles between the so-called "two Spains," the Spanish Civil War (1936-39) is a watershed moment in modern Spanish and European history. Interdisciplinary, multimedia approach: the war seen through Spanish and foreign novels, poetry, film, painting, journalism, songs, and posters. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall & Spring. Instructor(s): Kauffmann.

SPAN 376 POETRY AND CULTURE (3)

Study of contemporary poetry and its cultural functions. Students engage with poetry through analysis and interpretation of selected Spanish poets. Students also practice writing and translating poems. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Fall. Instructor(s): Perez.

SPAN 378 CURRENT ISSUES IN SPAIN (3)

Exploration of diverse cultural aspects of today's Spain through films and newspaper articles. The topics discussed will serve as a springboard for further development of writing skills. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Spring. Instructor(s): Perez.

SPAN 379 LITERARY TRANSLATION (3)

Overview of modern theories of literary translation, and practice in Spanish-English (and limited English-Spanish) literary translation, using examples from diverse genres of Spanish and Latin American literature. Recommended prerequisite(s): Third-year Spanish or equivalent. Limited enrollment. Not offered Fall & Spring. Instructor(s): Kauffmann.

SPAN 380 THE EVOLUTION OF SPANISH (3)

This course provides an introduction to (1) major historical changes that led to the evolution of Proto-Romance (Vulgar Latin) to the Castillian dialect of Spanish (español or castellano), and (2) current developments and expected changes in the future of the various representatives of former Castillian dialect. Cross-listed with LING 424. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall & Spring. Instructor(s): Salaberry.

SPAN 381 THEORIES OF L2 DEVELOPMENT (3)

This course surveys and critiques various theories of second language acquisition. Major topics are: analysis of linguistic, cognitive and social processes in the development of second languages, formal hypotheses of non-academic and classroom L2 learning, analysis of various SLA research methodologies and interpretation of findings from SLA research. Cross-listed with LING 314. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Spring. Instructor(s): Salaberry.

SPAN 382 THE ACQUISITION OF L2 SPANISH (3)

This course reviews the available research on the acquisition of the phonology, vocabulary, morphosyntactic and discursive-pragmatic features of Spanish as a second language. Aims to provide students with a thorough understanding of second language acquisition processes that are specific to Spanish but generalizable to other languages as well. Cross-listed with LING 418. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Salaberry.

SPAN 385 FOUNDATIONS OF SPANISH AMERICAN LITERATURE (3)

How did Spanish American literature acquire an identity of its own? This course attempts to answer this question by analyzing a number of foundational works of Spanish American literature in conjunction with later works that revise and rewrite key themes in the continent's literary tradition. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 386 CULTURE AND POWER IN LATIN AMERICA (3)

This course uses a variety of materials and sources to examine the epistemologies of coloniality in Latin America, with a focus on their European and Western origins. Explores various aspects of the discourses of coloniality and subalternity in a range of cultural productions (cinema, poetry, narrative, salsa, Latin rock music). Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 388 THE LATIN AMERICAN SHORT STORY (3)

Latin American writers have achieved great distinction in the genre of the short story. This course studies texts by some of the continent's best-known short-story writers, such as Cortazar, Borges, Monterroso, Rulfo, Fuentes, Garcia Marquez, Elena Garro, Ana Lydia Vega, Clarice Lispector, Benedetti, Uslar Pietri, Massiani, Lemebel, Asis, and Carpentier. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 390 HISPANIC CINEMA (3)

This course examines the ways in which films in both Spain and Latin America have represented the cultural contexts of their countries. Focus is on the theme of power, and the consequences on social and individual lives. Cross-listed with WGST 390. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Offered Spring. Instructor(s): Gonzalez-Stephan.

SPAN 392 MEXICAN AVANT-GARDE NARRATIVE (3)

This course looks at two key moments in the history of the Mexican avant-garde. We will begin by looking at the "historical" avant-garde of the 1920s and 30s, focusing on the estridentistas and on the Contemporaneos group, and reading works by Arqueles Vela, Xavier Icaza, Slavador Novo, Xavier Villaurrutia and Gilberto Owen. We will also study the emergence of a second avant-garde, represented by works such as *La semana de colores* by Elena Garro and *¿Aguila o sol?* by Octavio Paz. Recommended: Prerequisite(s): Third year Spanish or permission of instructor. Offered Fall. Instructor(s): Escalante.

SPAN 393 CARIBBEAN FICTION (3)

In spite of the region's political fragmentation and linguistic diversity, the Caribbean in many ways constitutes a unified literary region. This course examines differences and commonalities in the responses to the distinctive features of Caribbean history and geography in works by English-, Spanish-, French-, and Dutch-speaking authors. Authors studied include Alejo Carpentier, Reinaldo Arenas, Rosario Ferre, V.S. Naipaul, George Lamming, Jean Rhys, Cristina Garcia, Patrick Chamoiseau, and Frank Marinus Arion. Taught in English. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 395 DIALOGUE OF THE AMERICAS (3)

The history of Latin America since the nineteenth century has been profoundly shaped by its relationship to the "North" (the United States of America), as a model either to be imitated or rejected. This course examines both positions (emulation and detraction) as reflected in literature, painting, film, and political texts. Recommended prerequisite(s): Third-year Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 401 LITERARY THEORY/HISPANIC TEXTS (3)

Overview of major schools in contemporary literary theory (e.g., Formalist, Structuralist, Post-structuralist, Marxist, Feminist, Neo-historicist), including Hispanic contributions to and adaptations of such theory where relevant, using texts from Spain and Latin America as study examples. Graduate/Undergraduate version: SPAN 501. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Fall. Instructor(s): Gonzalez-Stephan.

SPAN 410 THE PICARESQUE NOVEL (3)

This course will deal with the relationships connecting the picaresque genre with the *Libros de caballerias*, the *Novela pastoril*, and "Don Quijote". Among the principal texts: "Lazarillo de Tormes", "Guzman de Alfarache", "El buscon", "Gil Blas de Santillana", and "Nuevas andanzas de Lazarillo". Graduate/Undergraduate version: SPAN 510. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Fall. Instructor(s): Castaneda.

SPAN 412 DON QUIJOTE (3)

Cervantes's masterpiece is studied in its relationship to the books of knight errantry, and to the picaresque and pastoral novels, with emphasis on the innovative techniques of Cervantes which contribute to the birth of the modern novel. Graduate/Undergraduate version: SPAN 512. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Castaneda.

SPAN 414 CALDERON'S THEATER (3)

This course will cover the principal dramatic works which have earned for Calderon the distinction of being the most important philosophical and religious dramatist of the Golden Age. Among other dramatists to be studied are Moreto and Rojas Zorrilla. Graduate/Undergraduate version: SPAN 514. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Castaneda.

SPAN 420 THE DISPUTED GENERATION OF 1898 (3)

The origins and fortunes of the Generation of 1898 as a historiographic concept. What have been the conceptual and historiographic gains and losses, and the main ideological functions of the concept of the *Generacion del 98* since it was invented (separately, by Ortega y Gasset and Azorin, and with differing referents!) in 1913? Graduate/Undergraduate version: SPAN 520. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Kauffmann.

SPAN 422 UNAMUNO AND ORTEGA (3)

Intellectual relations and mutual influences of two figures whose confrontation played a crucial role in defining the situation of Spain from 1900-1936. Reception of their thought by major writers of their time and ours (A. Machado, M. Zambrano, F. Ayala, J.L. Borges, O. Paz, L. Zea). Graduate/Undergraduate version: SPAN 522. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Kauffmann.

SPAN 426 THE SPANISH AVANT-GARDE (3)

This cross-genre, multimedia course examines the contributions of major figures (Picasso, Gris, Dali, Diego, Alberti, Lorca, Bunuel, Gomez de la Serna) to the Spanish avant-garde in the 20th century. Graduate/Undergraduate version: SPAN 526. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Perez.

SPAN 428 CONTEMPORARY SPANISH LITERATURE (3)

This course considers in detail specific problems, figures, movements, works, or literary genres. Examples: Torrente's trilogies; Poets of 1927; Social Conscience in Literature. Graduate/Undergraduate version: SPAN 528. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Spring. Instructor(s): Perez.

SPAN 430 20TH CENTURY SPANISH NOVEL (3)

This course examines the evolution of the Spanish novel as a work of art while exploring how cultural issues are incorporated into fictional worlds. Graduate/Undergraduate version: SPAN 530. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Perez.

SPAN 435 THE MODERN SPANISH ESSAY (3)

Readings from representative essayists who attempt to define Spain's situation in response to the challenges of European modernity. Spanish "Europeanizers" vs. defenders of Spain's "differences" from Europe, scientific vs. anti-scientific rhetorical models, hierarchies of gender and genre, interpretations of Spanish landscape. Graduate/Undergraduate version: SPAN 535. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Spring. Instructor(s): Kauffmann.

SPAN 440 BILINGUALISM (3)

This course analyzes bilingualism from a variety of perspectives including cognitive, linguistic, and sociocultural viewpoints. Topics to be covered include conceptual representations of the lexicon, sentence parsing, levels of activation of bilingual modes, lexical, phonological, syntactic and pragmatic interference, code-switching, cultural identity, bilingual education, language and thought, etc. Cross-listed with LING 419. Graduate/Undergraduate version: SPAN 540. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Fall. Instructor(s): Salaberry.

SPAN 442 COGNITION AND L2 ACQUISITION (3)

This course provides an in-depth analysis of general cognitive processes in second language development and cognitive based theories of second language acquisition. Some of the issues to be discussed in detail are perception, attention, memory, automaticity, restructuring, sentence processing, learnability theories, language and intelligence, critical periods for language acquisition, etc. Cross-listed with LING 420. Graduate/Undergraduate version: SPAN 542. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Salaberry.

SPAN 444 TENSE AND ASPECT IN L2 ACQUISITION (3)

This course provides an introduction to (1) the morphosyntactic analysis of tense-aspect systems, (2) the development of inflectional morphology among first and second language learners, (3) the sequence and rate of aspectual contrasts, (4) the differences between natural and academic learning settings, and (5) the impact of pedagogical manipulations. Cross-listed with LING 422. Graduate/Undergraduate version: SPAN 544. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Salaberry.

SPAN 446 CASTILIAN SPANISH (3)

The Romance languages come from the language spoken by the populace of Rome at the time of the Empire. This spoken language, known as Vulgar Latin, began to be used in Spain around 197 A.D. The objective of this course is to analyze the development of the reconstructed form of spoken Latin into Hispano-Romance and into present-day Castilian. The importance of the Arabic contribution will be studied. Samples of literary texts will be discussed as linguistic documents. Graduate/Undergraduate version: SPAN 546. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Urrutibeithey.

SPAN 450 CIVILIZATION AND BARBARISM (3)

Since the Conquest, Latin America has been viewed by the European imagination as an "empty" continent, lacking in culture and history. This image of a "savage" continent has been interiorized by Latin America's own intellectuals. This course examines and deconstructs various manifestations of these ideological representations of Latin America. Graduate/Undergraduate version: SPAN 550. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 452 (UN) DISCIPLINED BODIES (3)

This course studies nineteenth-century and twentieth-century texts that contributed to nation-building in Latin America by developing images of the model citizen, in his/her manners, physical appearance, behavior, health, and ethnic identity. These texts also offer representations of those citizens regarded as undesirable. Graduate/Undergraduate version: SPAN 552. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 454 MACHO CULTURE IN LATIN AMERICA (3)

This course examines the works of patriarchal ideology in a variety of cultural forms (literature, film, painting, photography). Studies the ways in which this ideology, which manifests itself in works by both men and women, defines male and female roles in Latin American culture. Graduate/Undergraduate version: SPAN 554. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 456 LATIN AMERICAN WOMEN'S CULTURE (3)

Studies the cultural production (literary, artistic, cinematic) of intellectual women in Latin America. Examines the struggles for interpretive power in works by women from the colonial period to the present. Graduate/Undergraduate version: SPAN 556. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 460 EUROPE AND LATIN AMERICA (3)

Definitions of Latin American literature and culture often take as their point of departure a consideration of the continent's relationship to Europe. This course examines works-essays, stories, and novels-that analyze and exemplify diverse aspects of this relationship. Graduate/Undergraduate version: SPAN 560. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 462 MODERN SPANISH AMERICAN NOVEL (3)

Works by Asturias, Carpenter, Rulfo, Onetti, Vargas Llosa, Cortazar, Fuentes, and others. Examines how Spanish American novelists from the 1940s onward appropriated the techniques of European modernist literature and infused them with new cultural content. Graduate/Undergraduate version: SPAN 562. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 466 20TH CENTURY MEXICAN NARRATIVE (3)

Examines the innovations in narrative form developed by twentieth-century Mexican novelists and short-story writers, as well as the social and political subjects with which they grappled in their work. Graduate/Undergraduate version: SPAN 566. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Spring. Instructor(s): van Delden.

SPAN 468 OCTAVIO PAZ (3)

Studies the literary and intellectual career of Nobel prize-winning Mexican poet and essayist Octavio Paz. Topics to be covered include: poetry and modernity; literature and national identity; art and the avant-garde; Paz's role in political debates in Mexico; the reception of his work at home and abroad. Graduate/Undergraduate version: SPAN 568. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 470 LATIN AMERICAN CULTURAL THEORY (3)

This course analyzes the main theoretical positions within contemporary cultural criticism. We will also study the reflection of these theories in fiction and film. Graduate/Undergraduate version: SPAN 570. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 474 SPANISH AMERICAN POETRY AND THE EXPERIENCE OF THE LIMIT (3)

Examines twentieth-century Spanish American poetry from the perspective of the poet's struggle to articulate experiences that exist at the limit of the inexpressible. Poets studied include Cesar Vallejo, Vicente Huidobro, Pablo Neruda, Jorge Luis Borges, Octavio Paz, Olga Orozco, Raul Zurita, Carmen Boullsa, Marosa di Giorgio and Francisco Hernandez. Graduate/Undergraduate version: SPAN 574. Recommended prerequisite(s): Third year Spanish or permission of instructor. Offered Fall. Instructor(s): Escalante.

SPAN 490 INDEPENDENT STUDY (1 TO 4)

Research in Hispanic literature, Hispanic linguistics, Hispanic culture and civilization. Open to qualified juniors and seniors interested in a topic not covered in other courses. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Fall and Spring.

SPAN 495 HONORS THESIS (3)

Independent research projects by outstanding Spanish majors leading to a substantial honors essay, undertaken in close cooperation with a departmental faculty member, who must first approve the thesis proposal. Recommended prerequisite(s): Advanced Spanish or permission of instructor. Offered Fall and Spring.

SPAN 501 LITERARY THEORY/HISPANIC TEXTS (3)

Graduate/Undergraduate version: SPAN 401. Offered Fall. Instructor(s): Kauffmann.

SPAN 507 TEACHING COLLEGE SPANISH (PRACTICUM) (1 TO 3)

Study of pedagogical principles applicable to the teaching of Spanish. Includes practice teaching and performance reviews, design of pedagogical activities and peer observation. Repeatable for Credit. Offered Fall. Instructor(s): Salaberry.

SPAN 510 THE PICARESQUE NOVEL (3)

Graduate/Undergraduate version: SPAN 410. Offered Fall. Instructor(s): Castaneda.

SPAN 512 DON QUIJOTE (3)

Graduate/Undergraduate version: SPAN 412. Not offered Fall and Spring. Instructor(s): Castaneda.

SPAN 514 CALDERON'S THEATRE (3)

Graduate/Undergraduate version: SPAN 414. Not offered Fall and Spring. Instructor(s): Castaneda.

SPAN 520 THE DISPUTED GENERATION OF 1898 (3)

Graduate/Undergraduate version: SPAN 420. Not offered Fall and Spring. Instructor(s): Kauffmann.

SPAN 522 UNAMUNO AND ORTEGO (3)

Graduate/Undergraduate version: SPAN 422. Not offered Fall and Spring. Instructor(s): Kauffmann.

SPAN 526 THE SPANISH AVANT-GARDE (3)

Graduate/Undergraduate version: SPAN 426. Not offered Fall and Spring. Instructor(s): Perez.

SPAN 528 CONTEMPORARY SPANISH LITERATURE (3)

Graduate/Undergraduate version: SPAN 428. Offered Spring. Instructor(s): Perez.

SPAN 530 20TH-CENTURY SPANISH NOVEL (3)

Graduate/Undergraduate version: SPAN 430. Not offered Fall and Spring. Instructor(s): Perez.

SPAN 535 THE MODERN SPANISH ESSAY (3)

Graduate/Undergraduate version: SPAN 435. Offered Spring. Instructor(s): Kauffmann.

SPAN 540 BILINGUALISM (3)

Graduate/Undergraduate version: SPAN 440. Offered Fall. Instructor(s): Salaberry.

SPAN 542 COGNITION AND L2 ACQUISITION (3)

Graduate/Undergraduate version: SPAN 442. Not offered Fall and Spring. Instructor(s): Salaberry.

SPAN 544 TENSE AND ASPECT IN L2 ACQUISITION (3)

Graduate/Undergraduate version: SPAN 444. Not offered Fall and Spring. Instructor(s): Salaberry.

SPAN 546 ORIGIN AND EVOLUTION OF CASTILIAN SPANISH (3)

Graduate/Undergraduate version: SPAN 446. Not offered Fall and Spring. Instructor(s): Urrutibeheity.

SPAN 550 CIVILIZATION AND BARBARISM (3)

Graduate/Undergraduate version: SPAN 450. Not offered Fall and Spring Instructor(s): Gonzalez-Stephan.

SPAN 552 (UN) DISCIPLINED BODIES (3)

Graduate/Undergraduate version: SPAN 452. Not offered Fall and Spring Instructor(s): Gonzalez-Stephan.

SPAN 554 MACHO CULTURE IN LATIN AMERICA (3)

Graduate/Undergraduate version: SPAN 454. Not offered Fall and Spring. Instructor(s): Gonzalez-Stephan.

SPAN 556 LATIN AMERICAN WOMEN'S CULTURE (3)

Graduate/Undergraduate version: SPAN 456. Repeatable for Credit. Not offered Fall and Spring Instructor(s):Gonzalez-Stephan.

SPAN 560 EUROPE AND LATIN AMERICA (3)

Graduate/Undergraduate version: SPAN 460. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 562 MODERN SPANISH AMERICAN NOVEL (3)

Graduate/Undergraduate version: SPAN 462. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 566 20TH CENTURY MEXICAN NARRATIVE (3)

Graduate/Undergraduate version: SPAN 466. Offered Spring. Instructor(s): van Delden.

SPAN 568 OCTAVIO PAZ (3)

Graduate/Undergraduate version: SPAN 468. Not offered Fall and Spring. Instructor(s): van Delden.

SPAN 570 LATIN AMERICAN CULTURAL THEORY (3)

Graduate/Undergraduate version: SPAN 470. Not offered Fall and Spring Instructor(s): Gonzalez-Stephan.

SPAN 574 SPANISH AMERICAN POETRY AND THE EXPERIENCE OF THE LIMIT (3)

Graduate/Undergraduate version: SPAN 474. Recommended prerequisite(s): Third year Spanish or permission of instructor. Offered Fall. Instructor(s): Escalante.

SPAN 591 INDEPENDENT STUDY (1 TO 9)

Research in Hispanic literature, Hispanic linguistics, and Hispanic culture and civilization. Open to graduate students interested in a topic not covered in other courses. Department permission required. Repeatable for Credit. Offered Fall.

SPAN 592 INDEPENDENT STUDY (1 TO 9)

Research in Hispanic literature, Hispanic linguistics and Hispanic culture and civilization. Open to graduate students interested in a topic not covered in other courses. Department permission required. Repeatable for Credit. Offered Spring.

SPAN 700 SUMMER GRADUATE RESEARCH (1 TO 9)

Research leading to candidacy. Repeatable for Credit.

SPAN 701 RESEARCH LEADING TO CANDIDACY (1 TO 9)

Topics in Spanish and Latin American literary theory and Spanish Linguistics. To be taken after a student has completed departmental course requirements for the Masters, and before being admitted to candidacy. Repeatable for Credit. Offered Fall.

SPAN 702 RESEARCH LEADING TO CANDIDACY (1 TO 9)

Topics in Spanish and Latin American Literary theory and Spanish Linguistics. To be taken after a student has completed departmental course requirements for the Master's degree, but before being admitted to candidacy. Repeatable for Credit. Offered Spring.

SPAN 800 SUMMER THESIS RESEARCH (1 TO 9)

Research and thesis. Taken after a student has been approved for candidacy. Can be repeated for credit. Repeatable for Credit.

SPAN 801 FALL RESEARCH AND THESIS (1 TO 9)

Research for the M.A. thesis. Taken after approval for candidacy. Repeatable for Credit. Offered Fall.

SPAN 802 SPRING RESEARCH AND THESIS (1 TO 9)

Taken after approval for candidacy. Can be repeated for credit. Repeatable for Credit. Offered Spring.

STAT (STATISTICS)

School of Engineering/Statistics

STAT 100 DATA, MODELS, AND REALITY: AN INTRODUCTION TO THE SCIENTIFIC METHOD (3)

The formation of models of reality and the ways models are tested by their analysis in the light of data are considered. We cover a variety of examples from antiquity to the present time. Only offered in the Spring. Offered Spring. URL: www.owl.net.rice.edu/~stat100.

STAT 280 ELEMENTARY APPLIED STATISTICS (4)

A noncalculus introduction to statistical methods with emphasis on techniques. Includes computer laboratory. Offered Fall and Spring. URL: statistics.rice.edu/courses.cfm.

STAT 300 MODEL BUILDING (3)

Examples to illustrate mathematical formulation (modeling) of scientific problems, their solution and interpretation. Pre-requisite(s): MATH 211, or permission of instructor. Offered Fall. URL: statistics.rice.edu/courses.cfm.

STAT 305 INTRODUCTION TO STATISTICS FOR BIOSCIENCES (4)

An introduction to statistics for Biosciences with emphasis on statistical models and data analysis techniques. Computer-assisted data analysis, including biological examples, is explored in laboratory sessions. Pre-requisite(s): MATH 101 and MATH 102. Offered Fall. URL: www.owl.net.rice.edu/~stat305.

STAT 310 PROBABILITY AND STATISTICS (3)

Probability theory and the central concepts and methods of statistics. Cross-listed with ECON 382. Pre-requisite(s): MATH 102. Recommended prerequisite(s): MATH 212. Offered Fall. URL: statistics.rice.edu/courses.cfm.

STAT 331 APPLIED PROBABILITY (3)

Elementary probability theory, conditional probability, independence, discrete and continuous random variables, expectation, standard discrete and continuous distributions, transform techniques, central limit theorems, estimation, and correlation. Selected topics such as the Poisson process, Markov chains, and statistical techniques. Illustrations from engineering. Cross-listed with ELEC 331. Pre-requisite(s): MATH 212. Offered Fall. URL: statistics.rice.edu/courses.cfm.

STAT 339 STATISTICAL METHODS-PSYCHOLOGY (4)

See psychology listing for course information. Cross-listed with PSYC 339.

STAT 385 METHODS OF DATA ANALYSIS AND SYSTEM OPTIMIZATION (4)

The three general topic areas covered in this methodology oriented course are statistical methods including regression, sampling, and experimental design; simulation based methods in statistics, queuing and inventory problems; and an introduction to optimization methods. Excel will serve as the basic computing software. Pre-requisite(s): STAT 280 or STAT 305. Offered Spring. URL: statistics.rice.edu/courses.cfm.

STAT 400 ECONOMETRICS (3)

See economics listing for course information. Cross-listed with ECON 400.

STAT 410 INTRODUCTION TO REGRESSION AND STATISTICAL COMPUTING (3)

A survey of statistical methods with emphasis on computing and computing environments, focusing on applied regression and experimental design. Pre-requisite(s): STAT 310 or STAT 331, or permission of instructor. Offered Fall. URL: statistics.rice.edu/courses.cfm.

STAT 420 STATISTICAL PROCESS CONTROL AND EXPERIMENTAL DESIGN (3)

An historical development of quality control including the approaches of Ford, Pareto, Shewhart, Deming, Box and Taguchi. Not offered Fall and Spring. URL: statistics.rice.edu/courses.cfm.

STAT 421 COMPUTATIONAL FINANCE II: TIME SERIES ANALYSIS (3)

Applied time series modeling and forecasting, with applications to financial markets. Pre-requisite(s): STAT 310, or permission of instructor. Offered Spring. URL: statistics.rice.edu/courses.cfm.

STAT 422 BAYESIAN DATA ANALYSIS (3)

This course will cover Bayesian methods for analyzing data. The emphasis will be on applied data analysis rather than theoretical development. We will consider a variety of models, including linear regression, hierarchical models, and models for categorical data. Pre-requisite(s): STAT 410. Offered Fall. URL: www.owl.net.rice/~stat422.

STAT 423 PROBABILITY IN BIOINFORMATICS AND GENETICS (3)

Advances in computers and biotechnology have had an immense impact on the biomedical fields. Correspondingly, new areas of probability and statistics are being developed specifically to meet the needs of this area. This course describes some of the main statistical applications in the field, including gene finding and evolutionary inference. Graduate/Undergraduate version: STAT 623. Pre-requisite(s): STAT 305 or STAT 310 or STAT 331, or permission of instructor. Offered Spring. URL: statistics.rice.edu/courses.cfm.

STAT 431 OVERVIEW OF MATHEMATICAL STATISTICS (3)

Topics include random variables, distributions, transformations, moment generating functions, common families of distributions, independence, sampling distributions, the basics of estimation theory, hypothesis testing and Bayesian inference. Pre-requisite(s): STAT 310 or STAT 331. Offered Fall. URL: statistics.rice.edu/courses.cfm.

STAT 450 PRACTICUM IN STATISTICAL MODELING (2)

This course introduces current theoretical and applied problems encountered in statistical practice. The content changes each semester in response to contemporary topics. Graduate/Undergraduate version: STAT 540. Instructor permission required. Not offered Fall and Spring.

STAT 453 BIOSTATISTICS (3)

An overview of methodologies used in Biostatistics. Graduate/Undergraduate version: STAT 553. Pre-requisite(s): STAT 410, or permission of instructor. Offered Spring. URL: statistics.rice.edu/courses.cfm.

STAT 470 FROM SEQUENCE TO STRUCTURE: AN INTRODUCTION TO COMPUTATIONAL BIOLOGY (4)

This course is a modern introduction to problems in computational biology spanning sequence to structure. The course has three modules: the first introduces statistical techniques in sequence analysis; the second covers statistical machine learning techniques for understanding experimental data generated in computational biology; and the third introduces problems in the structure of complex biomolecules. Cross-listed with COMP 470. Pre-requisite(s): COMP 280 and COMP 212 and STAT 310 or STAT 331. Offered Spring. URL: statistics.rice.edu/courses.cfm. Instructor(s): Guerra; Kaviraki; Kimmel; Subrmanian.

STAT 486 COMPUTATIONAL FINANCE I: MARKET MODELS (3)

This course takes the classical efficient market models and superimposes upon it models for other stochastic phenomena not generally accounted for in efficient market theory, showing how risk is lessened by portfolios and other mechanisms. The course uses computer simulations as an alternative to closed form solutions. Pre-requisite(s): STAT 310 or STAT 331. Offered Fall. URL: statistics.rice.edu/courses.cfm.

STAT 490 INDEPENDENT STUDY (1 TO 6)

Repeatable for Credit. Offered Fall and Spring.

STAT 491 INDEPENDENT STUDY (0 TO 6)

Repeatable for Credit. Offered Spring.

STAT 495 INTRODUCTION TO STATISTICS (3)

See political science listing for course information. Cross-listed with POLI 495.

STAT 499 MATHEMATICAL SCIENCES VIGRE SEMINAR (1 TO 3)

This course prepares a student for research in the mathematical sciences on a specific topic. Each section is dedicated to a different topic. Current topics include bioinformatics, biomathematics, computational finance, simulation driven optimization, and data simulation. The topics change each semester. Cross-listed with CAAM 499, MATH 499. Graduate/Undergraduate version: STAT 699. Repeatable for Credit. Offered Fall and Spring. URL: www.vigre.rice.edu.

STAT 503 TOPICS IN METH AND DATA ANALYSIS (3)

See political science listing for course information. Cross-listed with POLI 503.

STAT 509 ADVANCED PSYCHOLOGICAL STATISTICS I (3)

See psychology listing for course information. Cross-listed with PSYC 502.

STAT 510 ADVANCED PSYCHOLOGICAL STATISTICS II (3)

See psychology listing for course information. Cross-listed with PSYC 503.

STAT 532 MATHEMATICAL STATISTICS I (3)

The first semester in a two-semester course in mathematical statistics: random variables, distributions, small and large sample theorems of hypothesis testing, point estimation, and confidence intervals; topics such as exponential families, univariate and multivariate linear models, and nonparametric inference will also be discussed. Required for graduate students in statistics. Pre-requisite(s): STAT 581 and STAT 431, or permission of instructor. Offered Spring. URL: statistics.rice.edu/courses.cfm.

STAT 533 ADVANCED STATISTICAL INFERENCE (3)

A continuation of STAT 532. Required for Ph.D. students in statistics. Cross-listed with CAAM 533. Pre-requisite(s): STAT 582 and STAT 532. Offered Fall. URL: statistics.rice.edu/courses.cfm.

STAT 540 PRACTICUM IN STATISTICAL MODELING (2)

This course introduces current theoretical and applied problems encountered in statistical practice. The content changes each semester in response to contemporary topics. Designed for graduate students in statistics. Graduate/Undergraduate version: STAT 450. Repeatable for Credit. Not offered Fall and Spring. URL: statistics.rice.edu/courses.cfm.

- STAT 541 MULTIVARIATE ANALYSIS (3)**
Study of multivariate normal theory, principal components, factor analysis, discrimination, and hypothesis testing. Not offered Fall and Spring. URL: statistics.rice.edu/courses.cfm.
- STAT 542 SIMULATION (3)**
Topics in stochastic simulation including; random number generators; Monte Carlo methods, resampling methods, Markov Chain Monte Carlo, importance sampling and simulation based estimation for stochastic processes. Pre-requisite(s): STAT 532. Offered Fall.
- STAT 545 GENERALIZED LINEAR MODELS AND CATEGORICAL ANALYSIS (3)**
- STAT 546 DESIGN AND ANALYSIS OF EXPERIMENTS AND SAMPLING THEORY (3)**
Not offered Fall and Spring
- STAT 547 SURVIVAL ANALYSIS (3)**
Not offered Fall and Spring
- STAT 550 NONPARAMETRIC FUNCTION ESTIMATION (3)**
Survey of topics in data analysis including data visualization, multivariate density estimation, and nonparametric regression. Advanced applications will include clustering, discrimination, dimension reduction, and bump-hunting using nonparametric density procedures.
- STAT 551 ADVANCED TOPICS IN TIME SERIES (3)**
The course will cover current topics in both modeling and forecasting discrete and continuous time series. A brief coverage will also be given to spatial and spatial-temporal processes. Emphasis will be placed on applications in the area of computational finance. Not offered Fall and Spring.
- STAT 552 APPLIED STOCHASTIC PROCESSES (3)**
This course covers the theory of some of the most frequently used stochastic processes in application; discrete and continuous time, Markov chains, Poisson and renewal processes, and Brownian motion. Pre-requisite(s): STAT 581 and STAT 582. Offered Fall. URL: statistics.rice.edu/courses.cfm.
- STAT 553 BIostatISTICS (3)**
Same as STAT 453 with advanced problem sets. Graduate/Undergraduate version: STAT 453. Pre-requisite(s): STAT 410, or permission of instructor. Offered Spring. URL: statistics.rice.edu/courses.cfm.
- STAT 581 MATHEMATICAL PROBABILITY I (3)**
Measure-theoretic foundations of probability. Open to qualified undergraduates. Cross-listed with CAAM 581. Offered Fall. URL: statistics.rice.edu/courses.cfm.
- STAT 582 MATHEMATICAL PROBABILITY II (3)**
Continuation of STAT 581. Pre-requisite(s): STAT 581. Offered Spring. URL: statistics.rice.edu/courses.cfm.
- STAT 583 INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS (3)**
See ELEC listing for course information. Cross-listed with CAAM 583, ELEC 533.
- STAT 586 WAVELET AND SPECTRAL ANALYSIS (3)**
See ELEC listing for course information. Cross-listed with ELEC 532.
- STAT 590 INDEPENDENT STUDY (1 TO 15)**
Repeatable for Credit.
- STAT 591 INDEPENDENT STUDY (1 TO 6)**
Repeatable for Credit.
- STAT 600 GRADUATE SEMINAR IN STATISTICS (1 TO 3)**
Must be enrolled in one of the following Major(s): Statistics. Must be enrolled in one of the following Level(s): Graduate. Repeatable for Credit. Offered Fall and Spring. URL: statistics.rice.edu/courses.cfm.
- STAT 604 ADVANCED ECONOMIC STATISTICS (5)**
See ECON listing for course information. Cross-listed with ECON 504.
- STAT 610 ECONOMETRICS I (5)**
Cross-listed with ECON 510.
- STAT 611 ECONOMETRICS II (5)**
Cross-listed with ECON 511.
- STAT 620 SPECIAL TOPICS (3)**
Seminar on advanced topics in Statistics. Repeatable for Credit. URL: statistics.rice.edu/courses.cfm.

STAT 630 TOPICS IN CLINICAL TRIALS (3)

This course deals with fundamental concepts in the design of clinical studies, ranging from early dose-finding studies (phase I) to screening studies (phase II) to randomized comparative studies (phase III). The goal is to prepare the student to read the clinical trial literature critically and to design clinical studies. Additionally, the faculty will introduce newer designs for clinical studies that incorporate prior knowledge and/or satisfy optimality considerations. Topics include protocol writing; randomization; sample size calculation; study design options; interim monitoring; adaptive designs; multiple end points; and writing up the results of a clinical trial for publication.

STAT 639 EXTREME VALUE THEORY (3)

Extreme Value Theory is used in many areas such as financial markets, risk management, environmental studies, as well as network design. In this course we will study the theory and practice of extreme value theory. Pre-requisite(s): STAT 532. Recommended prerequisite(s): STAT 533. Not offered Fall and Spring. URL: statistics.rice.edu/courses.cfm.

STAT 640 DATA MINING AND STATISTICAL LEARNING (3)

Survey of ideas, methods, and tools for analyzing large data sets; techniques for searching for unexpected relationships in data. Topics from supervised and unsupervised learning include regression, discriminant analysis, kernels, model selection, bootstrapping, trees, MARS, boosting, classification, clustering, neural networks, SVM, association rules, principal curves, multidimensional scaling, and projection pursuit.

STAT 647 ADVANCED SURVIVAL ANALYSIS (3)

Pre-requisite(s): STAT 547. Offered Fall. Instructor(s): Rojo.

STAT 650 STOCHASTIC DIFFERENTIAL EQUATIONS (3)

This course will cover both theory and applications of stochastic differential equations. Topics include: the Langevin equation from physics, the Wiener process, white noise, the martingale theory, numerical methods and simulation, the Ito and Stratonovitch theories, applications in finance, signal processing, materials science, biology, and other fields.

STAT 655 STATISTICAL METHODS IN BIOINFORMATICS (3)

Topics will include but are not limited to micro arrays, molecular evolution and stochastic processes for genomics.

STAT 685 QUANTITATIVE ENVIRONMENTAL DECISION MAKING (3)

A project oriented computer intensive course focusing on statistical and mathematical solutions and investigations for the purpose of environmental decisions. This course is required for EADM students. Pre-requisite(s): STAT 305, or permission of instructor. Corequisite(s): STAT 385, or permission of instructor. Offered Spring. URL: statistics.rice.edu/courses.cfm. Instructor(s): Raun.

STAT 688 DECISION THEORY WITH MEDICAL APPLICATION (1 TO 15)

Statistical inference, decision theory, and simulation as applied to assist in making individual clinical decisions, policy recommendations, and as a guide to study design and research; topics include statistical decision theory, decision analysis, decision trees, markov models and simulation, cost-effectiveness analysis, meta-analysis, and sensitivity analysis. Grading will be based on regularly assigned homework exercises and term projects. Pre-requisite(s): STAT 422 and STAT 410, or permission of instructor. Offered Fall. Instructor(s): Cox.

STAT 699 MATHEMATICAL SCIENCES VIGRE SEMINAR (1 TO 3)

This course prepares a student for research in the mathematical sciences on a specific topic. Each section is dedicated to a different topic. Current topics include bioinformatics, biomathematics, computational finance, simulation driven optimization, and data simulation. The topics change each semester. Cross-listed with CAAM 699, MATH 699. Graduate/Undergraduate version: STAT 499. Repeatable for Credit. Offered Fall and Spring. URL: www.vigre.rice.edu.

STAT 800 THESIS (1 TO 15)

Repeatable for Credit. Offered Fall and Spring.

THEA (THEATRE)**School of Humanities/English****THEA 100 THEATRE TECHNOLOGY (3)**

Introduction to materials, tools, and standard theatre production techniques. Theory and practice of lighting equipment and controls, scenic building and painting techniques, creation of props, sound support requirements, and running crew during performance. Lab hours required. Limited enrollment. Offered Fall. Instructor(s): Schlieff.

THEA 101 THEATRE TECHNOLOGY: COSTUME CONSTRUCTION (3)

Introduction to the materials, tools, and standard techniques of costume/clothing construction. Lab hours required. Limited enrollment. Offered Fall.

THEA 300 INTRODUCTION TO THEATRE DESIGN (3)

Introduction to the theory and practice of theatre design through exploration of the principles and elements of design as they apply to scenery, lighting, and costumes with an emphasis on text analysis and research. Students will complete and present a variety of projects. Required to taking other design courses. Offered Fall. Instructor(s): Schlieff.

THEA 301 ACTING I (3)

Introduction to the fundamentals of acting through the exploration of actor training techniques based on the theories of Stanislavsky, Strasburg, Adler, Meisner, and Hagen, emphasizing the actor's primary tools- voice, body, emotional life, and imagination. Limited enrollment. Offered Fall. Instructor(s): Rigdon.

THEA 302 ACTING II (3)

Text analysis for the actor with a particular emphasis on a thorough investigation of given circumstances and dramatic action. Students will rehearse and perform a play from the works of contemporary playwrights. Play to be determined based on number of students enrolled. Pre-requisite(s): THEA 301, or permission of instructor. Limited enrollment. Instructor(s): Rigdon.

THEA 303 INTRODUCTION TO THEATRE (3)

A survey course of the art and theory of the theatre through an examination of dramatic literature from the Greeks through the modern era. The course will also explore the craft of the theatre as it is practiced today. Cross-listed with ENGL 390. Offered Fall. Instructor(s): Rigdon; Schlieff.

THEA 304 COSTUME DESIGN (3)

Advanced examination of the principles of costume design through the analysis of character and relationships. Students will read and analyze a variety of plays in different periods and styles and then, based on text analysis and research, complete and present design projects using different rendering techniques. The role of the costume designer in collaboration with directors, actors, and other designers will also be explored. Pre-requisite(s): THEA 300. Not offered Fall and Spring. Instructor(s): Rigdon.

THEA 305 LIGHTING DESIGN (3)

Study of the role that lighting plays in a production and the lighting designer's place as an artist in the collaboration process with emphasis on the practical application of the controllable properties of light as they apply to theatre. Students will be required to complete a variety of projects including unrealized designs based on reading and analyzing plays, light labs responding to music, and collaboration with Rice Dance Theatre on the Spring production. Pre-requisite(s): THEA 300. Offered Spring. Instructor(s): Schlieff.

THEA 306 SCENIC DESIGN (3)

Advanced examination of the principles of scenic design including research, rendering, technical drawing, model construction, text analysis and the role of the scenic designer in collaboration with directors, actors, and other designers. Students will read and analyze a variety of plays in different periods and styles, and then, based on text analysis and research, complete and present design projects. Pre-requisite(s): THEA 300. Offered Spring.

THEA 310 ACTING III: THE SPOKEN TEXT (3)

An exploration of language as one of the actor's primary means of communication and expression. The student will analyze, rehearse, and perform from a play the work of William Shakespeare. Pre-requisite(s): THEA 301, or permission of instructor. Recommended prerequisite(s): ENGL 321. Limited enrollment. Offered Spring. Instructor(s): Rigdon.

THEA 311 ACTING IV (3)

Advanced acting challenges designed to expose the student to performing the master playwrights. Students will rehearse and perform a full play to be chosen based on number of students enrolled from the works of the Greeks, Ibsen, O'Nei, Williams and others. Pre-requisite(s): THEA 301. Recommended prerequisite(s): THEA 303 or 321. Limited enrollment. Offered Spring. Instructor(s): Rigdon.

THEA 312 DIRECTING I (3)

An introductory course exploring the tools and craft of the stage director. Students will learn how to analyze dramatic text and will gain a fundamental knowledge of the director's basic skills, including composition, picturization, movement, rhythm, and pantomimic dramatization. Pre-requisite(s): THEA 301, or permission of instructor. Recommended prerequisite(s): THEA 303 and 300. Limited enrollment. Offered Fall. Instructor(s): Rigdon.

THEA 321 HISTORY OF THEATRE (3)

Chronological survey and comprehensive exploration of theatre as a socio-cultural institution from a historical perspective. Students will research the characteristic practices of theatre and the philosophical, cultural, political, and social forces that changed those practices from its origin as ancient tribal ritual to the 21st century multimedia production. Recommended prerequisite(s): THEA 303. Offered Spring. Instructor(s): Rigdon.

THEA 322 DIRECTING SHAKESPEARE (3)

Staging Shakespeare's plays for modern audiences learning to speak the lines "trippingly off the tongue", analyzing textual clues, and researching the period to find correlations to contemporary society in the process of active rehearsal. Students will work with ENGL 321 to stage a final scene. Pre-requisite(s): THEA 301. Recommended prerequisite(s): THEA 310. Limited enrollment. Not offered Fall and Spring. Instructor(s): Rigdon.

THEA 323 VOICE AND SPEECH FOR THEATRE (3)

Development of an expressive speaking voice through awareness and overcoming physical and vocal habits and limitations, including alignment, relaxation, breath support, resonance, tone and projection. This course will also introduce students to dialects. Recommended prerequisite(s): THEA 301. Limited enrollment. Offered Spring. Instructor(s): Johnson.

THEA 324 MOVEMENT AND STAGE COMBAT (3)

Introduction to body dynamics and coordination through partner exercises, physical stretching and conditioning, ensemble movement, full body awareness, focus, centering, breath support, action and counter-action, precision, and economy of effort. Introduction to sage and dramatically effective techniques of staged violence with a focus on spatial awareness, concentration, and timing. Recommended prerequisite(s): THEA 301. Limited enrollment. Offered Spring. Instructor(s): Byrnes.

THEA 329 SPECIAL PROBLEMS: TECHNICAL, PRODUCTION (1 TO 6)

Independent study. Pre-requisite(s): THEA 100 or THEA 101. Recommended prerequisite(s): THEA 303. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rigdon; Schlieff.

THEA 330 CONTEMPORARY DRAMATIC LITERATURE (3)

In this course we will examine contemporary American plays that have had a significant impact on theatrical form or that are highly reflective of contemporary society. Playwrights whose work will be studied will include Mamet, Guare, Lucas, Wilson and many others. Not offered Fall and Spring.

THEA 431 SPECIAL PROBLEMS: HISTORY, LITERATURE (3)

Independent study. Pre-requisite(s): THEA 303. Recommended prerequisite(s): THEA 321. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rigdon; Schlieff.

THEA 432 SPECIAL PROBLEMS (1 TO 3)

Independent study. Pre-requisite(s): THEA 300 and (THEA 304 or THEA 305 or THEA 306). Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rigdon; Schlieff.

THEA 435 SPECIAL PROBLEMS: ADVANCED TOPICS (3)

Independent study. Pre-requisite(s): THEA 303 or THEA 301 or THEA 300. Repeatable for Credit. Offered Fall and Spring. Instructor(s): Rigdon; Schlieff.

TIBT (TIBETAN)**School of Humanities/Religious Studies****TIBT 132 TIBETAN LANGUAGES AND CULTURE I (3)**

Readings in Tibetan Bon and Buddhist Religious texts. Cross-listed with RELI 132. Not offered Fall and Spring. Instructor(s): Klein.

TIBT 133 TIBETAN LANGUAGE AND CULTURE II (3)

Continuation of first semester. We begin by learning the Tibetan alphabet, pronunciation, and then start reading Buddhist texts. Permission of instructor required. Cross-listed with RELI 133. Pre-requisite(s): RELI 133. Not offered Fall and Spring. Instructor(s): Klein.

TIBT 324 ADVANCED TIBETAN LANGUAGE AND CULTURE I (3)

Not offered Fall and Spring. Instructor(s): Klein.

TIBT 332 ADVANCED TIBETAN LANGUAGE AND CULTURE II (3 TO 4)

Continuation of TIBT 324 and RELI 331. Cross-listed with RELI 332. Not offered Fall and Spring.

UNIV (UNIVERSITY COURSES)**No College Designated/University Courses****UNIV 111 THE SUSTAINABLE ENVIRONMENT (3)**

This course is intended as an introduction to environmental studies and the concept of a sustainable environment for students from all divisions on campus. The course will focus on the scientific basis for our current environmental situation, on social and cultural attitudes and values relating to the environment as represented in literature, history, and public policy, and on the constant interaction among these various approaches. Cross-listed with ENST 101. Must be in one of the following Classification(s): Freshman. Limited enrollment. Not offered Fall and Spring. Instructor(s): Isle.

UNIV 121 THE IDEA OF THE MODERN (3)

This seminar will examine some of the ideas that underlie and constitute the major classification concept of the past century, the modern. We will consider such topics as the triumph of secularism, critique of foundationalism, break with representation along with other experiments in the arts, existentialism and the absurd, changing notions of the family and of human sexuality, and the view from the margins. Must be in one of the following Classification(s): Freshman. Limited enrollment. Offered Spring. Instructor(s): Grob.

UNIV 201 CENTURY SCHOLARS PROGRAM (1)

Repeatable for Credit. Offered Fall and Spring.

UNIV 309 CREATING AND MANAGING CHANGE (3)

UNIV 309 offers an opportunity to understand and grow the capacities associated with leadership. The class combines theory and practice with an emphasis on learning how to build and sustain a powerful team. This class is required for a Leadership Rice Mentorship or the Leadership Certificate. Limited enrollment. Offered Fall. Instructor(s): Lieberman.

UNIV 310 LEADERSHIP RICE SEMINAR (1 TO 3)

This series of seminars explores leadership development in more depth. Students should come away with a better sense of how to impact their communities and construct an authentic life. Open to students accepted into the Leadership Certificate program, as well as those interested in Leadership Rice but unable to take the fall course. Instructor permission required. Repeatable for Credit. Instructor(s): Lieberman.

UNIV 311 CREATIVITY SEMINAR (1)

The purpose of this seminar is to deepen our understanding of the creative process and to explore ways in which individuals can mine their own creative capacity. In addition to weekly assignments (no more than one hour long) participants will design a creative project that grows from one's own interests and develop it during the semester. Offered alternate years. Instructor(s): Lieberman.

UNIV 313 ENTREPRENEURIAL LEADERSHIP (2)

An entrepreneur is a person who perceives an opportunity and creates an organization to pursue it. This semester is about attitudes, attributes and skills that contribute to successful entrepreneurship, both in the profit and non-profit realms. Students must have some professional work experience to participate. Instructor(s): Lieberman.

UNIV 314 GENETICS: BIOLOGICAL, CULTURE-HISTORICAL, AND ETHICAL PERSPECTIVES (3)

The course uses an interdisciplinary perspective to examine the claims and counter-claims made regarding genetics and new technologies for identifying and manipulating genetic material. The course will cover biological basics of genes, DNA, and sequencing techniques; cultural and historical aspects to genetics, including essentialism and eugenics past and present; ethical issues arising from new genetic technologies; and policy issues. Cross-listed with ANTH 314, BIOS 307. May not be in any of the following Classification(s): Freshman. Not offered Fall and Spring.

UNIV 409 LEADERSHIP PRACTICUM (1)

UNIV 409 is required for students while they are serving as Teaching Assistants for UNIV 309 during the Fall Semester. Instructor permission required. Limited enrollment. Instructor(s): Lieberman.

WGST (WOMEN & GENDER STUDIES)**School of Humanities/Women and Gender Studies****WGST 101 INTRODUCTION TO THE STUDY OF WOMEN AND GENDER (3)**

An introductory survey of issues in the study of women, including women's social, political, and legal status in the United States and around the world; feminist perspectives on sexuality, gender, family, and reproduction; and the implications of these perspectives for social and critical theory.

WGST 105 LANGUAGE, GENDER, AND SEXUALITY (3)

This course examines the role that gender, biological sex, and sexuality play in the language varieties that people use. We will see that although all cultures have specified gender roles, and all cultures mark gender through language varieties, those differences are not, I promise what you think they are. Cross-listed with FSEM 105, LING 105.

WGST 130 WOMEN AND NATIONAL SOCIALISM (3)

Introduction to the Nazi idea of "womanhood" and the actual roles women played during National Socialism. Female perpetrators, Mitlauffer, a multiplicity of victims, and to resistance fighters. The course is taught in English. Cross-listed with FSEM 130, GERM 130. Limited enrollment.

WGST 201 INTRODUCTION TO LESBIAN, GAY, BISEXUAL, AND TRANSGENDER STUDIES (3)

Introduction to Lesbian, Gay, Bisexual, and Transgender Studies. This course is an introduction to the interdisciplinary examination of sexual desires, sexual orientations, and the concept of sexuality generally, with a particular focus on the construction of lesbian, gay, bisexual, and transgender identities. The course will look specifically at how these identities interact with other human phenomena such as government, family, popular culture, scientific inquiry, and especially gender. In exploring sexual diversity, we will highlight the complexity and variability of sexualities both across different historical periods, and in relation to identities of race, class, ethnicity, and nation.

WGST 205 LANGUAGE AND SOCIETY (3)

This course treats language as a social phenomenon to show how language, personal identity and institutions of social control inter-relate. The course focuses on linguistic interaction in daily life and how gender, ethnic, class, activity and geographic variation affect language use. Cross-listed with LING 205.

WGST 220 GENDERED PERSPECTIVES ON THE LAW (3)

This course explores the ways in which law genders and is gendered. Using academic texts, popular media, and legal cases this course provides an introduction to feminist legal theory, critical race feminism, and feminist sociolegal studies. Looking at law from both local and global perspectives, we critically engage what sociolegal scholars have called "the common place of law" and its relation to larger structural forces. While we focus on law in the United States, we also examine gendered perspectives on the law in international and transitional contexts.

WGST 225 WOMEN IN GREECE AND ROME (3)

Survey of the depiction of women in Greek and Roman mythology, literature, and art. Includes a study of the lives of Greek and Roman women as evidenced by archaeological as well as literary materials. Cross-listed with CLAS 225.

WGST 234 U.S. WOMEN'S HISTORY I: COLONIAL BEGINNINGS TO THE CIVIL WAR (3)

Survey of American women's history examines the lives of elite, working, black, Indian, and white women, and traces changes in women's legal, political, and economic status from the mid-17th century through the Civil War. Topics include slavery; suffrage, sexuality, and feminism. Cross-listed with HIST 241.

WGST 235 U.S. WOMEN'S HISTORY II: CIVIL WAR TO THE PRESENT (3)

Survey of American women's history examines the lives of black, Asian American, Chicana, Native American, and white women, and traces changes in women's legal, political, and economic status from the Civil War to the present. Topics include suffrage, anti-lynching, welfare, birth control, and the modern civil rights and feminist movements. Cross-listed with HIST 242.

WGST 240 GENDER AND POLITICIZED RELIGION (3)

This course examines the emergence of religion-based politics in various Asian countries-particularly Hindu and Muslim-focusing on the women participants in these movements as well as the movements' concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-listed with ASIA 240. Course equivalency: WGST 340.

WGST 250 INTERNATIONAL POLITICAL ECONOMY OF GENDER (3)

This course explores the relationship between women's lives, gender ideologies, and international and domestic politics and economics. We will examine women's experiences with and resistance to the sexual division of labor, imperialism, capitalism, consumerism, domestic service, war, slavery, and migration across different geographical and historical contexts. Cross-listed with POLI 250.

WGST 283 WOMEN IN THE MODERN ISLAMIC WORLD (3)

This course introduces students to the history of women in the Islamic world. Topics include women and law, family relations, work, women as political actors in Islamic history, the harem as a social and political institution, women as property owners, veiling, and modern feminist movements throughout the Islamic world. Cross-listed with HIST 283.

WGST 300 MEDIEVAL WOMEN WRITERS (3)

This course examines the significant medieval European women authors from the 10th-17th centuries, from Italy and Germany to France, England, Austria, and Spain. Using various techniques and media- feminist and gender theory, reader-response theory, staging and performance, films, recordings, slides, journal entries and personal criticism, etc. to access their work, we will combine close readings with a focus on intertextuality. All works will be read in translation. Cross-listed with ENGL 311, MDST 300. URL: www.rice.edu/~jchance/mewom.html. Instructor(s): Chance.

WGST 301 ARTHURIAN LITERATURE (3)

A survey of the origins and development of the Arthurian legend from the earliest chronicles in the sixth century and later medieval French, Welsh, Irish, and English Arthurian poems to modern adaptations of Arthurian material, including films. Cross-listed with ENGL 317, MDST 317. URL: www.rice.edu/~jchance/arthurian2.html. Instructor(s): Chance.

WGST 303 WOMEN'S STORIES AND LEGAL CHANGE (3)

This course (1) explores how women's bodies have been constructed by cultures committed to valuing and promoting beauty and (2) analyzes how feminism has variously engaged such an ongoing cultural commitment. We will analyze beauty cultures-the cosmetic industry, plastic surgery, and the recent return of the aesthetic as a salient interpretative mode in literary theory, for example-asking what impact these cultures have on feminist practice. Reading will include among others: Kathy Peiss, *Hope in a Jar*; *American Beauty*; *The Politics of Women's Bodies: Sexuality, Appearance and Behavior*; *Feminist Theory and the Body: A Reader*; *On Beauty and Being Just*; and *Venus Envy: A History of Cosmetic Surgery*.

WGST 305 CHAUCER (3)

Chaucer and his literary and philosophical backgrounds. Readings include minor poems, a dream vision, *The Canterbury Tales*, and *LeTroilus*. Cross-listed with ENGL 316, MDST 316. URL: www.rice.edu/~jchance/chaucer2/html. Instructor(s): Chance.

WGST 315 GENDER AND ISLAM (3)

Explores the lives of Muslim women in Asia, the Middle East, Europe, and North America; analyzes constructions of gender in the Islamic world overtime; the challenges faced from such diverse quarters as colonial administrators, Western feminists, and states; as well as movements and individuals within the Muslim world. Cross-listed with RELI 315. Limited enrollment.

WGST 323 THE KNOWING BODY: BUDDHISM, GENDER AND THE SOCIAL WORLD (3)

Western thought tends to regard mind and body dualistically, a view with significant impact on religious, cultural, gender and social processes. This course juxtaposes received Western assumptions with Buddhist perspectives (especially Tibetan Buddhist), mapping Western and Buddhist categories onto each other to better understand the implications of each. Cross-listed with ASIA 323, RELI 323. Graduate/Undergraduate version: WGST 577.

WGST 324 SOCIOLOGY OF GENDER (3)

Relationship between gender and social role. Development of the contemporary sexual division of labor and process of socialization with reference to family, education, media, and occupations. Cross-listed with SOCI 306. Limited enrollment.

WGST 325 SOCIOLOGY OF THE FAMILY (3)

This course will teach students the important influences and consequences of American family life. We will consider issues such as dating, marriage and cohabitation, divorce, family structure, gay marriage, domestic violence, and household labor. We will also examine the role of society in shaping family norms and constraints on family behaviors. Cross-listed with SOCI 334.

WGST 327 20TH-CENTURY WOMEN WRITERS (3)

Writers might come from Great Britain, the U.S., or elsewhere in translation. Past topics include "Sex, Gender, and Modernism". Cross-listed with ENGL 380. Repeatable for Credit.

WGST 328 LATIN AMERICAN GENDERS (3)

Course examines diversity of Latin American cultures and gender relations from modern urban societies to Indian peasant villages. Cross-listed with HIST 328.

WGST 329 LITERATURE AND CULTURE OF THE AMERICAN WEST (3)

Here, the American literary West is examined through the historic context of the U.S. in the 20th century, especially in light of postmodernity, the civil rights movement, Hollywood, and global politics. Cross-listed with ENGL 369.

WGST 330 COURTSHIP, LOVE, AND MARRIAGE IN THE AGE OF CHIVALRY (3)

The literature of the High Middle Ages is the first since antiquity to probe the hazards and potentials of romance between men and women, as well as single-sex friendship and love. This course will show how the literary ideal of love emerged in a society that was torn apart by war and rivalry. The poems and stories we will read belong to the treasures of medieval literature from the German lands. Taught in English with a possible FLAC section. Cross-listed with GERM 330, MDST 335, HUMA 330.

WGST 331 THE PSYCHOLOGY OF GENDER (3)

Overview of research and theory on gender in psychology. Cross-listed with PSYC 331.

WGST 332 SEX, SELF, AND SOCIETY IN ANCIENT GREECE (3)

An introductory venture into conducting fieldwork in the past. The course treats a wide range of artifacts, from philosophical essays to vase paintings. It derives its focus from a rich corpus of recent research into the ancient problemization of desire and self-control. Cross-listed with ANTH 325.

WGST 333 MASCULINITIES (3)

This course deals with masculinities in the West, concentrating on concepts of masculine protagonism and personhood. Readings explore identities constructed in realms such as law, politics, finances, art, the home, and war. Cross-listed with ANTH 311.

WGST 335 THE LIFE CYCLE: A BIOCULTURAL VIEW (3)

The human life cycle from conception to death. Focus is on the interaction between biological processes and culture. Cross-listed with ANTH 388.

WGST 336 HISTORY AS A CULTURAL MYTH (3)

Explores ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as a statement of cultural values as well as conceptualizations of cause, change, time, and reality. Cross-listed with ANTH 308.

WGST 339 FEMINIST PHILOSOPHY (3)

This course is an introduction to feminist philosophy, including texts by both historical and contemporary thinkers (e.g. Wollstonecraft, Mill, de Beauvoir, MacKinnon, Gilligan, Irigaray). We shall discuss both feminists' radical critiques of traditional values and beliefs, and feminist alternative views of justice, ethical judgment, and truth. Cross-listed with PHIL 319.

WGST 340 GENDERED AND POLITICIZED RELIGION (ENRICHED VERSION) (3)

This course examines the emergence of religion-based politics in various Asian countries-particularly Hindu and Muslim-focusing on the women participants in these movements as well as the movements' concern with gender roles in society. We will investigate, for instance, the extent to which women participants have been willing or able to reshape the central ideas of such movements. Cross-listed with ASIA 340. Course equivalency: WGST 240.

WGST 341 GENDER AND POLITICS (3)

Examination of politics through the lens of gender hierarchy. Emphasis on how the constructions of masculinity and femininity shape and are shaped by interacting economic, political, and ideological practices.

WGST 348 SUBJECTIVITY IN MODERN AND POSTMODERN ART AND THOUGHT (3)

This course examines the intellectual history of subjectivity and its various representations in modernist and postmodernist aesthetics. In particular, we will consider the intersection of subjectivity and desire by examining the ongoing project of human self-creation through aesthetics, ornament, framing devices, technological apparatuses, and other supplementary objects of desire within traditional humanist discourses to recent "posthumanist" narratives. Cross-listed with HART 368.

WGST 349 WOMEN WRITERS: 1400-1900 (3)

A survey of major British early women writers. Poems, memoirs, plays, and novels by significant women, and their film adaptations. Cross-listed with ENGL 319. URL: www.ruf.rice.edu/~jchance/womsurvey3.htm. Instructor(s): Chance.

WGST 350 GENDER AND SYMBOLISM (3)

Examinations of beliefs concerning men, women, and gender in different cultures, including the West, relating to issues of symbolism, power, and the distribution of cultural models. Cross-listed with ANTH 327.

WGST 358 EUROPEAN WOMEN FILMMAKERS (MAPPING GERMAN CULTURE) (3)

Filmmaking has celebrated its first hundred years. Women's contributions were significant and deserve to widen the film canon for all filmgoers. The course will concentrate on films by European women directors, taking into account aesthetic particularities, gender commitment, and post-feminist attempts. Importance will also be given to the contexts and conditions of women's film production. All films are subtitled in English. Taught in English with possible FLAC section. Cross-listed with GERM 321, HUMA 321, HART 385.

WGST 361 NEW GERMAN CINEMA (3)

From the 1960's to 2000 Germany has developed a very distinct auteur cinema with independent filmmakers such as Fassbinder, Herzog, Wenders, Adlon, Trotta Sander, Brueckner, Doerrie, Garnier, Tykwer and others. The first 20 years of German film were oriented on coming to terms with the fascist past, the second 20 years focused on more contemporary issues. Film critical readings and class discussions in English. All films are subtitled in English and will be assessed with podium technology. Cross-listed with GERM 338, HUMA 373.

WGST 365 GENDER, SUBJECTIVITY, AND THE HISTORY OF PHOTOGRAPHY (3)

This course will examine a range of subjects within the history, theory, and criticism of photography, including the relationship between commodification, eroticism, and the objectification of the body, and the intersecting issues of mechanical reproduction, authorship, and authenticity in modern and postmodern discourses. Cross-listed with HART 365. Limited enrollment.

WGST 366 TOPICS IN AMERICAN LITERATURE (3)

Topics vary from year to year.

WGST 367 AMERICAN ECOFEMINISM: INTERSECTIONS BETWEEN FEMINISM, PACIFISM, ENVIRONMENTALISM (3)

A critical examination of the contemporary intersections of feminism and environmental studies, and/or political activism. History, literature, theory, and film are studied in some combination. Cross-listed with ENGL 367.

WGST 368 MYTHOLOGIES (3)

This interdisciplinary course will introduce students to a variety of world mythologies and mythmakers, from the beginnings to the modern period. Included mythologies: Babylonian, Sumerian, Hindu, Egyptian, Greek, Roman, Irish, Welsh, Old Norse, Anglo-Saxon, Finnish, Mayan, Hopi, and modern (Borges, Philip Glass). Cross-listed with MDST 368. URL: www.ruf.rice.edu/~jchance/myth/htm. Instructor(s): Chance.

WGST 369 SEMINAR ON BEAUTY AND FRAGMENTATION IN MODERN ART (3)

This course will examine literal and symbolic representation of the body in modern American and European art. Topics addressed will include conceptions on beauty vs. subjective fragmentation; the performance nature of social identity; and art history's long-standing preoccupation with the sensuous equivalency of flesh and paint. Cross-listed with HART 369. Limited enrollment.

WGST 370 SURVEY OF AFRICAN AMERICAN LITERATURE (3)

This course traces, through various genres and themes, African American literary history from the late eighteenth century to the present. Attention is given to theories and critiques of African American literature and culture. Cross-listed with ENGL 370.

WGST 372 SURVEY OF VICTORIAN FICTION: THE 19TH CENTURY NOVEL (3)

A survey of the genres of the 19th-century novel, this course will try to come to terms with some of the insistent questions posed by and through the fiction of the period. Cross-listed with ENGL 342.

WGST 380 CULTURE, SECURITY, AND HUMAN RIGHTS (3)

Course addresses theories of risk society and their relationship to concepts of culture, gender, security, and human rights-based social movements. It addresses contemporary reorganizations of domestic, cultural, and geopolitical space and also examines the increasingly intense discussions surrounding 'cultures' of fear, risk, safety, civility, governance, biopolitics, and rights. Cross-listed with ANTH 380, HIST 380.

WGST 387 CULTURAL STUDIES (4)

Recent topics have included film, mass culture, "Marx", contemporary ethnic studies, and "the culture of love". Not limited in period, scope, or geography. Cultural Studies is a broad category. Cross-listed with ENGL 387, HART 387.

WGST 389 GENERATION X IN LITERATURE AND CULTURE (3)

An interdisciplinary survey of Generation X in literature, music, film, and politics. Cross-listed with ENGL 389.

WGST 390 HISPANIC CINEMA (3)

This course examines the ways in which films in both Spain and Latin America have represented the cultural contexts of their countries. Focus is on the theme of power, and on the consequences on social and individual lives. Cross-listed with SPAN 390. Recommended prerequisite(s): Third year Spanish or permission of instructor

WGST 391 PRODUCING FEMINIST KNOWLEDGE: METHODOLOGY AND VISUAL CULTURE (3)

In this course we will examine various methodologies used by feminist scholars in the Social Sciences and the Humanities. Particular attention will be devoted to the practical application of feminist methodologies in visual culture and the history of art, as well as to the interdisciplinary feminist inquiries in science, ethnography, and epistemology. Cross-listed with HART 391. Limited enrollment.

WGST 392 HISTORY OF SEXUALITY IN AMERICA (3)

Course surveys four centuries of the social, cultural, political, and legal history of sex and sexuality in America. Seeking to challenge conventional interpretations of the history of sexuality as a movement from the repressed days of Puritan America to the more liberated, modern ideals of the 20th century. Cross-listed with HIST 390.

WGST 395 FEMINIST KNOWLEDGES (3)

In this course we will examine various methodologies used by feminist scholars in the social sciences and the humanities. Particular attention will be devoted to interdisciplinary feminist inquiries in science, ethnography, and epistemology.

WGST 399 WOMEN IN CHINESE LITERATURE (3)

This course examines women's roles in Chinese literature as writers, readers, and characters, focusing particularly on the tension between women's lived bodily experiences and the cultural experiences inscribed on the female body and how, in the process, women have contrarily gendered patriarchal culture into their own. It will also touch on Chinese women's incorporation of the Western Tradition. Cross-listed with ASIA 399.

WGST 400 CONSTRUCTING IDENTITIES IN MODERN FICTION (3)

This course will explore the construction of racial, sexual, gendered, and ethnic identities in modern fiction, with a particular concern for the connections among identity, literary form, and social categories of meaning. Readings include Woolf, Colette, Duras, Carter, Djebbar, Morisson, Winterson, Baraoui, and others.

WGST 405 AUSTEN ONLY (3)

This course will try to come to terms with Jane Austen as author and icon. Material will include all her fiction as well as portions of her letters and biography. Recent film and television adaptations of her novels will also be critically examined. Cross-listed with ENGL 443.

WGST 412 WOMEN AND WOMEN'S VOICES IN FRENCH LITERATURE (3)

Examination of the ways in which women have been represented in fiction, by themselves and by others, since the early modern period. Readings from Mme. de Lafayette, Baudelaire, Villiers de L'Isle-Adam, de Beauvoir, Duras, and Wittig, with emphasis on the constitution of the "feminine" in literary texts as cultural, historical, and social artifact. Cross-listed with FREN 460. Pre-requisite(s): FREN 311 and FREN 312, or placement test, or permission of instructor.

WGST 415 SOCIOLINGUISTICS (3)

Topic: Issues of language and gender, race and class. The course will begin with an overview of contemporary sociolinguistic theory and methodologies. We will then examine the linguistic consequences to speakers of their membership in groups, defined in terms of gender, race, and class. Cross-listed with LING 415.

WGST 420 WOMEN AND GENDER IN 19TH CENTURY EUROPE (3)

Examination of the political and cultural discussions of the "Woman Question" in 19th-century Europe. Includes the role of public and private legal rights in republicanism and the early feminist movement, gender equality in the context of 19th-century socialist movements, and the challenges to gender identity posed by cultural modernism. Cross-listed with HIST 349.

WGST 422 FEMINIST ECONOMICS (3)

This is an introductory course covering a range of theoretical and policy issues in contemporary feminist economics. Topics include: the social construction of economic knowledge; disciplinary debates; global economic issues relating to gender, race, ethnicity, and sexual orientation; economic justice; children and family policy; unpaid work; inequities in pay, wealth, and resources; and gender budgets. No prior training in economics is required. Graduate/Undergraduate version: WGST 522. Limited enrollment.

WGST 430 QUEER THEORY (3)

What is queer theory and why is it important? This course aims to answer these questions by examining key issues in queer theory and situating them in the context of major literary and cultural theories of the past quarter century. As such the course will also serve as an introduction to psychoanalytic theory, poststructuralism, deconstruction, postcolonial theory, film studies and recent work on the relationship between science and literature. Cross-listed with ENGL 498.

WGST 432 ISLAM IN SOUTH ASIA (3)

Topics will include emergence of Indian Muslim society; Muslim responses to colonialism and the movement for Pakistan; and the role of Islam in politics in contemporary India, Pakistan, and Bangladesh. Requires no prior knowledge of Islam or South Asia. Cross-listed with ASIA 432, HIST 432. Limited enrollment.

WGST 434 FRENCH FEMINIST THEORY (3)

The purpose of this course is to gain a broad understanding of the important problems of contemporary feminist theories in French. We will focus on the interrelated issues of gender, sexuality, race, ethics, language, and power by exploring in depth primary texts in feminist theory. Readings (in English) will include Beauvoir, Irigaray, Djebar, and Brossard. This course specifically intends to expose the fundamentals of French feminist theory as they apply to the broader spectrum of contemporary feminist thought and philosophy. Course will be offered in translation. Cross-listed with FREN 434.

WGST 440 WOMEN IN MUSIC (3)

Study of gender in music, including aesthetics and representation, and of the major roles women have assumed in music, especially as composers, performers, and patrons. While the course emphasizes the Western art tradition, other types of music are explored as well. Cross-listed with MUSI 526.

WGST 442 WOMEN IN RUSSIAN LITERATURE (3)

The portrayal of women in major works of Russian literature, with particular attention paid to the women writers' presentation of women. No knowledge of Russian required. Cross-listed with RUSS 420.

WGST 444 FAMILY INEQUALITY (3)

This is an intensive, upper-level seminar focused on aspects of inequality concerning American families. We will discuss how well-known modes of inequality such as race/ethnicity, gender, and social class affect individual families, as well as how families serve as agents of inequality along these lines. Cross-listed with SOCI 440. Pre-requisite(s): WGST 325. Limited enrollment.

WGST 453 TOPICS IN AFRICAN AMERICAN LITERATURE: BLACK WOMEN WRITERS (3)

Topics vary. For Fall 2005, the topic will be "Black Women Writers". Cross-listed with ENGL 470.

WGST 455 MEDIEVAL ISLAM WOMEN AND GENDER (3)

Examination of the legal position and social realities of men and women in the Islamic world, with emphasis on how boundaries of gender have traditionally been drawn. Includes the family and sexual ethics, the harem, polygamy, divorce, and eunuchs (who played an important role in both the military and in certain religious institutions). Cross-listed with HIST 438, MDST 438. Limited enrollment.

WGST 460 FEMINIST SOCIAL THOUGHT (3)

Study of feminist theory as critique and reconstruction. Includes Wollstonecraft and de Beauvoir, as well as contemporary debates about equity, difference, knowledge, sexuality, and power. Cross-listed with SOCI 395.

WGST 462 20TH CENTURY AMERICAN STUDIES: HISTORY, MEMORY, AND IDENTITY IN LATER 20TH CENTURY U.S. LITERATURE (3)

This course will examine 20th century and contemporary U.S. literature and culture in context of theories and movements of social justice and individual freedom. These might include: liberal individualism, theories of subjective agency, feminism, anti-racism, and so on. The course will examine the role that literature plays in constructing, questioning, and reformulating ideas of freedom and agency. Cross-listed with ENGL 462.

WGST 465 GENDER AND HEALTH (3)

This course will examine the relationship between gender and health, both physical and mental. We will begin the semester by examining issues related to gender and health in the U.S., and spend the second half of the semester examining gender and health in an international context. Cross-listed with SOCI 465. Instructor permission required. Limited enrollment.

WGST 468 WOMEN AND THE U.S. WELFARE STATE: SEXUAL POLITICS AND AMERICAN POVERTY (3)

This seminar in the history of women and welfare focuses on women's contributions to the growth of the welfare system and investigates how welfare has been shaped by understandings of gender, race, and class. Compares American programs to similar programs developed in other countries. Cross-listed with HIST 468.

WGST 470 SEX, SANCTITY, PSYCHOANALYSIS (3)

An advanced mapping of the psychoanalytic study of religion through a close reading of psychoanalytically informed studies of saints, founding figures, and charismatic teachers, with a particular focus on sexuality and gender and their relationship to the expression and representation of holiness in the history of religions. Cross-listed with RELI 480. Graduate/Undergraduate version: WGST 580. Limited enrollment.

WGST 480 FEMINIST LITERARY THEORY (3)

An introduction to the core concepts and writings of the field. Cross-listed with ENGL 382.

WGST 482 PROBLEMS IN CONTEMPORARY FEMINIST THEORY (3)

The purpose of this course is to gain a broad understanding of the important problems of contemporary feminist theory. We will focus on the interrelated issues of gender, sexuality, race, ethics, language, and power by exploring in depth primary texts in feminist theory. Pre-requisite(s): WGST 101 and WGST 201, or permission of instructor.

WGST 485 GENDER AND HOLLYWOOD CINEMA IN THE 1950'S (3)

This course examines representations of gendered subjectivity in Hollywood cinema during the 1950s. Some of the topics to be addressed include the uneasy relationship between normative domesticity and heterosexual masculinity, and issues of voyeurism, eroticism, the ongoing conflict between liberated individualism and social conformity in corporate culture and bourgeois society. Cross-listed with HART 485. Limited enrollment.

WGST 495 INDEPENDENT STUDY (1 TO 4)

Open to SWG majors only. Instructor permission required.

WGST 496 APPLIED WOMEN'S AND GENDER STUDIES (1 TO 3)

Hours variable, 1-3 hours. Internship will be arranged individually at the request of students; details must be approved by the director. Students will also be required to submit a paper of between 8-15 pages (depending on the amount of credit) that demonstrates their ability to apply critically their knowledge of women's and gender students. Department permission required. Repeatable for Credit.

WGST 497 DIRECTED READING (1 TO 3)

Directed reading under the supervision of a SWG faculty member with permission of the instructor. May count only once toward major requirements. Instructor permission required.

WGST 498 RESEARCH IN THE STUDY OF WOMEN AND GENDER (3)

Research seminar for SWG seniors to fulfill capstone requirement. Open to SWG majors only. Repeatable for Credit.

WGST 499 RESEARCH IN THE STUDY OF WOMEN AND GENDER (3)

Research seminar for SWG seniors to fulfill capstone requirement. Open to SWG majors only.

WGST 501 FEMINIST DEBATES (3)

This course identifies and traces three streams of thought by debates about major issues in women's studies. While the content of these streams will vary, the course will always be attentive to the historical and theoretical context of the debates in question and to the intersection of these debates with others. Topics might include: public and private spheres; the relation between the local and the global links between gender and sexuality; the problem of identity; the relation between activist and academic feminism.

WGST 502 GENDER, THE DISCIPLINES, AND INTERDISCIPLINARY (3)
This course examines the relation between women's studies and the traditional disciplines. Topics include: disciplinarity, interdisciplinarity, and multidisciplinarity; the institutional place of women's studies; pedagogy in women's studies; and the relation of women's studies to area, global, ethnic, race, and sexuality studies. Students will produce a women's studies intro course syllabus and a paper to deliver at an interdisciplinary women's studies conference. Pre-requisite(s): WGST 501.

WGST 517 MEDIEVAL WOMEN WRITERS (3)
A survey of major continental European women writers, among them mystics, philosophers, scientists, and court-poets, in translation and in Middle English, from the 5th to the 15th centuries with attention to feminist gender and reader-response theory. Cross-listed with ENGL 517. URL: www.ruf.rice.edu/~jchance/medwom.html. Instructor(s): Chance.

WGST 520 SHAKESPEARE AND DIFFERENCE (3)
Topics vary from year to year as needed. Cross-listed with ENGL 520.

WGST 522 FEMINIST ECONOMICS (ENRICHED VERSION) (3)
This is an introductory course covering a range of theoretical and policy issues in contemporary feminist economics. Topics include: the social construction of economic knowledge; disciplinary debates; global economic issues relating to gender, race, ethnicity, and sexual orientation; economic justice; children and family policy; unpaid work; inequities in pay, wealth, and resources; and gender budgets. No prior training in economics is required. Graduate/Undergraduate version: WGST 422. Limited enrollment.

WGST 523 DIRECTED READING IN WOMEN'S AND GENDER HISTORY (4)
Cross-listed with HIST 523.

WGST 525 SEX, SELF, AND SOCIETY IN ANCIENT GREECE (3)
Cross-listed with ANTH 525.

WGST 542 VICTORIAN FICTION (3)
Topics vary from year to year as needed. Different topics may be repeated for credit. Repeatable for Credit.

WGST 545 WOMEN GENDER EUROPE BEYOND (4)
Graduate seminar examining recent work in key areas of research on women and gender; nationalism; the modern welfare state; and the challenges which histories of working-class women have posed to definitions of politics, feminism, class, and family. Setting will include colonial and national Britain, India, Africa, Netherlands, Indonesia, France, and Germany. Cross-listed with HIST 545.

WGST 546 20TH CENTURY BRITISH LITERATURE (3)
Topics vary from year to year as needed. Different topics may be repeated for credit. Cross-listed with ENGL 546. Repeatable for Credit.

WGST 551 U.S. WOMEN'S HISTORY (4)
Graduate readings seminar. Content varies. Cross-listed with HIST 551.

WGST 556 SEMINAR IN LANGUAGE VARIATION (3)
Topics vary from semester to semester. For this semester, we will take a move in depth look at language variation as it relates to gender and ethnicity. We will examine such variation from both quantitative and qualitative stand points. Cross-listed with LING 556.

WGST 576 RESEARCH TOPICS IN U.S. WOMEN'S HISTORY (4)
Graduate research seminar in U.S. women's history designed to introduce students to a growing body of literature on women and gender that is changing the way historians understand American history more broadly. By considering a variety of new scholarship participants are introduced to the major questions that have engaged feminist historians for decades, as well as new questions that are just now beginning to shape the field. Cross-listed with HIST 576.

WGST 577 THE KNOWING BODY: BUDDHISM, GENDER AND THE SOCIAL WORLD (3)
Western thought tends to regard mind and body dualistically, a view with significant impact on religious cultural, gendered and social processes. This course juxtaposes received Western assumptions with Buddhist perspectives (especially Tibetan Buddhist), mapping Western and Buddhist categories onto each other to better understand the implications of each. Cross-listed with RELI 577. Graduate/Undergraduate version: WGST 323.

WGST 580 SEXUALITY, SANCTITY, AND PSYCHOANALYSIS (3)
An advanced mapping of the psychoanalytic study of religion through a close reading of psychoanalytically informed studies of saints, founding figures, and charismatic teachers, with a particular focus on sexuality and gender and their relationship to the expression and representation of holiness in the history of religions. Cross-listed with RELI 580. Graduate/Undergraduate version: WGST 470.

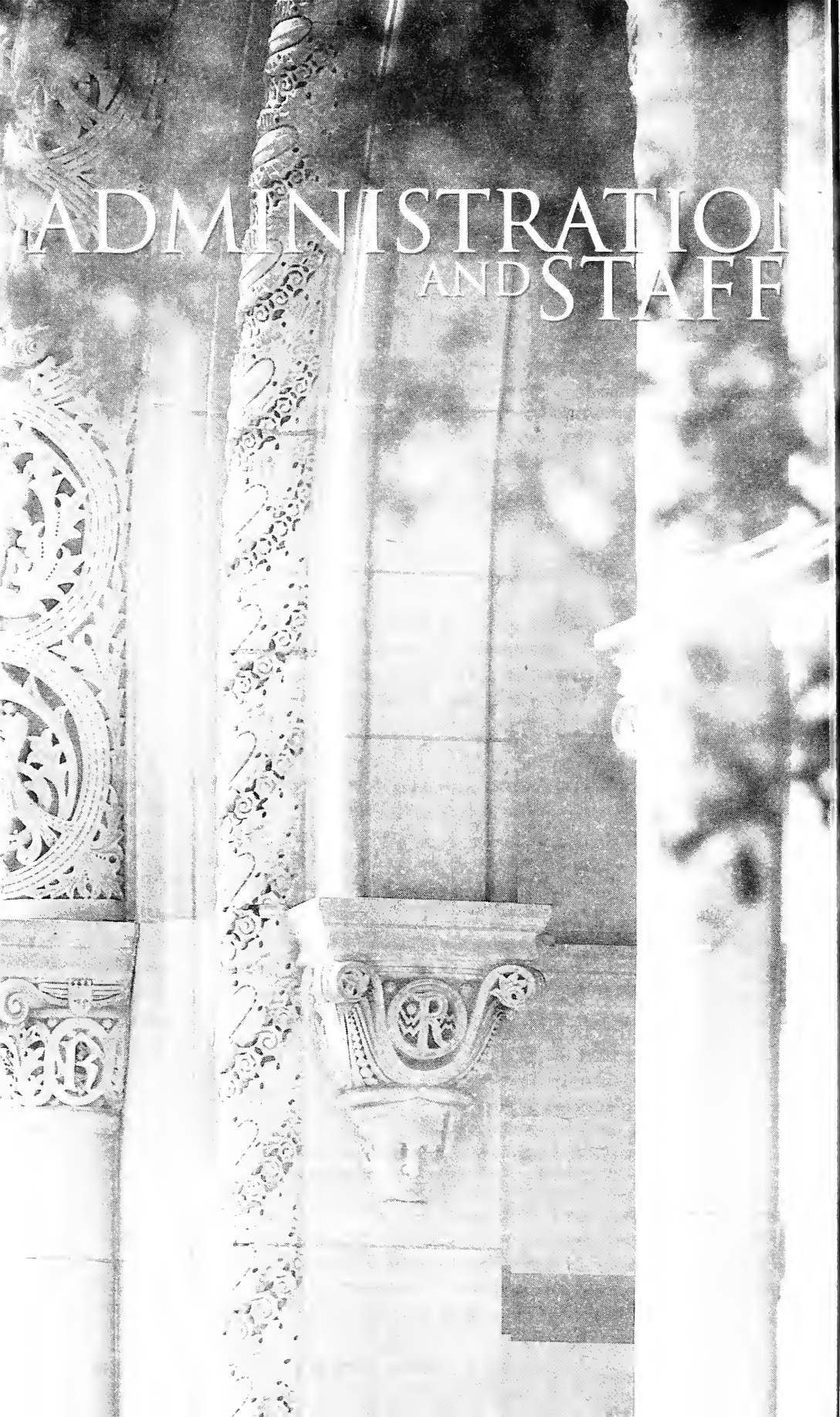
WGST 581 CULTURAL STUDIES (3)

Topics vary from year to year as needed. Cross-listed with ENGL 581.

WGST 585 POSTCOLONIALISM AND AFTER (3)

Course serves both as an introduction to postcolonial theory and as a reevaluation of its political and ethical end vis-a-vis recent debates around globalization and cosmopolitanism. Cross-listed with ENGL 585.

ADMINISTRATION AND STAFF



ADMINISTRATION

| | |
|--|-----------------------|
| President | David W. Leebron |
| Assistant to the President | Mark Scheid |
| Advisor to the President | Maryana Iskander |
| Provost | Eugene H. Levy |
| Vice Provost for Academic Affairs | Walter Isle |
| Vice Provost for Research and Graduate Studies | Jordan Konisky |
| Vice Provost for Information Technology | Kamran Khan |
| Vice Provost and University Librarian | Charles Henry |
| Associate Provost | Roland B. Smith, Jr. |
| Dean of the School of Architecture | Lars Lerup |
| Dean of the School of Continuing Studies | Mary B. McIntire |
| Dean of the George R. Brown School of Engineering | Sallie Keller-McNulty |
| Dean of the School of Humanities | Gary S. Wihl |
| Dean of the Jesse H. Jones Graduate School of Management | William H. Glick |
| Dean of the Shepherd School of Music | Robert Yekovich |
| Dean of the Wiess School of Natural Sciences | Kathleen S. Matthews |
| Dean of the School of Social Sciences | Robert Stein |
| Dean of Undergraduates | Robin Forman |
| Director of the James A. Baker III Institute for Public Policy | Edward P. Djerejian |
| Vice President for Enrollment | Ann Wright |
| Vice President for Finance | Kathy Collins |
| Vice President for Investments and Treasurer | Scott W. Wise |
| Vice President for Public Affairs | Terry Shepard |
| Vice President for Resource Development | Eric C. Johnson |
| General Counsel | Richard A. Zansitis |
| University Representative | Y. Ping Sun |

ADMINISTRATIVE OFFICES

| | |
|---|---------------------|
| Academic Advising | Michele Daley |
| Academic and Research Computing | Rick Peterson |
| Administrative Systems | Randy Castiglioni |
| Admission | Julie Browning |
| Affirmative Action/Equal Employment Opportunity | Russell Barnes |
| Alumni Affairs | Mark Davis |
| Athletics | J. R. "Bobby" May |
| Budget Office | Kathy Collins |
| Campus Store | TBN |
| Career Services | Cheryl Matherly |
| Cashier's Office | Patricia C. Ciampi |
| Community Involvement Center | Mac Griswold |
| Controller's Office | Evelyn Stewart |
| Counseling Center | Lindley Doran |
| Delivery Services | Ute Franklin |
| Disability Support Services | Jean Ashmore |
| Educational Outreach | Roland Smith |
| Emergency Medical Service (EMS) | Bill Taylor |
| Enrollment: Administration | Diane Havlinek |
| Enterprise Applications | Andrea Martin |
| Environmental Health and Safety | Kathryn Cavender |
| Events Office | Amande Lytz Hellman |
| Facilities and Engineering | Bill Mack |

| | |
|---|--------------------------------|
| General Counsels | Carlos Garcia, Joe Davidson |
| Housing and Dining | Mark Ditman |
| Human Resources | Mary A. Cronin |
| Institutional Research | Leona Urbish |
| International Programs (Study/Work Abroad) | Shannon Cates, Cheryl Matherly |
| International Students and Scholars | Adria Baker |
| Intramural and Club Sports | Tina Villard |
| KTRU General Manager | Will Robedee |
| Language Resource Center | Claire Bartlett |
| Leadership Rice | Susan A. Lieberman |
| Media Relations and Information | Margot Dimond |
| Multicultural Affairs | Catherine E. Clack |
| Networking, Telecommunications, and Data Center | William Deigaard |
| Payroll Office | Darlene Banning |
| Police Department (RUPD) | Bill Taylor |
| President's Office | Mark Scheid |
| Provost's Office | Colleen Morimoto |
| Public Affairs | Margot Dimond |
| Registrar's Office | David Tenney |
| Research and Graduate Studies | Debra Purtee |
| Research Computing | Kim Andrews |
| Scholarships and Fellowships | Patricia Bass |
| Sponsored Research | Nancy Nisbett |
| Student Activities | Heather Masden |
| Student Affairs | Matt Taylor |
| Student and Recreation Center | Boyd Beckwith |
| Student Financial Services | Julia Benz |
| Student Health Services | Mark Jenkins, M.D. |
| Student Judicial Programs | Donald Ostdiek |
| Systems, Architecture, and Infrastructure | Barry Ribbeck |
| Telecommunications | Reggie Clarkson |
| Transportation Office | Eugen Radulescu |
| University Relations | Greg Marshall |
| Web Services | Jeff Frey |
| Wellness Center | Emily Page |

COLLEGE MASTERS

| | |
|------------------------|---------------------------------------|
| Baker College | Jose Aranda and Krista Comer |
| Brown College | John and Paula Hutchinson |
| Hanszen College | Wesley and Barbara Morris |
| Jones College | Rudy and Nancy Guerra |
| Lovett College | Bernard and Carolyn Aresu |
| Martel College | Gerald Dickens and Michelle McCormick |
| Sid Richardson College | Melissa Marschall and Michael Orchard |
| Wiess College | Katharine Donato and Daniel Kalb |
| Will Rice College | Joel and Traci Wolfe |

FACULTY

EMERITUS FACULTY

- Akers, William Walter**, 1947–93. Professor Emeritus in Chemical Engineering
BS (1943) Texas Technological College; MS (1944) University of Texas at Austin; PhD (1950) University of Michigan
- Alcover, Madeleine**, 1975–2004. Professor Emerita of French
Licence de lettres modernes (1962), Diplôme d'études supérieures (1963), Doctorat de 3e cycle (1965) France
- Ambler, John S.**, 1964–2003. Professor Emeritus of Political Science
BA (1953) Willamette University; MA (1954) Stanford University; Certificat d'études politiques (1955) University of Bordeaux; PhD (1964) University of California at Berkeley
- Andrews, John F.**, 1982–91. Professor Emeritus of Environmental Science and Engineering
BSCe (1951), MS (1954) University of Arkansas; PhD (1964) University of California at Berkeley
- Apple, Max**, 1972–2001. Gladys Louise Fox Professor Emeritus of English
BA (1963), University of Michigan, MA (1965) Stanford University, PhD (1970) University of Michigan
- Awapara, Jorge**, 1957–84. Professor Emeritus of Biochemistry
BS (1941), MS (1942) Michigan State University; PhD (1947) University of Southern California
- Bailar, Benjamin F.**, 1987–97. H. Joe Nelson, III, Professor Emeritus of Administration
BA (1955) University of Colorado; MBA (1959) Harvard Graduate School of Business Administration
- Baker, Donald Roy**, 1966. Professor Emeritus of Geology and Honorary Associate of Brown College
BS (1950) California Institute of Technology; PhD (1955) Princeton University
- Baker, Stephen D.**, 1963–2004. Professor Emeritus of Physics and Astronomy
BS (1957) Duke University; MS (1959), PhD (1963) Yale University
- Bale, Allen M.**, 1947–78. Athletic Director Emeritus
BS (1930) Rice Institute; MA (1939) Columbia University
- Bally, Albert W.**, 1981–96. Harry Carothers Wiess Professor Emeritus of Geology
PhD (1953) University of Zurich, Switzerland
- Barker, J. R.**, 1949–86. Professor Emeritus of Health and Physical Education
BS (1949) Rice Institute; MEd (1954) University of Texas at Austin
- Beckmann, Herbert W. K.**, 1957–85. Professor Emeritus of Mechanical Engineering
Cand. Ing. (1939), Dipl. Ing. (1944), Dr. Ing. (1957) Hanover University, Germany
- Bixby, Robert E.**, 1984–98. Noah Harding Professor Emeritus of Computational and Applied Mathematics
BS (1968) University of California at Berkeley; MS (1971), PhD (1972) Cornell University
- Boterf, Chester Arthur**, 1973–93. Professor Emeritus of Art
BA (1959) Kansas University; MFA (1965) Columbia University
- Brelsford, Jr., John W.**, 1970–2000. Professor Emeritus of Psychology
BA (1960), MA (1961) Texas Christian University; PhD (1965) University of Texas at Austin
- Brotzen, Franz Richard**, 1954–86. Stanley C. Moore Professor Emeritus of Materials Science
BS (1950), MS (1953), PhD (1954) Case Institute of Technology
- Brown, Katherine Tsanoff**, 1963–89. Professor Emerita of Art History and Honorary Associate of Will Rice College
BA (1938) Rice Institute; MFA (1940) Cornell University
- Burrus, C. Sidney**, 1965–2005. Maxfield and Oshman Professor Emeritus of Electrical and Computer Engineering
BA (1957), BSEE (1958), Rice Institute; MS (1960) Rice University; PhD (1965) Stanford University
- Burt, George**, 1984–97. Professor Emeritus of Theory and Composition
BA (1955) University of California at Berkeley; MA (1958) Mills College; MFA (1962) Princeton University
- Camfield, William A.**, 1969–2002. The Joseph and Joanna Nazro Mullen Professor Emeritus of Art and Art History
AB (1957) Princeton University; MA (1961), PhD (1964) Yale University
- Campbell, James W.**, 1959–2000. Professor Emeritus of Biochemistry and Cell Biology
BS (1953) Southwest Missouri State University; MS (1955) University of Illinois; PhD (1958) University of Oklahoma
- Cason, Carolyn**, 1956–74. Lecturer Emerita in Dietetics
BS (1934) University of Texas at Austin; MA (1939) Columbia University
- Chapman, Alan Jesse**, 1946–95. Harry S. Cameron Professor Emeritus of Mechanical Engineering
BSME (1945) Rice Institute; MS (1949) University of Colorado; PhD (1953) University of Illinois
- Clark, Howard Charles**, 1966–88. Professor Emeritus of Geology and Geophysics
BS (1959) University of Oklahoma; MA (1965), PhD (1967) Stanford University

- Class, Calvin M.**, 1952–85. Professor Emeritus of Physics
AB (1943), PhD (1951) John Hopkins University
- Copeland, James E.**, 1966–2001. Professor Emeritus of Linguistics and German
BA (1961) University of Colorado; PhD (1965) Cornell University
- Curl, Jr., Robert F.**, 1958–2005. University Professor Emeritus and Kenneth S. Pitzer-Schlumberger Professor Emeritus of Chemistry
BA (1954) Rice Institute; PhD (1957) University of California at Berkeley
- Daichman, Graciela S.**, 1973–99. Lecturer Emerita of Hispanic Studies
Profesorado (1959) Instituto Nacional del Profesorado en Lenguas Vivas, Argentina;
MA (1975), PhD (1983) Rice University.
- Davidson, Chandler**, 1966–2003. Radoslav A. Tsanoff Professor Emeritus of Public Affairs and Sociology and Research Professor
BA (1961) University of Texas at Austin; MA (1966), PhD (1969) Princeton University
- Davis, Philip W.**, 1969–2003. Agnes Cullen Arnold Professor Emeritus of Linguistics
BA (1961) University of Texas at Austin; PhD (1965) Cornell University
- Davis, Jr., Sam H.**, 1957–2000. Professor Emeritus in Chemical Engineering and Computational and Applied Mathematics
BA (1952), BS (1953) Rice Institute; ScD (1957) Massachusetts Institute of Technology
- De Bremaecker, Jean-Claude**, 1959–94. Professor Emeritus of Earth Science
Ingenieur Civil des Mines (1948) University of Louvain, Belgium; MS (1950) Louisiana State University; PhD (1952) University of California at Berkeley
- Dennis, John E.**, 1979–2002. Noah Harding Professor Emeritus of Computational and Applied Mathematics and Research Professor
BS (1962); MS (1964), University of Miami; PhD (1966) University of Utah
- Dessler, Alexander J.**, 1963–93. Professor Emeritus of Space Physics and Astronomy
BS (1952) California Institute of Technology; PhD (1956) Duke University
- Doughtie, Edward O.**, 1963–2001. Professor Emeritus of English
AB (1958) Duke University; AM (1960), PhD (1964) Harvard University
- Drew, Katherine Fischer**, 1950–96. Lynette S. Autrey Professor Emerita of History
BA (1944), MA (1945) Rice Institute; PhD (1950) Cornell University
- Dyson, Derek C.**, 1966–2000. Professor Emeritus of Chemical Engineering
BA (1955) University of Cambridge; PhD (1966) University of London
- Evans, Elinor Lucile**, 1964–85. Albert K. and Harry K. Smith Professor Emerita of Architecture
BA (1938) Oklahoma State University; MFA (1954) Yale University
- Farwell, Joyce**, 1994–2005. Professor Emerita of Voice
BME (1956), MME (1958) University of Oklahoma; DMA (1976) College Conservatory of Music, University of Cincinnati
- Fisher, Jr., Frank M.**, 1963–2002. Professor Emeritus of Biology
BA (1953) Hanover College; MS (1958), PhD (1961) Purdue University
- Fliegel, Raphael**, 1975–89. Professor Emeritus of Violin
- Freeman, John W.**, 1964–2000. Professor Emeritus of Space Physics and Astronomy and Associate of Lovett College
BS (1957) Beloit College; MS (1961); PhD (1963) University of Iowa
- Gardner, Gerald H. F.**, 1990–93. Professor Emeritus of Geophysics
BS (1948) Trinity College, Dublin; MSc (1949) Carnegie Mellon University; PhD (1953) Princeton University
- Glass, Graham P.**, 1967–2005. Professor Emeritus of Chemistry
BS (1959) Birmingham University, England; PhD (1963) Cambridge University
- Gordon, Chad**, 1970–99. Professor Emeritus of Sociology
BS (1957), MA (1962), PhD (1963) University of California at Los Angeles
- Gordon, William E.**, 1965–85. Distinguished Professor Emeritus of Space Physics and Astronomy and of Electrical and Computer Engineering
BA (1939), MA (1942) Montclair State College; MS (1946), PhD (1953) Cornell University
- Grob, Alan**, 1961–2002. Professor Emeritus of English
BA (1952) Utica College; MA (1957), PhD (1961) University of Wisconsin at Madison
- Hackerman, Norman**, 1970–85. President Emeritus and Distinguished Professor Emeritus of Chemistry
AB (1932), PhD (1935) Johns Hopkins University
- Hale, Elton B.**, 1963–79. Professor Emeritus of Accounting
BS (1937), MA (1940) Southwest Texas State Teachers College; PhD (1948) University of Texas at Austin
- Hansz, Ingrid**, 1987–2000. Lecturer Emerita of Hispanic Studies, 2001 Language Consultant for School of Continuing Studies
BA (1952) Universidad de la Republica; MA (1987) Rice University
- Harvey, F. Reese**, 1968–2003. Professor Emeritus of Mathematics
BS, MA (1963) Carnegie Institute of Technology; PhD (1966) Stanford University

- Havens, Neil**, 1964–2000. Professor Emeritus of Art and Art History
BA (1956) Rice Institute; MA (1959) Indiana University
- Haymes, Robert C.**, 1968–98. Professor Emeritus of Space Physics and Astronomy
BA (1952), MS (1953), PhD (1959) New York University
- Hellums, Jesse David**, 1960–1998 and 2003–2005. A.J. Hartsook Professor Emeritus of Bioengineering and Chemical, and Biomolecular Engineering
BS (1950), MS (1958) University of Texas at Austin; PhD (1961) University of Michigan
- Heymann, Dieter**, 1966–98. Professor Emeritus of Geology and Geophysics
MS (1954), PhD (1958) University of Amsterdam, The Netherlands
- Hightower, Joe W.**, 1967–2001. Professor Emeritus of Chemical Engineering
MS (1961), PhD (1963) John Hopkins University
- Hodges, Lee**, 1930–71. Professor Emeritus of French
BS (1930) Harvard University; MA (1934) Rice Institute
- Holt, Edward C.**, 1956–93. Professor Emeritus of Civil and Environmental Engineering
SB (1945), SM (1947) Massachusetts Institute of Technology; PhD (1956) Pennsylvania State University
- Huddle, Donald L.**, 1964–92. Professor Emeritus of Economics
BS (1959), MA (1960) University of California at Los Angeles; PhD (1964) Vanderbilt University
- Hyman, Harold M.**, 1968–97. William P. Hobby Professor Emeritus of History
BA (1948) University of California at Los Angeles; MA (1950), PhD (1952) Columbia University
- Jitcoff, Andrew N.**, 1950–72. Professor Emeritus of Russian
Bachelor (1928), Master (1931) Prague Institute of Technology, Czechoslovakia
- Jones, Samuel**, 1973–97. Professor Emeritus of Music
BA (1957) Millsaps College; MA (1958), PhD (1960) Eastman School of Music, University of Rochester
- Jump, J. Robert**, 1968–2003. Professor Emeritus of Electrical and Computer Engineering and of Computer Science and Honorary Master of Lovett College
BS (1960), MS (1962) University of Cincinnati; MS (1965), PhD (1968) University of Michigan
- Kelber, Werner H.**, 1973–2005. Isla Carrol Turner and Percy E. Turner Professor Emeritus of Religious Studies
MT (1963) Princeton Theological Seminary; MA (1967), PhD (1970) University of Chicago
- Kiperman, Anita**, 1976–98. Lecturer Emerita of Spanish
BA (1957) Universidad Nacional de Buenos Aires; MA (1971) University of Houston
- Kobayashi, Riki**, 1951–97. Louis Calder Professor Emeritus in Chemical Engineering
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Dr. CE (1944), Dr. AE (1946) University of Rome
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