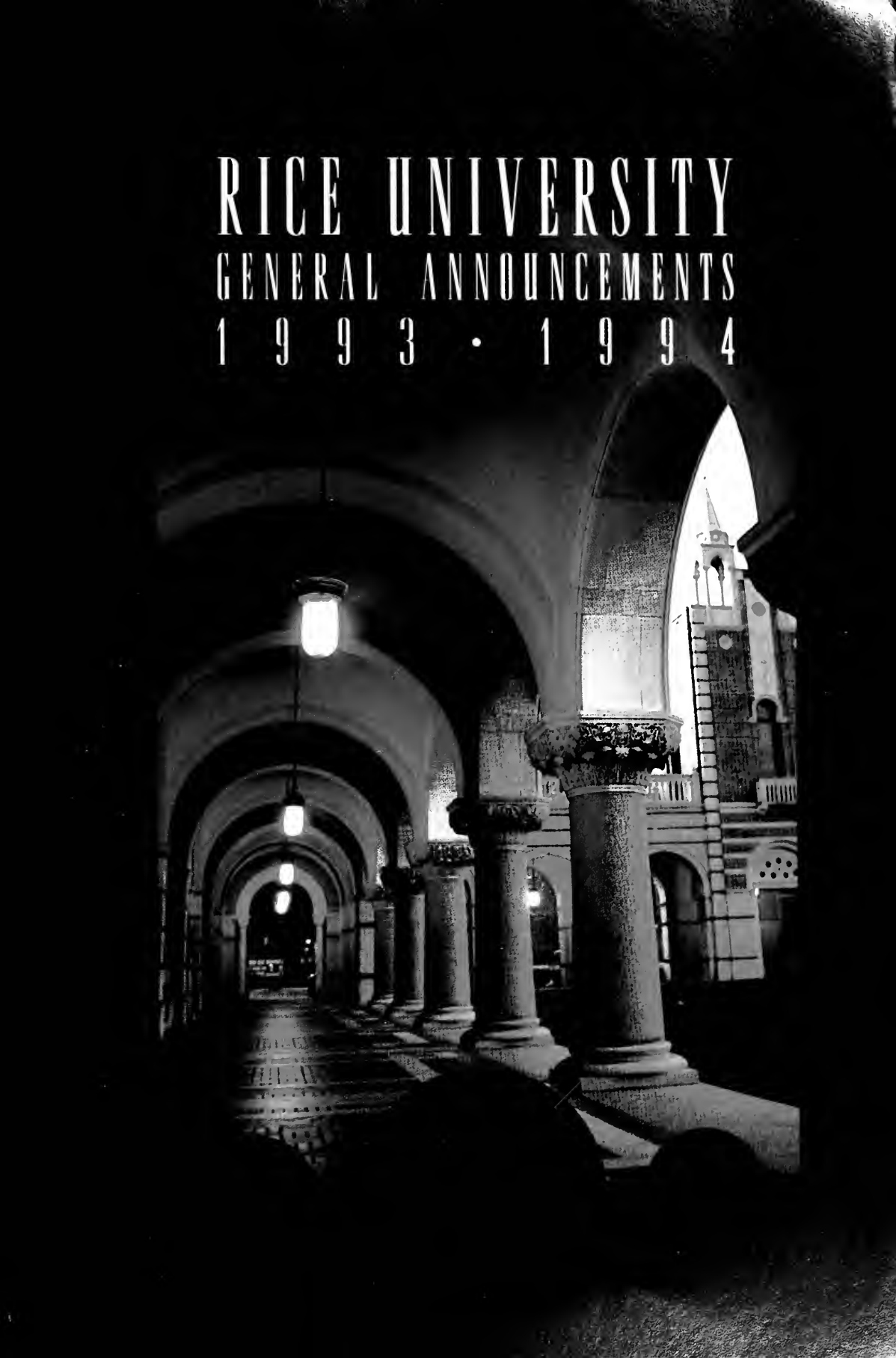
# RICE UNIVERSITY
## GENERAL ANNOUNCEMENTS
## 1993 • 1994



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# Rice University General Announcements 1993-94

RICE

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# Academic Calendar 1993-94

## First Semester

| | |
|---|---|
| *Monday, August 16-Friday, August 20* | Orientation for new students |
| *Monday, August 23* | FIRST DAY OF CLASSES |
| *Monday, August 23-Friday, August 27* | Registration for continuing undergraduates and graduate students |
| *Friday, September 3* | **Deadline:** adding/dropping courses without fee, 5 p.m. |
| *Monday, September 6* | Labor Day Holiday |
| *Friday, September 17* | **Deadline:** adding courses/designating *pass-fail* option, 5 p.m. |
| *Friday, September 24* | **Deadline:** instructors submit grades to clear *incompletes*, 5 p.m. |
| *Wednesday, October 6* | College course plans due in the Office of Student Affairs |
| *Friday, October 8* | Mid-semester grades for first-year students due, 5 p.m. |
| *Monday, October 11-Tuesday, October 12* | Midterm recess |
| *Wednesday, October 13* | All classes normally held on Monday meet. All Wednesday classes are canceled to equalize holidays by days of the week during the semester |
| *Friday, October 29* | **Deadline:** dropping courses, 5 p.m. |
| *Monday, November 1* | **Deadline:** Ph.D. candidacy petitions due, Office of Graduate Programs, 5 p.m. |
| *Monday, November 8-Friday, November 12* | Preregistration for undergraduate students for the spring semester |
| *Monday, November 22-Wednesday, November 24* | Self-scheduling of final exams by undergraduates |
| *Thursday, November 25-Friday, November 26* | Thanksgiving recess |
| *Friday, December 3* | LAST DAY OF CLASSES |
| *Wednesday, December 8-Wednesday, December 15* | Final examinations |
| *Wednesday, December 22* | All grades due, Registrar's Office, 5 p.m. |

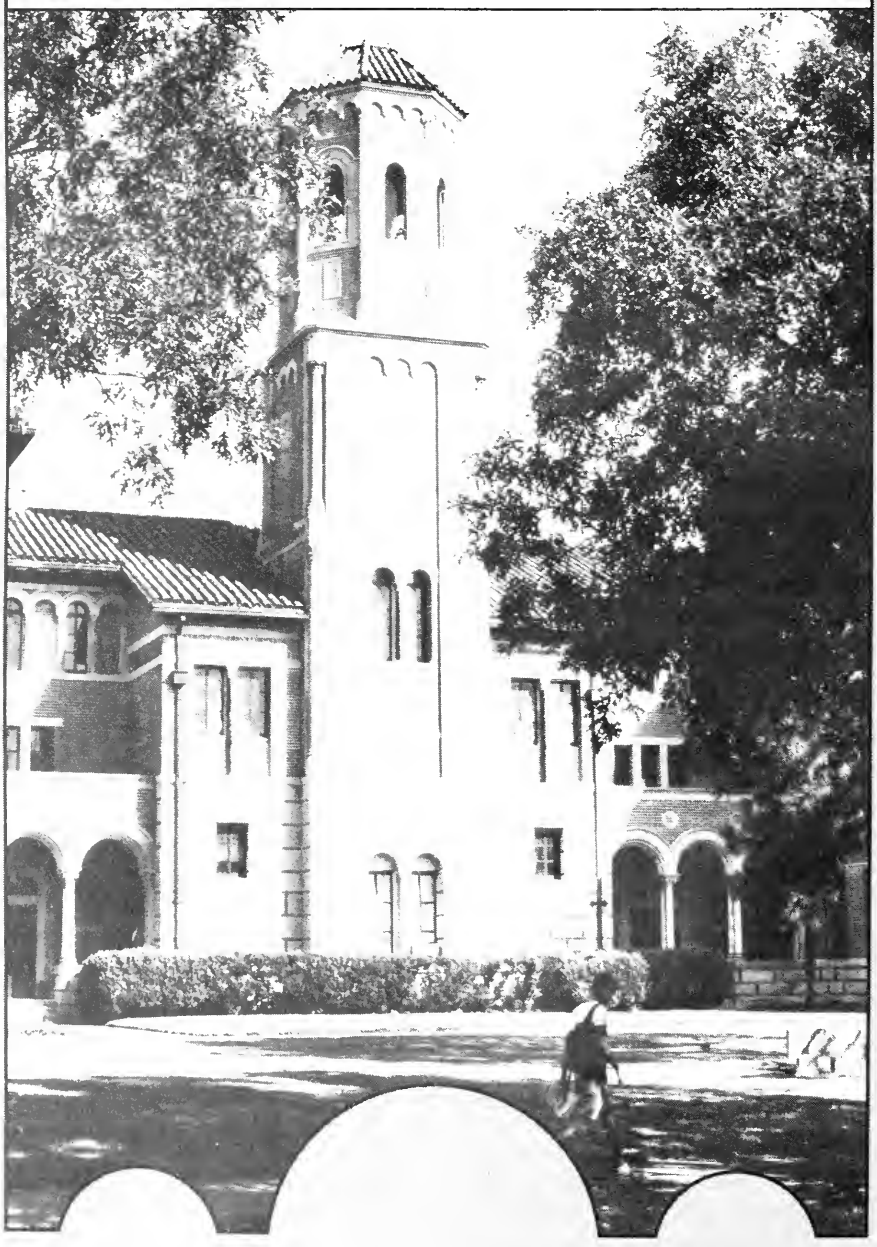
FIFTEEN WEEKS, MINUS FIVE CLASS DAYS FOR HOLIDAYS
70 CLASS DAYS

**Second Semester**

| | |
|---|---|
| *Monday, January 10* | FIRST DAY OF CLASSES |
| *Monday, January 10-Friday, January 14* | Registration for undergraduate and graduate students |
| *Friday, January 14* | **Deadline:** resolution of grades of *other* and converting *pass-fail* to grade, 5 p.m. |
| *Monday, January 17* | Martin Luther King Day Holiday |
| *Friday, January 21* | **Deadline:** adding/dropping courses without fee, 5 p.m. |
| *Tuesday, February 1* | **Deadline:** Master's Degree Petitions (Thesis Programs); petitions/certification forms for Masters' degrees without thesis, Office of Graduate Studies, 5 p.m. |
| *Friday, February 4* | **Deadline:** adding course/designating *pass-fail* option, 5 p.m. |
| *Friday, February 11* | **Deadline:** instructors submit grades to clear *incompletes,* 5 p.m. |
| *Friday, February 11* | College course plans due in the Office of Student Affairs |
| *Friday, February 18* | Majors Day |
| *Friday, February 25* | Mid-semester grades for first-year students due, 5 p.m. |
| *Monday, February 28-Friday, March 4* | Midterm recess |
| *Friday, March 11* | **Deadline:** sophomores file majors with Registrar |
| *Friday, March 18* | **Deadline:** dropping courses, 5 p.m. |
| *Monday, March 21-Friday, March 25* | Preregistration for undergraduate students for the fall semester |
| *Thursday, March 31-Friday, April 1* | Spring recess |
| *Monday, April 11-Wednesday, April 13* | Self-scheduling of final exams by undergraduate students |
| *Friday, April 22* | **Deadline:** oral examinations for advanced degrees to be awarded at spring graduation must be completed |
| *Friday, April 22* | LAST DAY OF CLASSES |
| *Saturday, April 23-Thursday, April 28* | Final examinations for all degree candidates<br>**Deadline:** complete exams by 12 noon, April 28 |
| *Friday, April 29* | **Deadline:** submission of theses for spring graduation, Office of Graduate Studies, 12 noon |
| *Wednesday, April 27-Wednesday, May 4* | Final examinations for remaining students |
| *Saturday, April 30* | Grades of all degree candidates due in Registrar's Office, 9 a.m. |
| *Saturday, May 7* | EIGHTY-FIRST COMMENCEMENT |
| *Wednesday, May 11* | Remaining grades due in Registrar's Office, 5 p.m. |
| *Friday, June 3* | **Deadline:** resolution of grades of *other* and converting *pass-fail* to a grade, 5 p.m. |

FIFTEEN WEEKS, MINUS EIGHT CLASS DAYS FOR HOLIDAYS
67 CLASS DAYS

# THE·UNIVERSITY AND·THE·CAMPUS



Dedicated to "the advancement of letters, science, and art," Rice is private, independent, nonsectarian, and coeducational. It includes among its academic divisions both undergraduate and graduate studies in the humanities, social sciences, natural sciences, engineering, architecture, administrative sciences, and music.

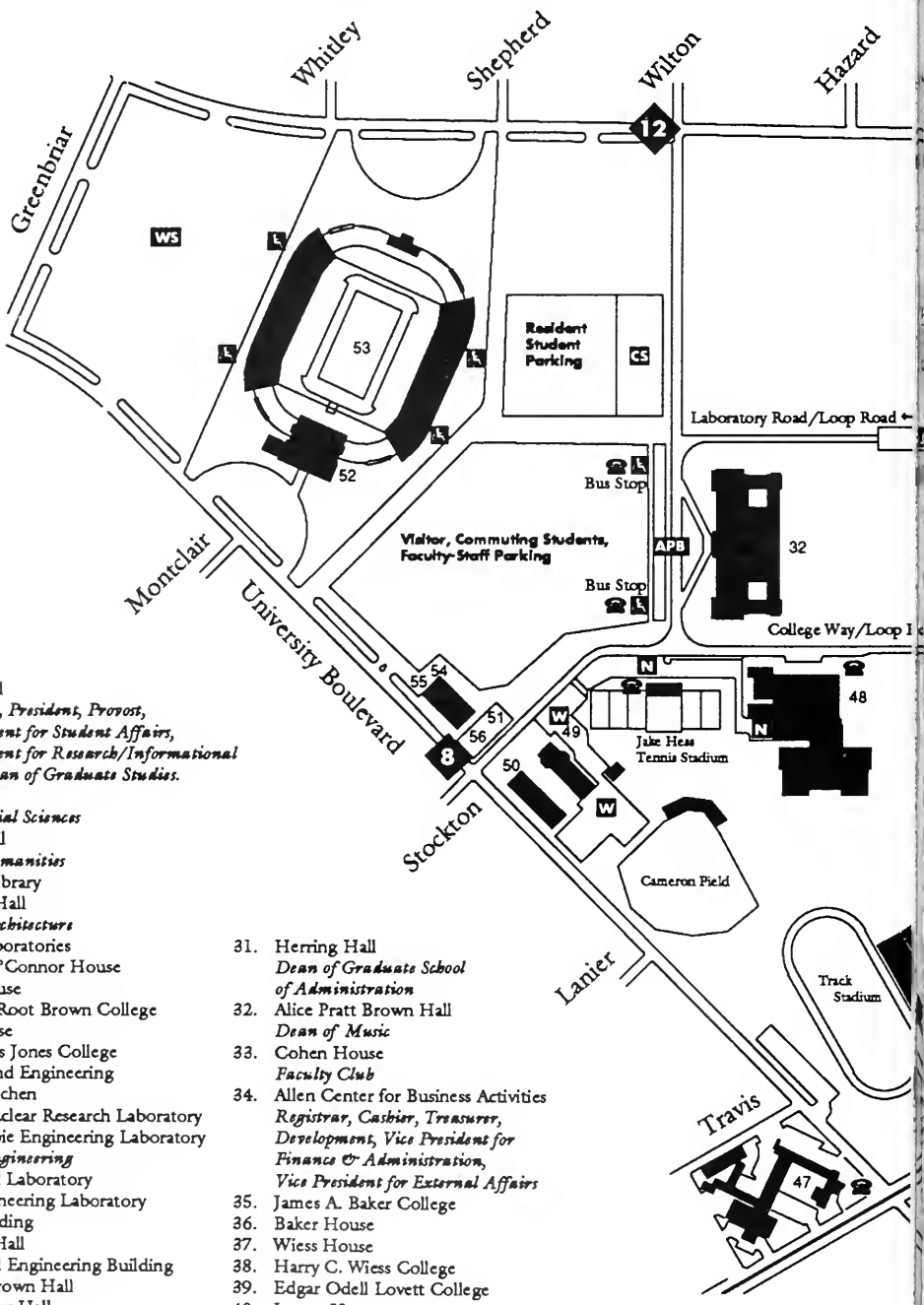
Highly talented students with diverse interests are attracted to Rice by the opportunities for creative learning. They find rewarding student-faculty relationships, options for individually tailored programs of study, opportunities for research, cooperative activities with other institutions in the nation's fourth largest city, and the unique experience of residential colleges.

About 65 percent of Rice's 2,700 undergraduate students live on campus in the eight residential colleges. The colleges have independent student governments, plan social functions, field intramural teams, and sponsor innovative academic courses, distinguished speakers, plays, and other events. In each college, the college master, comaster, and approximately 20 faculty associates act as advisers to the students. This system provides students and faculty with a style of living in keeping with the tenets of fine education.

Rice's approximately 1,300 graduate students work closely with eminent faculty members and conduct innovative research to extend the horizons of current knowledge. Graduate students live off campus or in the university-owned Graduate House. The Graduate Student Association organizes and funds regular social activities and provides graduate students with a separate organization to represent their interests within the university.

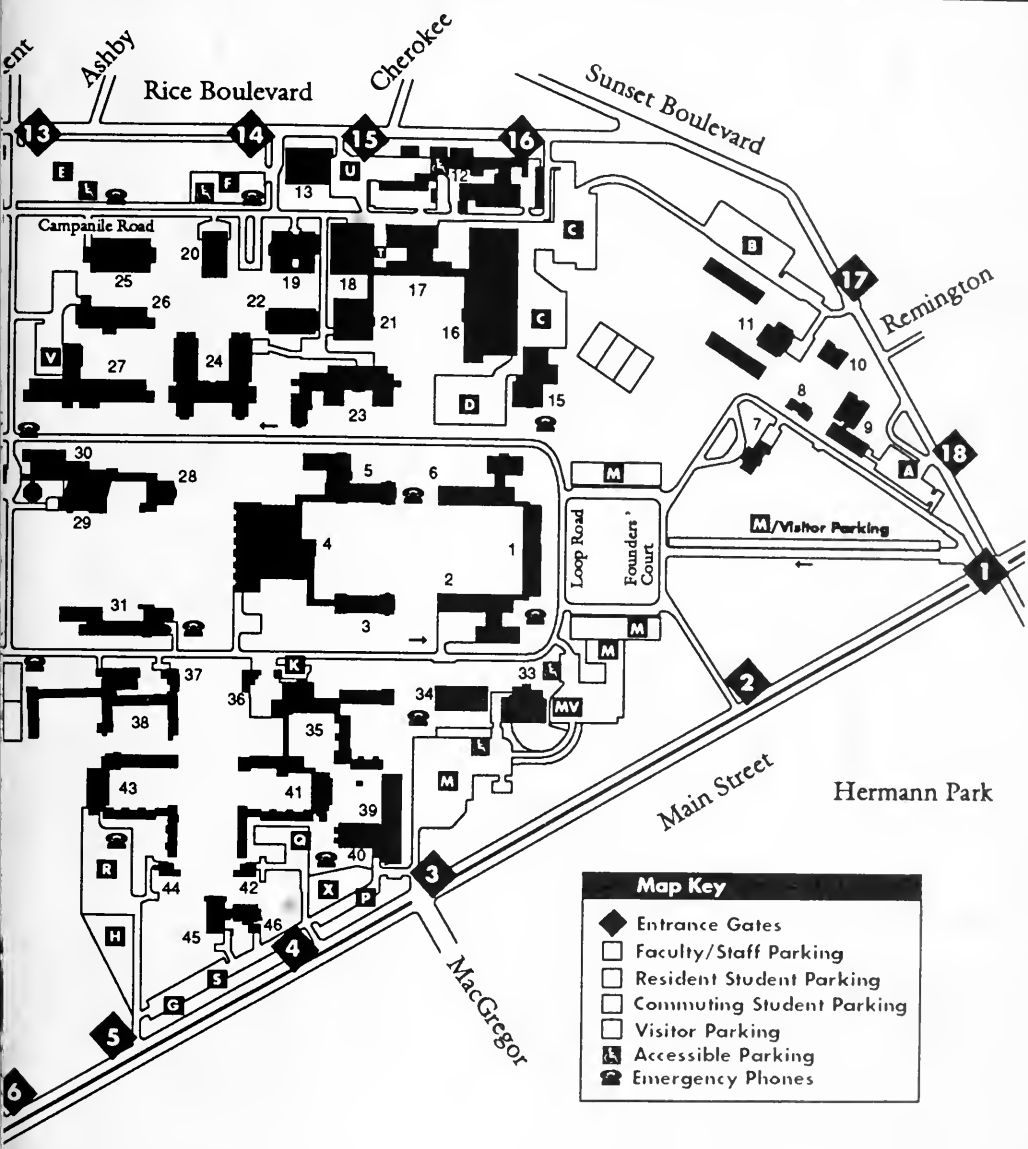
A look through the archway of Lovett Hall shows even the casual visitor why the 300-acre Rice campus is widely acclaimed for its dignified yet casual beauty. Approximately 40 permanent buildings are conveniently grouped in quadrangles under graceful live oak trees. The city's largest stadium, Fondren Library, the Media Center, the computer center, and Alice Pratt Brown Hall, with its dramatic musical presentations, make Rice "behind the hedges" a community unto itself. Yet only three miles from downtown Houston, Rice students enjoy all the commercial and cultural advantages of a major metropolitan center.

# Rice University Campus Map




**Building Key**

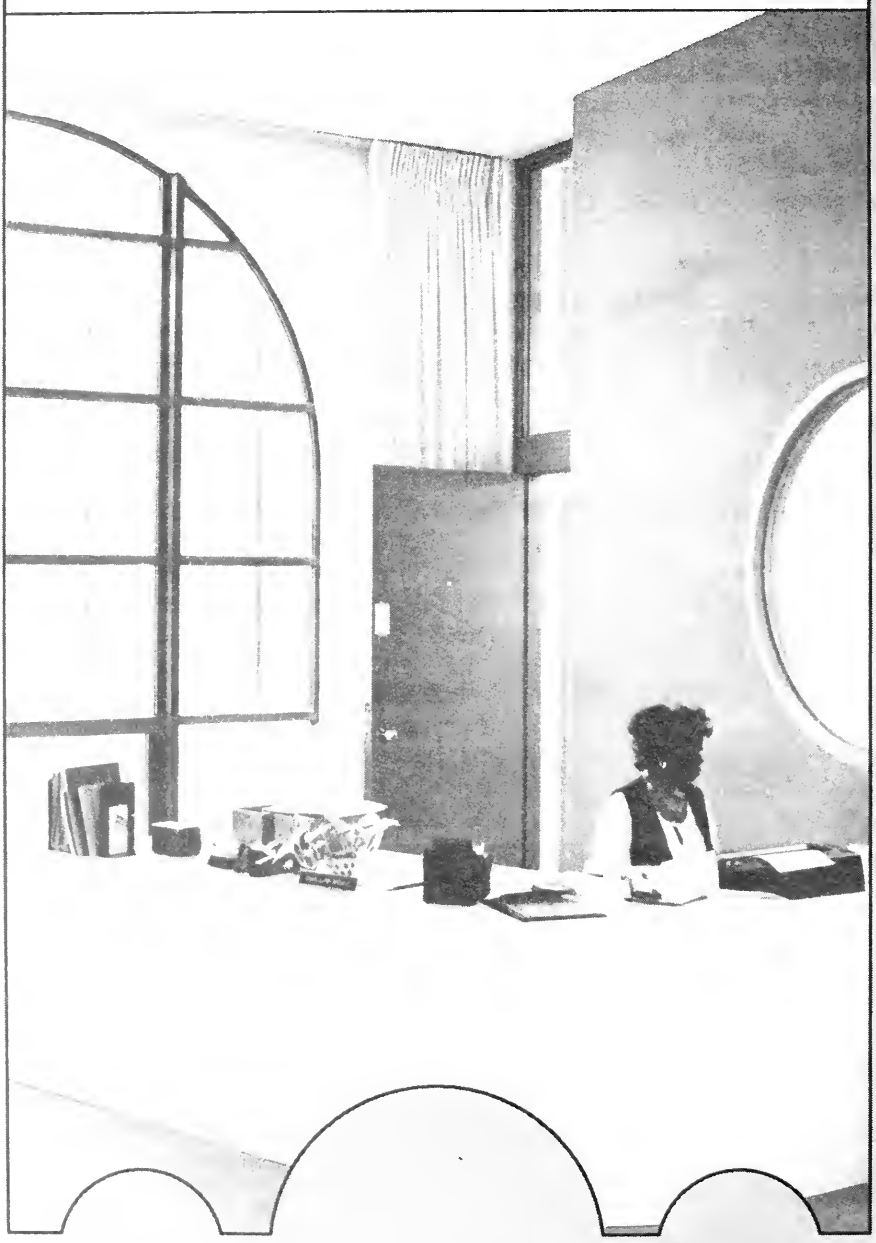
1. Lovett Hall
   *Admissions, President, Provost, Vice President for Student Affairs, Vice President for Research/Informational Systems, Dean of Graduate Studies.*
2. Sewall Hall
   *Dean of Social Sciences*
3. Rayzor Hall
   *Dean of Humanities*
4. Fondren Library
5. Anderson Hall
   *Dean of Architecture*
6. Physics Laboratories
7. Ralph S. O'Connor House
8. Brown House
9. Margarett Root Brown College
10. Jones House
11. Mary Gibbs Jones College
12. Facilities and Engineering
13. Central Kitchen
15. Bonner Nuclear Research Laboratory
16. Abercrombie Engineering Laboratory
    *Dean of Engineering*
17. Mechanical Laboratory
18. Ryon Engineering Laboratory
19. Mudd Building
20. Hamman Hall
21. Mechanical Engineering Building
22. Herman Brown Hall
23. Dell Butcher Hall
24. George R. Brown Hall
25. Space Science Building
    *Dean of Natural Sciences*
26. Keith-Wiess Geological Laboratories
27. Anderson Biological Laboratories
28. Rice Memorial Chapel
29. Rice Memorial Center
    *Bookstore, Alumni Office*
30. Ley Student Center
31. Herring Hall
    *Dean of Graduate School of Administration*
32. Alice Pratt Brown Hall
    *Dean of Music*
33. Cohen House
    *Faculty Club*
34. Allen Center for Business Activities
    *Registrar, Cashier, Treasurer, Development, Vice President for Finance & Administration, Vice President for External Affairs*
35. James A. Baker College
36. Baker House
37. Wiess House
38. Harry C. Wiess College
39. Edgar Odell Lovett College
40. Lovett House
41. Will Rice College
42. Will Rice House
43. Harry C. Hanszen College
44. Hanszen House
45. Sid W. Richardson College
46. Richardson House
47. Graduate House
48. Gymnasium and Autry Court
49. Rice Media Center
50. Center for Continuing Studies
    *Dean of Continuing Studies*
51. Campus Police
52. Athletic Offices and "R" Room
53. Rice Stadium
54. Mail Service
55. Administrative Store
56. Navy ROTC




**Parking Key**

A Brown College Residents Lot
APB Alice Pratt Brown Hall Lot
B Jones College Residents Lot
C Abercrombie Lot
CS Commuting Students East Stadium Lot
D Bonner Lot
E North Lot
F North Visitors Lot
H Herring Hall Lot
J Laboratory Road Lot
K Baker College-Food and Housing Lot
L Central Visitors Lot
LH Lovett Hall Lot
M Allen Center-Cohen House Lot
MV Cohen House Visitors Lot
N Autry Court Lot
P Main Street Lot
Q Will Rice College Residents Lot
R Baker-Hanszen-Wiess Colleges Residents Lot
S Richardson College Residents Lot
T Ryon-Mechanical Laboratory Lot
U Facilities and Engineering Lot
V Biology-Geology Lot
W Continuing Studies-Media Center Lot
WS West Stadium Lot
X Lovett College Residents Lot

# ADMINISTRATION AND STAFF



# Board of Governors

**Trustees**

Charles W. Duncan, Jr., *Chair*
Josephine E. Abercrombie, *Vice Chair*
D. Kent Anderson
J. Evans Attwell
John L. Cox
Burton J. McMurtry
Jack T. Trotter

**Term Members**

J. D. Bucky Allshouse
James A. Baker III
E. William Barnett
A. L. Jensen
George R. Miner
Paula M. Mosle
James L. Pate
Selby W. Sullivan

**Alumni Governors**

T. Robert Jones
G. Walter McReynolds
Steven J. Shaper
Stephen B. Smith

**Trustees Emeriti**

Harry J. Chavanne
Oveta Culp Hobby
C. M. Hudspeth
Edward W. Kelley, Jr.
H. Malcolm Lovett
Ralph S. O'Connor
James U. Teague

**Governor Advisers**

Judy Ley Allen
Richard A. Chapman
Stephen C. Cook
Thomas H. Cruikshank
Carolyn Douglas Devine
James A. Elkins III
J. Thomas Eubank
William S. Farish III
Catherine C. Hannah
Joyce Pounds Hardy
James W. Hargrove
Gerald D. Hines
William P. Hobby
Paul N. Howell
Carl Illig
Jack S. Josey
Howard B. Keck
Baine P. Kerr
Albert N. Kidd
William F. Kieschnick
Neal T. Lacey, Jr.
Wendel D. Ley
J. Hugh Liedtke
William M. McCardell
Jerry McCleskey
J. W. McLean
James R. Meyers
Pat H. Moore
S. I. Morris
Walter D. Murphy
Ralph W. Noble II
Haylett O'Neill, Jr.
M. Kenneth Oshman
J. Howard Rambin
David L. Rooke
Frank B. Ryan
Louisa Stude Sarofim
Harry K. Smith
Thomas D. Smith
Louis D. Spaw, Jr.
James O. Winston, Jr.
Benjamin N. Woodson
Helen S. Worden

# Administration

President ..... Malcolm Gillis
Provost ..... James L. Kinsey, acting
Vice President for Graduate Studies, Research, and Information Systems ..... G. Anthony Gorry
Vice President for Finance and Administration ..... Dean Currie
Vice President for External Affairs ..... Frank B. Ryan
Interim Vice President for Student Affairs ..... Sarah A. Burnett
Treasurer and Vice President for Investments ..... Scott W. Wise
Dean of the School of Humanities ..... Allen J. Matusow
Dean of the Wiess School of Natural Sciences ..... James L. Kinsey
Dean of the George R. Brown School of Engineering ..... Michael M. Carroll
Dean of the School of Social Sciences ..... James R. Pomerantz
Dean of the Shepherd School of Music ..... Michael Hammond
Dean of the Jesse H. Jones Graduate School of Administration ..... Benjamin F. Bailar
Dean of the School of Architecture ..... Lars Lerup
Dean of Admission and Records ..... Richard N. Stabell
Dean of the School of Continuing Studies ..... Mary B. McIntire
Dean of Graduate Studies ..... Graham P. Glass

# Administrative Offices

Administrative Computing ..... to be named
Admission ..... Julie Browning
Affirmative Action ..... Paula Cox and Deborah Nelson
Alumni Association ..... Scott Biddy
Athletics ..... John R. May
Career Services ..... Robert D. Sanborn
Cashier ..... Patricia C. Ciampi
Controller ..... Evelyn Stewart
Computer Information Services ..... (Acting Director) Kevin Long
Counseling ..... Lindley Doran
Development Office ..... Mark E. Kimbell
Financial Aid ..... G. David Hunt
Fondren Library ..... Beth J. Shapiro
Food and Housing ..... Marion O. Hicks
General Counsel ..... Shirley R. Redwine
Health Education ..... Cynthia Lanier
Human Resources ..... Caroline Garcia
Information Technology Development ..... Kevin Long
Multicultural Affairs ..... Catherine E. Clack
Minority Graduate Student Affairs ..... Richard A. Tapia
Networking and Planning ..... Farrell E. Gerbode

News and Publications ..... Michael Berryhill
Registrar ..... James G. Williamson
Secretary of the Faculty ..... to be named
Sponsored Research ..... Jean E. Vorhaben
Student Activities ..... Sarah N. Crawford
Student Advising ..... Patricia S. Martin
Student Health Services ..... Amanda Schnee
University Police Department ..... Mary M. Voswinkel

## College Masters and Comasters

Baker College ..... Rob and Robyn Dunbar
Brown College ..... Robert and Jamie Haymes
Hanszen College ..... Dennis Huston and Lisa Bryan
Jones College ..... David and Caroline Minter
Lovett College ..... Susan Wood
Richardson College ..... Gordon and Susan Wittenberg
Wiess College ..... George and Marilyn Pharr
Will Rice College ..... Dennis Shirley and Shelley Cochran
Graduate House ..... Robert L. Patten

# Instructional and Research Staff

## Emeritus Faculty

**Akers, William Walter,** 1947-93. Professor Emeritus in Chemical Engineering

B.S. (1943) Texas Technological College; M.S. (1944) University of Texas; Ph.D. (1950) University of Michigan

**Andrews, John F.,** 1982-91. Professor Emeritus of Environmental Science and Engineering

B.S.C.E. (1951), M.S. (1954) University of Arkansas; Ph.D. (1964) University of California at Berkeley

**Austin, Walter J.,** 1960-87. Professor Emeritus of Civil Engineering

B.S.C.E. (1941) Rice Institute; M.S. (1946), Ph.D. (1949) University of Illinois

**Awapara, Jorge,** 1957-84. Professor Emeritus of Biochemistry

B.S. (1941), M.S. (1942) Michigan State University; Ph.D. (1947) University of Southern California

**Bale, Allen M.,** 1947-78. Athletic Director Emeritus

B.S. (1930) Rice Institute; M.A. (1939) Columbia University

**Barker, J.R.,** 1949-86. Professor Emeritus of Health and Physical Education

B.S. (1949) Rice Institute; M.Ed. (1954) University of Texas

**Beckmann, Herbert W.K.,** 1957-85. Professor Emeritus of Mechanical Engineering

Cand. Ing. (1939), Dipl. Ing. (1944), Dr. Ing. (1957), Hanover University, Germany

**Bland, Robert L.,** 1954-92. Professor Emeritus of Human Performance and Health Sciences

B.S. Central Washington State College; M.A. (1954) Columbia University

**Boterf, Chester Arthur,** 1973-93. Professor Emeritus of Art

B.A. (1959) Kansas University; M.F.A. (1965) Columbia University

**Bourgeois, Andre Marie Georges,** 1928-72. Favrot Professor of French

Bachelier en lettres (1921), Bachelier en Droit (1923), Certifie d'etudes superieuries de lettres (1930) University of Paris, France; M.A. (1934) University of Texas; Docteur de l'luniversite (1945) University of Paris, France; Commandeur de l'Ordre des Palmes Academiques (1971)

**Brotzen, Franz Richard,** 1954-86. Stanley C. Moore Professor Emeritus of Materials Science

B.S. (1950), M.S. (1953), Ph.D. (1954) Case Institute of Technology

**Brown, Katherine Tsanoff,** 1963-89. Professor Emeritus of Art History and Honorary Associate of Will Rice College

B.A. (1938) Rice Institute; M.F.A. (1940) Cornell University

**Cason, Carolyn,** 1956-74. Lecturer Emerita in Dietetics

B.S. (1934) University of Texas; M.A. (1939) Columbia University

**Chamberlain, Joseph W.,** 1971-90. Professor Emeritus of Space Physics and Astronomy

A.B. (1948) A.M. (1949) University of Missouri; M.S. (1951), Ph.D. (1952) University of Michigan

**Clark, Howard Charles,** 1966-88. Professor Emeritus of Geology and Geophysics

B.S. (1959) University of Oklahoma; M.A. (1965), Ph.D. (Stanford University)

**Class, Calvin M.,** 1952-85. Professor Emeritus of Physics

A.B. (1943), Ph.D. (1951) Johns Hopkins University

**Dessler, Alexander J.,** 1963-93. Professor Emeritus of Space Physics and Astronomy

B.S. (1952) California Institute of Technology; Ph.D. (1956) Duke University

**Dowden, Wilfred Sellers,** 1948-87. Professor Emeritus of English and Honorary Associate of Baker College

B.A. (1939), M.A. (1940) Vanderbilt University; Ph.D. (1949) University of North Carolina

**Evans, Elinor Lucile,** 1964-85. Albert K. and Harry W. Smith Professor Emerita of Architecture

B.A. (1938) Oklahoma State University; M.F.A. (1954) Yale University

**Fliegel, Raphael,** 1975-89. Professor Emeritus of Violin

**Fulton, James Street,** 1946-74. Professor Emeritus of Philosophy and Honorary Master of Will Rice College

B.A. (1925), M.A. (1929) Vanderbilt University; Ph.D. (1934) Cornell University

**Gordon, William E.,** 1955-85. Distinguished Professor Emeritus of Space Physics and Astronomy and of Electrical and Computer Engineering

B.A. (1939), M.A. (1942) Montclair State College; M.S. (1946), Ph.D. (1953) Cornell University

**Hackerman, Norman,** 1970-85. President Emeritus and Distinguished Professor Emeritus of Chemistry

A.B. (1932), Ph.D. (1935) Johns Hopkins University

**Hake, Evelyn,** 1932-74. Lecturer Emerita in Biology

B.A. (1930), M.A. (1932) Rice Institute

**Hale, Elton B.,** 1963-79. Professor Emeritus of Accounting

B.S. (1937), M.A. (1940) Southwest Texas State Teachers College; Ph.D. (1948) University of Texas

**Hartsook, Arthur J.,** 1921-61. Professor Emeritus of Chemical Engineering

A.B. (1911) Nebraska Wesleyan University; B.S.Ch.E. (1920), M.S. (1921), MIT

**Higginbotham, Sanford Wilson,** 1961-83. Professor Emeritus of History

B.A. (1934) Rice Institute; M.A. (1941) Louisiana State University; Ph.D. (1949) University of Pennsylvania

**Hodges, Lee,** 1930-71. Professor Emeritus of French

B.S. (1930) Harvard University; M.A. (1934), Rice Institute

**Holt, Edward C.,** 1956-93. Professor Emeritus of Civil Engineering

S.B. (1945), S.M. (1947) MIT; Ph.D. (1956) Pennsylvania State University

**Huddle, Donald L.,** 1964-92. Professor Emeritus of Economics

B.S. (1959), M.A. (1960) University of California at Los Angeles; Ph.D. (1964) Vanderbilt University

**Jitcoff, Andrew N.,** 1950-72. Professor Emeritus of Russian

Bachelor (1928), Master (1931) Prague Institute of Technology, Czechoslovakia

**Kilpatrick, John E.,** 1947-85. Professor Emeritus of Chemistry and of Mathematical Sciences

B.A. (1940) Stephen F. Austin State University; A.M. (1942) University of Kansas; Ph.D. (1945) University of California at Berkeley

**Krzyzaniak, Marian,** 1964-81. Professor Emerita of Economics

B.A. (1932) University of Poznan, Poland; M.A. (1954) University of Alberta, Canada; Ph.D. (1959) MIT

**Lecuyer, Maurice Antoine,** 1962-79. Professor of French

Baccalaureat es lettres (1937), Licence es lettres (1943), Diplome d'etudes superieures (1944) Universite de Paris, France; Ph.D. (1954) Yale University

**Leeds, J. Venn, Jr.,** 1964-89. Professor Emeritus of Electrical and Computer Engineering

B.A. (1955), B.S.E.E. (1956) Rice Institute; M.S.E.E. (1960), Ph.D. (1963) University of Pittsburgh; J.D. (1972) University of Houston

**Lewis, Edward S.,** 1948-90. Professor Emeritus of Chemistry

B.S. (1940) University of California at Berkeley; Ph.D. (1947) Harvard University

**Manschreck, Clyde L.,** 1983-86. Harry and Hazel Chavanne Professor Emeritus of Religious Studies

B.A. (1941) George Washington University; B.D. (1944) Garrett Evangelical Seminary; M.A. (1944) Northwestern University; Ph.D. (1948) Yale University

**Morehead, James Caddell, Jr.,** 1940-79. Professor Emeritus of Architecture and Honorary Associate of Baker College

A.B. (1935) Princeton University; B.Arch. (1939) Carnegie Institute of Technology

**Nettleton, Lewis L.,** 1971-76. Lecturer Emeritus in Geology

B.S. (1918) University of Idaho; M.S. (1921), Ph.D. (1923) University of Wisconsin

**Nielsen, Niels C., Jr.,** 1951-91. Professor Emeritus of Philosophy and Religious Thought and Honorary Associate of Will Rice College

B.A. (1942) George Pepperdine University; B.D. (1946), Ph.D. (1951) Yale University

**Norris, Mary,** 1975-88. Professor Emerita of Music

Artist Diploma in Piano (1939) Curtis Institute of Music

**Oliver, Covey,** 1979-81. Radoslav A. Tsanoff Professor Emeritus of Public Affairs

B.A. (1933), J.D. (1936) University of Texas; LL.M. (1953), S.J.D. (1954) Columbia University; LL.D. (1976) Southern Methodist University

**Oliver-Smith, Philip,** 1969-82. Professor Emeritus of Art History

B.A. (1937), M.A. (1950) University of California at Berkeley; Ph.D. (1969) New York University

**Parsons, David G.,** 1953-81. Professor Emeritus of Art and Honorary Associate of Will Rice College

B.S. (1934), M.S. (1937) University of Wisconsin

**Phillips, Gerald C.,** 1949-88. Professor Emeritus of Physics

B.A. (1944), M.A. (1947), Ph.D. (1949) Rice Institute

**Raaphorst, Madeleine Rousseau,** 1963-89. Professor Emerita of French

Baccalaureat es lettres (1939) Universite de Poitiers, France; Licence en droit (1943) Universite de Paris, France; Ph.D. (1959) Rice Institute

**Rachford, Henry H., Jr.,** 1964-82. Professor Emeritus of Mathematical Sciences

B.S. (1945), M.A. (1947) Rice Institute; Sc.D. (1950) Massachusetts Institute of Technology

**Ransom, Harry Steelsmith, Jr.,** 1954-81. Professor Emeritus of Architecture

B.Arch. (1947) Carnegie Institute of Technology; M.Arch. (1967) Texas A&M University

**Rath, R. John,** 1963-80. Professor Emeritus of History

A.B. (1932) Kansas; M.A. (1934) University of California at Berkeley; Ph.D. (1941) Columbia University

**Risser, J.R.,** 1946-81. Professor Emeritus of Physics

A.B. (1931) Franklin and Marshall College; M.A. (1935), Ph.D. (1938) Princeton University

**Rossini, Frederick D.,** 1971-75. Professor Emeritus of Chemistry

B.S. (1925), M.S. (1926) Carnegie Institute; Ph.D. (1928) University of California at Berkeley

**Sims, James R.,** 1942-87. Herman and George R. Brown Professor Emeritus of Civil Engineering

B.S. (1941) Rice Institute; M.S. (1950), Ph.D. (1956) University of Illinois

**Spears, Monroe Kirk,** 1964-86. Libbie Shearn Moody Professor Emeritus of English
A.B., A.M. (1937) University of South Carolina; Ph.D. (1940) Princeton University

**Thomas, Joe David,** 1930-77. Professor Emeritus of English
Ph.D. (1929), A.M. (1930) University of Chicago

**Thrall, Robert,** 1969-84. Noah Harding Professor Emeritus of Mathematical Sciences and Professor Emeritus of Administrative Science

**Tipton, Albert N.,** 1975-87. Professor Emeritus of Music
Artists Diploma (1939) Curtis Institute; B.M. (1952) Washington University; M.M. (1953) St. Louis Institute of Music

**Todd, Anderson,** 1949-92. G.S. Wortham Professor Emeritus of Architecture
B.A. (1943), M.F.A. (1949) Princeton University

**Topazio, Virgil William,** 1965-83. Laurence H. Favrot Professor of French
B.A. (1943) Wesleyan College; M.A. (1947), Ph.D. (1951) Columbia University

**Trammell, George T.,** 1961-93. Professor Emeritus of Physics
B.A. (1944) Rice Institute; Ph.D. (1950) Cornell University

**Valdivieso, Mercedes,** 1973-89. Professor Emeritus of Spanish
Bachillerato (1946) University of Chile; M.A. (1969) University of Houston

**Wadsworth, Philip A.,** 1964-73. Professor Emeritus of French
A.B. (1935), Ph.D. (1939) Yale University

**Wall, Frederick T.,** 1972-79. Professor Emeritus of Chemistry
B.C. (1933), Ph.D. (1937) University of Minnesota

**Walker, James B.,** 1964-92. Professor Emeritus of Biochemistry and Cell Biology
B.S. (1943) Rice Institute; M.A. (1949), Ph.D. (1952) University of Texas

**Wilhoit, James Cammack, Jr.,** 1954-81. Professor Emeritus of Mechanical Engineering and Mathematical Sciences
B.S.M.E. (1948) Rice Institute; M.S. (1951) Texas A&M University; Ph.D. (1954) Stanford University

**Williams, George Guion,** 1924-68. Professor Emeritus of English
B.A. (1923), M.A. (1925) Rice Institute

**Young, Richard D.,** 1965-92. Professor Emeritus of Economics and Mathematical Sciences
B.A. (1951), M.A. (1954) University of Minnesota; Ph.D. (1965) Carnegie Institute of Technology

# Faculty

**Aazhang, Behnaam,** 1985. Associate Professor in Electrical and Computer Engineering and Associate of Lovett College

B.S. (1981), M.S. (1983), Ph.D. (1986) University of Illinois

**Abraham, Abraham,** 1989. Assistant Professor of Administrative Science and Associate of Wiess College

B.E. (1975) Indian Institute of Technology; M.A. (1985), M.B.A. (1985), Ph.D. (1989) Boston University

**Adams, David,** 1988. Faculty Fellow in Physics

B.S. (1980) California Institute of Technology; M.S. (1981), Ph.D. (1986) University of California at Los Angeles

**Adve, Sarita V.,** 1993. Assistant Professor in Electrical and Computer Engineering

B.S. (1982) Indian Institute of Technology; M.S. (1989), Ph.D. (1992) University of Wisconson at Madison

**Ahmad, Salahuddin,** 1990. Faculty Fellow in Physics

B.Sc. (1974), M.Sc. (1975) University of Dhaka, Bangladesh; Ph.D. (1981) University of Victoria, B.C., Canada

**Akin, John Edward,** 1983. Professor of Mechanical Engineering and Computational and Applied Mathematics

B.S. (1964) Tennessee Polytechnic Institute; M.S. (1966) Tennessee Technological University; Ph.D. (1968) Virginia Polytechnic Institute

**Alcover, Madeleine,** 1975. Professor of French

Licence de lettres modernes (1962), Diplôme d'études supérieures (1963), Doctorat de 3e cycle (1965) France

**Alford, John R.,** 1985. Associate Professor of Political Science and Associate of Hanszen College

B.S. (1975), M.A. (1977) University of Houston; M.A. (1980), Ph.D. (1981) University of Iowa

**Alfrey, Clarence P., Jr.,** 1968. Adjunct Professor in the Biomedical Engineering Laboratory

B.A. (1951) Rice Institute; M.D. (1955) Baylor College of Medicine; Ph.D. (1966) University of Minnesota

**Ambler, John S.,** 1964. Professor of Political Science and Associate of Brown College

B.A. (1953) Willamette University; M.A. (1954) Stanford University; Certificat d'etudes politiques (1955) University of Bordeaux, France; Ph.D. (1966) University of California at Berkeley

**Anderson, Christopher J.,** 1993. Assistant Professor of Political Science

B.A. (1988) University of Cologne; M.A. (1989) Virginia Polytechnic Institute; Ph.D. (1993) Washington University

**Anderson, James,** 1992. G.C. Evans Instructor of Mathematics

B.A. (1986) University of Georgia; Ph.D. (1991) State University of New York at Stony Brook

**Anderson, John B.,** 1975. Professor of Geology and Geophysics

B.S. (1968) University of South Alabama; M.S. (1970) University of New Mexico; Ph.D. (1972) Florida State University

**Angel, Yves C.,** 1984. Associate Professor in Mechanical Engineering and Associate of Brown College

B.S. (1976) Ecole Centrale De Lyon, France; M.S. (1977), Ph.D. (1980) University of California at Berkeley

**Antoulas, Athanasios C.,** 1985. Professor in Electrical and Computer Engineering

Dip. in Electrical Engineering (1975), Dip. in Mathematics (1975) Ph.D. (1980) Eidgenösische Technische Hochschule, Switzerland

**Apple, Max I.,** 1972. Gladys Louise Fox Professor of English

B.A. (1963) University of Michigan; M.A. (1965) Stanford University; Ph.D. (1970) University of Michigan

**Arbiter, Eric A.,** 1977. Assistant Professor of Music

B.M.E. (1972) Oberlin Conservatory of Music; M.Mus. (1973) Cleveland Institute of Music

**Arbogast, Todd,** 1992. Faculty Fellow in Computational and Applied Mathematics

B.S. (1981) University of Minnesota; M.S. (1983), Ph.D. (1987) University of Chicago

**Aresu, Bernard,** 1977. Associate Professor of French Studies

Licence es lettres (1967) Université de Montpellier, France; Ph.D. (1975) University of Washington

**Armeniades, Constantine D.,** 1969. Professor in Chemical Engineering and Associate of Will Rice College

B.S. (1961) Northeastern University; M.S. (1967) Case Institute of Technology; Ph.D. (1969) Case Western Reserve University

**Atherholt, Robert,** 1984. Artist Teacher, Oboe

B.Mus. (1976), M.Mus. (1977) Juilliard School of Music

**Atherton, W. Clifford, Jr.,** 1988. Lecturer in Administrative Science

B.A. (1971) Rice University; M.B.A. (1977), Ph.D. (1983) University of Texas at Austin

**Atkinson, E. Neely,** 1985. Adjunct Professor of Statistics

B.A. (1975), M.A., Ph.D. (1981) Rice University

**Attwell, Khleber,** 1989. Adjunct Professor of Accounting

B.A. (1953) Rice University; M.P.H. (1982) University of Texas Health Science Center at Houston

**Austin, Joe Dan,** 1978. Associate Professor of Education and Statistics and Associate of Jones College

B.S. (in Applied Mathematics) (1966) Georgia Institute of Technology; M.S. (in Mathematical Statistics) (1968), Ph.D. (in Mathematics Education) (1972) Purdue University

**Avé Lallemant, Hans G.,** 1970. Professor of Geology and Geophysics

B.Sc. (1960), M.Sc. (1964), Ph.D. (1967) Leiden University, The Netherlands

**Babikian, Virginia,** 1982. Professor of Voice

B.Mus. (1951), M.Mus. (1952) Westminster Choir College; Artists Diploma (1957), Teatro Lirico Sperimentale Di Spoleto, Italy

**Badgwell, Thomas A.,** 1993. Assistant Professor in Mechanical Engineering and Materials Science

B.S. (1982) Rice University; M.S. (1990), Ph.D. (1992) University of Texas

**Bailar, Benjamin F.,** 1987. Dean of the Jesse H. Jones Graduate School of Administration, H. Joe Nelson, III, Professor of Administration, and Associate of Sid Richardson College

B.A. (1955) University of Colorado; M.B.A. (1959) Harvard Graduate School of Business Administration

**Bailey, Walter B.,** 1982. Associate Professor of Music

B.Mus. (1976) Lewis and Clark College; M.A. (1979), Ph.D. (1982) University of Southern California

**Baker, Donald Roy,** 1966. Professor of Geology and Geophysics and Honorary Associate of Brown College

B.S. (1950) California Institute of Technology; Ph.D. (1955) Princeton University

**Baker, John W.,** 1988. Adjunct Lecturer on Linguistics

B.A. (1967) University of Texas at Austin; M.A. (1975) Johns Hopkins University

**Baker, Lovett,** 1986. Lecturer on Administrative Science

A.B. (1952) Princeton University

**Baker, Stephen D.,** 1963. Professor of Physics and Honorary Associate of Hanszen College

B.S. (1957) Duke University; M.S. (1959), Ph.D. (1963) Yale University

**Bally, Albert W.,** 1981. Harry Carothers Wiess Professor of Geology

Ph.D. (1953) University of Zurich, Switzerland

**Banavalkar, Prabadh V.,** 1993. Lecturer on Civil Engineering

B.E. (1962) Indian Institute of Technology, Bombay, India; M.S. (1966) University of Illinois; Ph.D. (1970) Cornell University

**Banks, Stephen J.,** 1991. Adjunct Professor of Administrative Science

B.S. (1962) MIT; M.B.A. (1967) Harvard University

**Baraniuk, Richard G.,** 1992. Assistant Professor in Electrical and Computer Engineering

B.S. (1987) University of Manitoba; M.S. (1988) University of Wisconsin; Ph.D. (1992) University of Illinois

**Barlow, Michael,** 1993. Visiting Assistant Professor of Linguistics

B.Sc. (1972) Liverpool University; M.Sc. (1973), Salford University; Ph.D. (1988) Stanford University

**Barnea, Amir,** 1989. Professor of Administrative Science

B.A. (1964), M.Soc.Sc. (1967) Hebrew University; Ph.D. (1972) Cornell University

**Barrera, Enrique V.,** 1990. Assistant Professor of Materials Science and Engineering

B.S. (1979), M.S. (1985), Ph.D. (1987) University of Texas

**Batsell, Richard R.,** 1980. Jesse H. Jones Distinguished Associate Professor of Administrative Science, Associate Professor of Psychology, and Associate of Hanszen College

B.A., B.B.A. (1971), Ph.D. (1976) University of Texas

**Bavinger, Bill Allen,** 1977. Assistant Professor of Architecture

B.A. (1973), M.Arch. (1976) Rice University

**Bayazitoglu, Yildiz,** 1977. Professor in Mechanical Engineering and Associate of Will Rice College

B.S. (1967) Middle East Technological University; M.S. (1969), Ph.D. (1974) University of Michigan

**Bearden, Frank W.,** 1954. Professor of Human Performance and Health Sciences

B.S. (1947) Texas Technological College; M.A. (1949), Ed.D. (1954) Columbia University

**Beckingham, Kathleen,** 1980. Professor of Biochemistry and Cell Biology

B.A. (1967), Ph.D. (1972) Cambridge University

**Bedient, Philip B.,** 1975. Professor of Environmental Science and Engineering

B.S. (1969), M.S. (1972), Ph.D. (1975) University of Florida

**Bell, Michael,** 1993. Assistant Professor of Architecture

B.S. (1983) Catholic University of America; M. Arch. (1987) University of California at Berkeley

**Benjamin, Don C., Jr.,** 1978. Lecturer on Religious Studies

B.A. (1964) St. Bonaventure University; M.A. (1968) Catholic University of America; Ph.D. (1981) Claremont Graduate School

**Bennett, George N.,** 1978. Professor of Biochemistry and Cell Biology and Associate of Lovett College

B.S. (1968) University of Nebraska; Ph.D. (1974) Purdue University

**Bennett, John K.,** 1988. Assistant Professor of Electrical and Computer Engineering and Associate of Wiess College

B.S.E.E. (1973), M.E.E. (1974) Rice University; M.S. (1983), Ph.D. (1987) University of Washington

**Billups, W. Edward,** 1970. Professor of Chemistry

B.S. (1961), M.S. (1965) Marshall University; Ph.D. (1970) Pennsylvania State University

**Bixby, Robert E.,** 1984. Professor of Computational and Applied Mathematics and Administrative Science and Associate of Baker College

B.S. (1968) University of California; M.S. (1971), Ph.D. (1972) Cornell University

**Black, David C.,** 1970. Adjunct Professor of Space Physics and Astronomy

B.S. (1965), M.S. (1967), Ph.D. (1970) University of Minnesota

**Black, Earl,** 1993. Herbert S. Autrey Professor of Political Science

B.A. (1964) University of Texas; Ph.D. (1968) Harvard University

**Blackburn, James B.,** 1975. Lecturer on Architecture and Environmental Science

B.A. (1969), J.D. (1972) University of Texas; M.S. (1974) Rice University

**Boles, John B.,** 1981. Allyn and Gladys Cline Professor of History and Associate of Will Rice College

B.A. (1965) Rice University; Ph.D. (1969) University of Virginia

**Bonner, Billy E.,** 1985. Professor of Physics and Director, T. W. Bonner Nuclear Lab

B.S. (1961) Louisiana Polytechnic Institute; M.A. (1963), Ph.D. (1965) Rice University

**Bordelon, Cassius B., Jr.,** 1972. Lecturer on Human Performance and Health Sciences

B.S. (1964) Louisiana State University; Ph.D. (1972) Baylor College of Medicine

**Boshernitzan, Michael,** 1982. Professor of Mathematics

B.A. (1971) Moscow University, U.S.S.R.; M.A. (1974) Hebrew University, Israel; Ph.D. (1981) Weizmann Institute of Science, Israel

**Bourland, Hardy M.,** 1961. Lecturer on Electrical and Computer Engineering, Associate Dean of Engineering, Director of Rice Engineering Design and Development Institute, and Associate of Wiess College

B.S. (1955) Texas Technological College; S.M.E.E. (1957) MIT

**Braam, Janet,** 1990. Assistant Professor of Biochemistry and Cell Biology

B.S. (1980) Southern Illinois University; Ph.D. (1985) Sloan-Kettering Division of Cornell Graduate School of Medical Sciences

**Brelsford, John W., Jr.,** 1970. Professor of Psychology and Statistics and Master of Brown College

B.A. (1960), M.A. (1961) Texas Christian University; Ph.D. (1965) University of Texas

**Bridges, Eileen,** 1987. Assistant Professor of Administrative Science and Associate of Sid Richardson College

B.S. (1977) California Institute of Technology; M.E.E. (1978) Rice University; M.B.A. (1982) University of Santa Clara; Ph.D. (1987) Northwestern University

**Brito, Dagobert L.,** 1984. George A. Peterkin Professor of Political Economy and Associate of Wiess College

B.A. (1967), M.A. (1970), Ph.D. (1970) Rice University

**Brody, Baruch,** 1975. Professor of Philosophy

B.A. (1962) Brooklyn College; M.A. (1965), Ph.D. (1967) Princeton University

**Broker, Karin L.,** 1980. Associate Professor of Art and Associate of Lovett College

B.F.A. (1972) University of Iowa; M.F.A. (1980) University of Wisconsin

**Brooks, Philip R.,** 1964. Professor of Chemistry and Associate of Lovett College

B.S. (1960) California Institute of Technology; Ph.D. (1964) University of California at Berkeley

**Brooks, Wayne,** 1985. Artist Teacher, Viola

Diploma (1977) Curtis Institute of Music

**Brown, Barry W.,** 1970. Adjunct Professor of Statistics

B.S.(1959) University of Chicago; M.S. (1961), Ph.D. (1963) University of California at Berkeley

**Brown, Bryan W.,** 1983. Reginald Henry Hargrove Professor of Economics and Statistics and Associate of Will Rice College

B.A. (1969), M.A. (1972) Texas Tech University; Ph.D. (1977) University of Pennsylvania

**Brown, Richard,** 1984. Associate Professor of Percussion

B.M.E. (1969) Temple University; M.Mus. (1971) Catholic University of America

**Bryan, William J.,** 1982. Adjunct Professor of Human Performance and Health Sciences

B.A. (1971) Johns Hopkins University; M.D. (1975) Baylor College of Medicine

**Bryant, John B.,** 1981. Henry S. Fox Sr. Professor of Economics, Professor of Administrative Science and Associate of Wiess College

B.A. (1969) Oberlin College; M.S. (1973), Ph.D. (1975) Carnegie Mellon University

**Buffler, Richard T.,** 1984. Adjunct Professor of Geology and Geophysics

B.S. (1959) University of Texas; Ph.D. (1967) University of California at Berkeley

**Burch, James L.,** 1968. Adjunct Professor of Space Physics and Astronomy

B.S. (1964), St. Mary's University; M.S.A. (1973), George Washington University; Ph.D. (1968), Rice University

**Burke, Kevin C. A.,** 1983. Adjunct Professor of Geology and Geophysics

B.Sc. (1951), Ph.D. (1953) University of London

**Burnett, Sarah A.,** 1972. Associate Professor of Psychology, Dean of Students and Associate of Jones College

B.S. (1966) Memphis State University; M.S. (1970), Ph.D. (1972) Tulane University

**Burnside, Mary A.,** 1986. Adjunct Assistant Professor of Psychology

B.A. (1972) Rice University; M.A. (1976), Ph.D. (1980) University of Houston

**Burrus, C. Sidney,** 1965. Professor of Electrical and Computer Engineering, Honorary Associate of Will Rice College and Associate of Lovett College

B.A., B.S.E.E. (1958) Rice Institute; M.S. (1960) Rice University; Ph.D. (1965) Stanford University

**Burt, George,** 1985. Associate Professor of Theory and Composition

B.A. (1955) University of California at Berkeley; M.A. (1958) Mills College; M.F.A. (1962) Princeton University

**Busby III, George W.,** 1989. Lecturer on Chemistry

B.S. (1968) MIT; M.A. (1970), Ph.D. (1975) Harvard University

**Butler, James E.,** 1982. Adjunct Professor of Human Performance and Health Sciences

B.S. (1956) University of the South; M.A. (1957) Southwest Texas State College; M.D. (1962) University of Texas Medical Branch at Galveston

**Caflisch, Anna B.,** 1983. Lecturer on Italian and Associate of Brown College

Liceo Classico J. Stellini, Udine, Italy; Dottore in Lettere (1958) Università del Sacro Cuore, Milan, Italy

**Callahan, Daniel L.,** 1990. Assistant Professor in Mechanical Engineering and Materials Science

B.S. (1985) Rice University; M.S. (1987), Ph.D. (1989) University of California at Berkeley

**Camfield, William A.,** 1969. Joseph and Joanna Nazro Mullen Professor of Art History and Associate of Jones College

A.B. (1957) Princeton University; M.A. (1961), Ph.D. (1964) Yale University

**Campbell, James Wayne,** 1959. Professor of Biochemistry and Cell Biology

B.S. (1953) Southwest Missouri State University; M.S. (1955) University of Illinois; Ph.D. (1958) University of Oklahoma

**Cannady, William Tillman,** 1964. Professor of Architecture

B.Arch. (1961) University of California at Berkeley; M.Arch. (1962) Harvard University

**Cardus, David,** 1970. Adjunct Professor of Statistics

B.A., B.Sc. (1942) University of Montpellier, France; M.D. (1949) Barcelona Medical School, Spain

**Carnahan, Norman F.,** 1986. Adjunct Associate Professor in Chemical Engineering

B.S.Ch.E. (1965) University of Houston; Ph.D. (1971) University of Oklahoma

**Carrington, Samuel M., Jr.,** 1967. Professor of French and Associate of Jones College
A.B. (1960), M.A. (1962), Ph.D. (1965) University of North Carolina

**Carroll, James W.,** 1992. Adjunct Assistant Professor of Accounting
B.A. (1977), M.A. (1977) Rice University

**Carroll, Michael M.,** 1988. Burton J. and Ann M. McMurtry Professor in Engineering and Dean of the George R. Brown School of Engineering
B.A. (1958), M.A. (1959) University College Galway; Ph.D. (1964) Brown University

**Cartwright, Robert S., Jr.,** 1980. Professor of Computer Science and Associate of Hanszen College
B.A. (1971) Harvard College, M.A. (1973), Ph.D. (1973) Stanford University

**Casbarian, John Joseph,** 1973. Professor of Architecture
B.A. (1969) Rice University; M.F.A. (1971) California Institute of the Arts; B.Arch. (1972) Rice University

**Castaneda, James A.,** 1961. Professor of Spanish, Honorary Master of Will Rice College, and Golf Coach
B.A. (1954) Drew University; M.A. (1955), Ph.D. (1958) Yale University

**Cavallaro, Joseph R.,** 1988. Assistant Professor in Electrical and Computer Engineering and Associate of Lovett College
B.S.E.E. (1981) University of Pennsylvania; M.S.E.E. (1982) Princeton University; Ph.D. (1988) Cornell University

**Chae, Suchan,** 1985. Associate Professor of Economics
B.S. (1978) Seoul National University; M.S. (1980) Jeonbuk National University; Ph.D. (1985) University of Pennsylvania

**Chan, Anthony A.,** 1993. Assistant Professor of Space Physics and Astronomy
B.Sc. (1982), M.Sc. (1984) University of Auckland; M.A. (1986), Ph.D. (1991) Princeton University

**Chance, Jane,** 1973. Professor of English
B.A. (1967) Purdue University; M.A. (1968), Ph.D. (1971) University of Illinois

**Chang, Yung-Ho,** 1993. Assistant Professor of Architecture
B.S. (1983) Ball State University; M. Arch. (1984) University of California at Berkeley

**Chapman, Alan Jesse,** 1946. Harry S. Cameron Professor in Mechanical Engineering
B.S.M.E. (1945) Rice Institute; M.S. (1949) University of Colorado; Ph.D. (1953) University of Illinois

**Chapman, Walter G.,** 1990. Assistant Professor in Chemical Engineering
B.S. (1983) Clemson University; Ph.D. (1988) Cornell University

**Cheatham, John Bane, Jr.,** 1963. Professor of Mechanical Engineering
B.S. (1948), M.S. (1953) Southern Methodist University; Ph.D. (1960) Rice University

**Chen, Lilly C.H.,** 1981. Instructor in Linguistics
B.A. (1961) National Taiwan University; M.A. (1969), Ph.D. (1974) University of Illinois

**Ciliske, Kathleen B.,** 1991. Lecturer on Accounting
B.A. (1979), M.A. (1980) Rice University

**Citron, Marcia J.,** 1976. Professor of Music and Associate of Brown College
B.A. (1966) Brooklyn College; M.A. (1970), Ph.D. (1971) University of North Carolina

**Ciufolini, Marco A.,** 1984. Associate Professor of Chemistry
B.S. (1978) Spring Hill College; Ph.D. (1981) University of Michigan

**Clark, John W., Jr.,** 1968. Professor in Electrical and Computer Engineering
B.S. (1962) Christian Brothers College; M.S. (1965), Ph.D. (1967) Case Western Reserve University

**Cloutier, Paul A.,** 1967. Professor of Space Physics and Astronomy
B.S. (1964) University of Southwestern Louisiana; Ph.D. (1967) Rice University

**Cochran, Tim D.,** 1990. Associate Professor of Mathematics

B.S. (1977) MIT; M.A. (1979), Ph.D. (1982) University of California at Berkeley

**Cohen, Ruben D.,** 1985. Associate Professor in Mechanical Engineering and Associate of Wiess College

B.M.E. (1978) Concordia University, Montreal; M.S.M.E. (1979) University of Massachusetts at Amherst; Ph.D. (1985) MIT

**Colaco, Joseph P.,** 1975. Lecturer on Architecture

B.S. (1960) University of Bombay, India; M.S. (1962), Ph.D. (1965) University of Illinois

**Connelly, Brian,** 1984. Artist Teacher, Piano Accompaniment and Vocal Coach

B.Mus. (1980), M.Mus. (1983) University of Michigan

**Conte, Joel P.,** 1990. Assistant Professor in Civil Engineering and Associate of Sid Richardson College

Diploma of Civil Engineering (1985) Swiss Federal Institute of Technology, Lausanne, Switzerland; M.S. (1986), Ph.D. (1990) University of California at Berkeley

**Cooper, Bruce F.,** 1986. Lecturer on Biochemistry and Cell Biology

B.A. (1978) Kent State University; Ph.D. (1985) Rice University

**Cooper, Keith D.,** 1990. Associate Professor of Computer Science and Associate of Brown College

B.S. (1978), M.A. (1982), Ph.D. (1983) Rice Univeristy

**Cooper, Paul,** 1974. Lynette S. Autrey Professor in Music and Composer-in-Residence

B.Mus., B.A. (1950), M.A. (1953), D.M.A. (1956) University of Southern California

**Copeland, James E.,** 1966. Professor of Linguistics and German and Associate of Baker College

B.A. (1961) University of Colorado; Ph.D. (1965) Cornell University

**Corcoran, Marjorie D.,** 1980. Professor of Physics and Associate of Baker College

B.S. (1972) University of Dayton; Ph.D. (1977) Indiana University

**Cox, Alan L.,** 1991. Assistant Professor of Computer Science

B.S. (1986) Carnegie Mellon; M.S. (1988), Ph.D. (1991) University of Rochester

**Cox, Dennis,** 1992. Professor of Statistics

B.A. (1972) University of Colorado; M.S. (1976) University of Denver; Ph.D. (1980) University of Washington

**Cox, Edward L.,** 1989. Associate Professor of History and Associate of Wiess College

B.A. (1970) University of the West Indies; M.A. (1973), Ph.D. (1977) Johns Hopkins University

**Cox, Steve J.,** 1988. Assistant Professor of Computational and Applied Mathematics

B.S. (1982), M.S. (1983) Marquette University; Ph.D. (1988) Rensselaer Polytechnic Institute

**Cramer, Dwight,** 1989. Adjunct Associate Professor of Administrative Science

A.B. (1974) Harvard University; J.D. (1978) Columbia University

**Crowell, Steven G.,** 1983. Associate Professor of Philosophy and Associate of Hanszen College

A.B. (1974) University of California at Santa Cruz; M.A. (1976) Northern Illinois University; Ph.D. (1981) Yale University

**Crump, Caryn McQuilkin,** 1986. Lecturer on Administrative Science

B.S. (1974) Indiana University; M.B.A. (1977) University of Chicago

**Cunningham, Robert A.,** 1986. Lecturer on Mechanical Engineering and Materials Science

A.A. (1943) Schriner Institute; B.S.M.E. (1949), M.S.M.E. (1955) Rice Institute

**Cunningham, R. George,** 1979. Lecturer on Architecture

B.S. (1952) University of Texas

**Curl, Robert F., Jr.,** 1958. Professor of Chemistry and Associate of Lovett College

B.A. (1954) Rice Institute; Ph.D. (1957) University of California at Berkeley

**Currall, Steven C.,** 1993. Assistant Professor of Administrative Science

B.A. (1982) Baylor University; M.Sc. (1985) London School of Economics; Ph.D. (1990) Cornell University

**Cuthbertson, Gilbert Morris,** 1963. Professor of Political Science and Resident Associate of Will Rice College

B.A. (1959) University of Kansas; Ph.D. (1963) Harvard University

**Cyprus, Joel H.,** 1965. Lecturer on Electrical and Computer Engineering

B.A., B.S.E.E. (1959) Rice Institute; M.S. (1961), Ph.D. (1963) Rice University

**Daichman, Graciela S.,** 1973. Lecturer on Spanish and Associate of Baker College

Profesorado (1958) Instituto Nacional del Profesorado en Lenguas Vivas; M.A. (1975), Ph.D.(1983) Rice University

**Dakoulas, Panajiotis (Panos) Christos,** 1987. Associate Professor of Civil Engineering and Associate of Hanszen College

Dipoloma (1980) National Technical University of Athens, Greece; M.Sc. (1982), Ph.D. (1985) Rensselaer Polytechnic Institute

**Davidson, Chandler,** 1966. Professor of Sociology

B.A. (1961) University of Texas; M.A. (1966), Ph.D. (1969) Princeton University

**Davis, Philip W.,** 1969. Professor of Linguistics

B.A. (1961) University of Texas; Ph.D. (1965) Cornell University

**Davis, Sam H., Jr.,** 1957. Professor in Chemical Engineering and Computational and Applied Mathematics and Master of Mary Gibbs Jones College

B.A. (1952), B.S. (1953) Rice Institute; ScD. (1957) MIT

**Dawson, Clint,** 1990. Assistant Professor of Computational and Applied Mathematics

B.A. (1982), M.S. (1984) Texas Tech University; Ph.D. (1988) Rice University

**De Bremaecker, Jean-Claude,** 1959. Professor of Geology and Geophysics and Associate of Jones College

Ingenieur Civil des Mines (1948) University of Louvain, Belgium; M.S. (1950) Louisiana State University; Ph.D. (1952) University of California at Berkeley

**Dennis, John E.,** 1979. Noah Harding Professor of Computational and Applied Mathematics

B.S. (1962), M.S. (1964) University of Miami; Ph.D. (1966) University of Utah

**DeRose Keith,** 1993. Assistant Professor of Philosophy

B.A. (1984) Calvin College; M.A. (1986), Ph.D. (1990) University of California at Los Angeles

**Derrick, Scott S.,** 1990. Assistant Professor of English

B.A. Albright College; M.A. (1978) University of Chicago; Ph.D. (1987) University of Pennsylvania

**D'Evelyn, Mark P.,** 1986. Assistant Professor of Chemistry

B.S. (1977) University of California at Los Angeles; Ph.D. (1982) University of Chicago

**Dharan, Bala G.,** 1982. Jesse H. Jones Distinguished Associate Professor of Accounting and Associate of Baker College

B.Tech. (1973) Indian Institute of Technology, India; M.B.A. (1975) Indian Institute of Management, India; M.S. (1977), Ph.D. (1981) Carnegie Mellon University

**Diddel, Roberta M.,** 1985. Adjunct Instructor of Psychology

B.A. (1976) Wesleyan University; Ph.D. (1989) Boston University

**Dillon, Diane,** 1993. Assistant Professor of Art and Art History

A.B. (1986) Harvard College; M.A. (1988) Williams College; Ph.D. (1993) Yale University

**Dipboye, Robert,** 1978. Professor of Psychology and Administrative Science and Associate of Sid Richardson College

B.A. (1968) Baylor University; M.S. (1969), Ph.D. (1973) Purdue University

**Disch, James G.,** 1973. Associate Professor of Human Performance and Health Sciences and Master of Sid Richardson College

B.S. (1969), M.Ed. (1970) University of Houston; P.E.D. (1973) Indiana University

**Dix, Robert H.,** 1968. Lena Gohlman Fox Professor of Political Science and Associate of Baker College

B.A. (1951), M.A. (1953), Ph.D. (1962) Harvard University

**Djidjev, Hristo,** 1992. Assistant Professor of Computer Science

B.S. (1979), M.S. (1980), Ph.D. (1984) Sofia University, Bulgaria

**Dobbins, Stella Maggio,** 1988. Lecturer on Art and Art History and Director of Sewall Art Gallery

B.A. (1964) University of Illinois; M.A. (1982) University of Houston at Clear Lake

**Dodds, Stanley A.,** 1977. Associate Professor of Physics and Associate of Wiess College

B.S. (1968) Harvey Mudd College; Ph.D. (1975) Cornell University

**Doody, Terrence Arthur,** 1970. Professor of English and Associate of Jones College

A.B. (1965) Providence College; M.A. (1969), Ph.D. (1970) Cornell University

**Dorough, Aralee,** 1990. Artist Teacher, Flute

B.Mus. (1983) Oberlin Conservatory of Music

**Doughtie, Edward Orth,** 1963. Professor of English

A.B. (1958) Duke University; A.M. (1960), Ph.D. (1964) Harvard University

**Downs, Thomas D.,** 1971. Adjunct Professor of Statistics

B.S. (1960) Western Michigan University; M.P.H. (1962), Ph.D. (1965) University of Michigan

**Dravis, Jeffrey J.,** 1987. Adjunct Associate Professor of Geology and Geophysics

B.S. (1971) St. Mary's University; M.S. (1977) University of Miami; Ph.D. (1980) Rice University

**Drew, Katherine Fischer,** 1950. Lynette S. Autrey Professor of History

B.A. (1944), M.A. (1945) Rice Institute; Ph.D. (1950) Cornell University

**Driskill, Linda P.,** 1970. Professor of English and Administrative Science and Associate of Brown College

B.A. (1961), M.A. (1968), Ph.D. (1970) Rice University

**Droxler, André W.,** 1987. Associate Professor of Geology and Geophysics and Resident Associate of Hanszen College

Diploma (1978) University of Neuchatel, Switzerland; Ph.D. (1984) University of Miami

**Duck, Ian M.,** 1963. Professor of Physics

B.S. (1955) Queen's University, Canada; Ph.D. (1961) California Institute of Technology

**Dudey, Marc Peter,** 1990. Assistant Professor of Economics

B.A. (1980) University of Wisconsin; M.A. (1986) University of Southern California; Ph.D. (1984) Princeton University

**Dufour, Reginald J.,** 1975. Professor of Space Physics and Astronomy and Associate of Brown College

B.S. (1970) Louisiana State University; M.S. (1971), Ph.D. (1974) University of Wisconsin

**Duke, Cullen A.,** 1990. Adjunct Assistant Professor of Accounting

B.A. (1979), M.Acc. (1980) Rice University

**Dunbar, Robert B.,** 1981. Associate Professor of Geology and Geophysics and Master of Baker College

B.S. (1975) University of Texas; Ph.D. (1981) University of California at San Diego

**Dunbar, Robyn Wright,** 1989. Lecturer on Geology and Geophysics and Master of Baker College

B.A. (1978) Trinity University; M.A. (1980), Ph.D. (1984) Rice University

**Dunne, Carrin,** 1975. Lecturer on Religious Studies

B.A. (1955) University of St. Thomas; M.A. (1965), Ph.D. (1970) University of Notre Dame

**Dunning, F. Barry,** 1972. Professor of Physics and of Space Physics and Astronomy and Associate of Jones College

B.Sc. (1966), Ph.D. (1969) University College, London

**Durrani, Ahmad J.,** 1982. Associate Professor of Civil Engineering and Associate of Jones College

B.S.C.E. (1968) Engineering University, Pakistan; M.S. (1975) Asian Institute of Technology, Thailand; Ph.D. (1982) University of Michigan

**Dutta, Addie,** 1993. Assistant Professor of Psychology

B.Ed. (1980) Western Washington University; M.Ed. (1988) Plymouth State College; Ph.D. (1993) Purdue University

**Dye, Ken,** 1983. Lecturer on Music; Director, Marching Owl Band

B.Mus. (1974) University of Southern California; M.A. (1980) California State University at Long Beach; D.Ed. (1983) University of Houston

**Dyson, Derek C.,** 1966. Professor of Chemical Engineering

B.A. (1955) University of Cambridge; Ph.D. (1966) University of London

**Eaker, Helen Lanneau,** 1964. Lecturer on Classics

B.A. (1944), Ph.D. (1955) University of North Carolina

**Edge, Valerie,** 1988. Lecturer on Human Performance and Health Sciences

B.S. (1963), M.S. (1977) Texas Woman's University; Ed.D. (1989) University of Houston

**Eggers, Mitchell D.,** 1991. Lecturer on Electrical and Computer Engineering

B.S. (1980), M.S. (1981), Ph.D. (1984) Texas A&M University

**Eggert, Allen W.** 1968. Lecturer on Human Performance and Health Sciences

B.S. (1963) Rice University; M.A. (1967) California Western University

**Eifler, Margret,** 1973. Professor of German and Slavic Studies and Associate of Hanszen College

B.A. (1962), M.A. (1964), Ph.D. (1969) University of California at Berkeley

**Eisner, Elmer,** 1988. Adjunct Professor of Computational and Applied Mathematics

B.S. (1939) Brooklyn College; Ph.D. (1943) Johns Hopkins University

**Ellison, Paul V.H.,** 1975. Professor of Music

B.M.E. (1965) Eastern New Mexico University; M.M. (1966) Northwestern University

**Engel, Paul S.,** 1970. Professor of Chemistry and Associate of Jones College

B.S. (1964) University of California at Los Angeles; Ph.D. (1968) Harvard University

**Engelhardt, Hugo Tristram, Jr.,** 1982. Professor of Philosophy

B.A. (1963), Ph.D. (1969) University of Texas; M.D. (1972) Tulane University School of Medicine

**Ensor, Katherine Bennett,** 1987. Associate Professor of Statistics and Associate of Lovett College

B.S.E. (1981), M.S. (1982) Arkansas State University; Ph.D. (1986) Texas A&M University

**Erdelyi, Csaba,** 1991. Professor of Viola

Diploma (1965) Bartok Conservatory; Artist Teacher Diploma (1970) Franz Liszt Academy

**Eschenbach, Christoph,** 1989. Artist-in-Residence, Conducting State Conservatory of Music, Cologne; Hamburg Conservatory of Music

**Eskin, Suzanne G.,** 1982. Adjunct Associate Professor in the Biomedical Engineering Laboratory

B.A. (1962), M.A. (1964) Rice University; Ph.D. (1969) University of Texas

**Estle, Thomas L.,** 1967. Professor of Physics

B.A. (1953) Rice Institute; M.S. (1954), Ph.D. (1957) University of Illinois

**Etnyre, Bruce R.,** 1984. Associate Professor of Human Performance and Health Sciences and Associate of Jones College

B.S. (1973) Valparaiso University; M.S. (1977) Purdue University; Ph.D. (1984) University of Texas at Austin

**Evans, Jonathan P.,** 1992. Huxley Instructor of Ecology and Evolutionary Biology

B.A. (1983) Cornell University; Ph.D. (1989) Duke University

**Fain, Michael,** 1989. Lecturer on Humanities

B.A. (1982), M.A. (1983), J.D. (1987) University of Houston

**Faubion, James D.,** 1993. Assistant Professor of Anthropology

B.A. (1980) University of Chicago; M.A. (1984), Ph.D. (1990) University of California at Berkeley

**Felleisen, Matthias,** 1987. Professor of Computer Science

M.S. (1981) University of Arizona; Ph.D. (1987) Indiana University

**Few, Arthur A. Jr.,** 1970. Professor of Space Physics and Astronomy and of Environmental Science and Associate of Brown College

B.S. (1962) Southwestern University; M.B.S. (1965) University of Colorado; Ph.D. (1969) Rice University

**Fischer, Jeanne K.,** 1992. Artist Teacher of Piano

B.Mus. (1971) Oberlin College; M.Mus (1977) New England Conservatory of Music

**Fischer, Norman,** 1992. Professor of Cello

B.Mus. (1971) Oberlin College

**Fisher, Frank M., Jr.,** 1963. Professor of Ecology and Evolutionary Biology and Associate of Jones College

B.A. (1953) Hanover College; M.S. (1958), Ph.D. (1961) Purdue University

**Fisher, G. D.,** 1973. Adjunct Professor of Chemical Engineering

B.S. (1957) University of Texas; Ph.D. (1965) Johns Hopkins University

**Fishman, Talya,** 1988. Assistant Professor of History

B.A. (1976) Wesleyan University; M.A. (1979) Jewish Theological Seminary of America; Ph.D. (1986) Harvard University

**Fleming, Jeff,** 1993. Assistant Professor of Administration Science

B.A. (1987) Cornell College; M.B.A. (1989), Ph.D. (1993) Duke University

**Flatt, Robert N.,** 1987. Adjunct Associate Professor of Administrative Science

B.A. (1969), M.E.E. (1970) Rice University; M.B.A. (1973) Harvard University

**Fleming, Jeff,** 1993. Assistant Professor of Administrative Science

B.A. (1987), M.B.A. (1989), Ph.D. (1993) Duke University

**Ford, Wally,** 1982. Lecturer on Architecture

B.S. (1975), M.C.E. (1976) Rice University

**Forman, Robin,** 1987. Associate Professor of Mathematics and Associate of Wiess College

B.A. (1981), M.A. (1981) University of Pennsylvania; Ph.D. (1985) Harvard University

**Frankowski, Ralph F.,** 1970. Adjunct Professor of Statistics

B.S. (1957), M.S. (1959) DePaul University; M.P.H. (1962), Ph.D. (1967) University of Michigan

**Fred, Herbert L.,** 1974. Adjunct Professor of Human Performance and Health Sciences

B.A. (1950) Rice Institute; M.D. (1954) Johns Hopkins University School of Medicine

**Freeman, John W.,** 1964. Professor of Space Physics and Astronomy and Honorary Master of Lovett College

B.S. (1957) Beloit College; M.S. (1961), Ph.D. (1963) University of Iowa

**Friday, A. Randall,** 1980. Lecturer on Accounting

B.B.A. (1973) University of Iowa; J.D.(1976) Stanford University

**Fukuyama, Tohru,** 1978. Professor of Chemistry

B.S. (1971), M.A. (1973) Nagoya University, Japan; Ph.D. (1977) Harvard University

**Funk, Carolyn L., 1993.** Assistant Professor of Political Science

A.B. (1984) Columbia University; M.A. (1988, Ph.D. (1993 University of California at Los Angeles

**Fultz, Lucille P.,** 1990. Assistant Professor of English

A.B. (1959) Spelman College; M.A. (1968) University of Iowa; Ph.D. (1990) Emory University

**Funk, Carolyn L.,** 1993. Assistant Professor of Political Science

A.B. (1984) Columbia University; M.A. (1988), Ph.D. (1991) University of California at Los Angeles

**Gao, Zhiyong,** 1986. Associate Professor of Mathematics and Associate of Sid Richardson College

A.A. (1965) University of Florida; B.A. (1979) Fudan University ; Ph.D. (1984) State University of New York at Stony Brook; M.D. (1969) Tulane University School of Medicine

**Gardner, Gerald H.F.,** 1990. W. H. Keck Professor of Geophysics

B.S. (1948) Trinity College, Dublin; M.Sc. (1949) Carnegie Mellon University; Ph.D. (1953) Princeton University

**Gaugler, Barbara B.,** 1987. Assistant Professor of Psychology

B.S. (1978) St. Lawrence University; M.S. (1981) Ohio University; Ph.D. (1987) Colorado State University

**Gehan, Edmund A.,** 1972. Adjunct Professor of Statistics

B.A. (1951) Manhattan University; M.S. (1953), Ph.D. (1957) North Carolina State University

**Georges, Eugenia,** 1986. Associate Professor of Anthropology

B.A. (1970) Florida Presbyterian College; M.A. (1971) Tulane University; Ph.D. (1985) Columbia University

**Gessler, Mark D.,** 1991. Adjunct Associate Professor of Administrative Science

B.S. (1983) Slippery Rock University; M.B.A. (1988) University of Tennessee

**Ghorbel, Fathi,** 1993. Assistant Professor of Mechanical Engineering and Materials Science

B.S. (1985) Pennsylvania State University; M.S. (1987) Carnegie Mellon University; Ph.D. (1990) University of Illinois

**Gibson, Kathleen R.,** 1981. Adjunct Associate Professor of Anthropology

B.A. (1963) University of Michigan; M.A. (1969), Ph.D. (1970) University of California at Berkeley

**Gibson, Susan I.,** 1993. Assistant Professor of Biochemistry and Cell Biology

B.S. (1982) Stanford University; Ph.D. (1989) Cornell University

**Gildea, Spike,** 1993. Assistant Professor of Linguistics

B.A. (1983), M.A. (1989), Ph.D. (1992) University of Oregon

**Giles, Wayne Rodney,** 1988. Adjunct Professor of Electrical and Computer Engineering

B.Sc. (1969), M.Sc. (1970) University of Alberta; M.Phil. (1971), Ph.D. (1974) Yale University

**Gillis, Malcolm,** 1993. President and Professor of Economics

B.A. (1962), M.A. (1963) University of Florida; Ph.D. (1968) University of Illinois

**Glantz, Raymon M.,** 1969. Professor of Biochemistry and Cell Biology

B.A. (1963) Brooklyn College; M.S. (1964), Ph.D. (1966) Syracuse University

**Glass, Graham P.,** 1967. Professor of Chemistry and Dean of Graduate Studies

B.S. (1960) Birmingham University, England; Ph.D. (1963) Cambridge University

**Glowinski, Roland,** 1986. Adjunct Professor of Computational and Applied Mathematics

Ph.D. (1970) University of Paris

**Goldman, Nathan C.,** 1989. Lecturer on Political Science

B.A. (1972) University of South Carolina; J.D. (1975) Duke University; M.A. (1978), Ph.D. (1980) Johns Hopkins University

**Goldman, Ronald N.,** 1990. Professor of Computer Science

B.S. (1968) MIT; M.A., Ph.D. (1973) Johns Hopkins University

**Goldsmith, Kenneth,** 1991. Associate Professor of Violin

B.M. (1966) George Peabody College for Teachers; M.A. (1968) Stanford University

**Goldsberry, Betty S.,** 1988. Adjunct Assistant Professor of Psychology

B.A. (1965) Central State University; M.A. (1978) Framingham State College; Ph.D. (1984) Rice University

**Gomer, Richard H.,** 1988. Assistant Professor of Biochemistry and Cell Biology

B.A. (1977) Pomona College; Ph.D. (1980) California Institute of Technology

**Gordon, Chad,** 1970. Professor of Sociology and Associate of Hanszen College

B.S. (1957), M.A. (1962), Ph.D. (1963) University of California at Los Angeles

**Gorry, G. Anthony,** 1976. Professor of Computer Science and Vice President for Graduate Studies, Research, and Information Systems

B.E. (1962) Yale University; M.S. (1963) University of California at Berkeley; Ph.D. (1967) MIT

**Gosain, Narendra K.,** 1981. Lecturer on Civil Engineering

B.A. (1963) University of Rajasthan, India; M.A. (1965) University of Roorkee, India; Ph.D. (1973) Rice University

**Gottlieb, David,** 1991. Lecturer on Administrative Science

B.A. (1955) Wayne State University; Ph.D. (1960) University of Chicago

**Gottschalk, Arthur W.,** 1977. Associate Professor of Music

B.Mus. (1974), M.A. (1975), D.M.A. (1978) University of Michigan

**Goux, Jean-Joseph,** 1990. Lawrence H. Favrot Professor of French

Licence de Philosophie (1965), D.E.S. Philosophie (1966), Doctorat du 3ème cycle de Philosophie (1973), Doctorat d'Etat es Lettres et Sciences Humaines (1988) Sorbonne, Paris

**Gow, Robert H.,** 1987. Lecturer on Administrative Science

B.A. (1955) Yale University

**Grandy, Richard E.,** 1980. Carolyn and Fred McManis Professor of Philosophy

B.A. (1963) University of Pittsburgh; M.A. (1965), Ph.D. (1968) Princeton University

**Griffin, Campbell A., Jr.,** 1992. Adjunct Professor of Administrative Science

A.B. (1951), A.M. (1952) University of Missouri; J.D. (1957) University of Texas

**Grob, Alan,** 1961. Professor of English and Associate of Hanszen College

B.A. (1952) Utica College; M.A. (1957), Ph.D. (1961) University of Wisconsin

**Gruber, Ira Dempsey,** 1966. Harris Masterson, Jr., Professor of History and Associate of Hanszen College

A.B. (1955), M.A. (1959), Ph.D. (1961) Duke University

**Gustin, Michael C.,** 1988. Assistant Professor of Biochemistry and Cell Biology

A.B. (1974) Johns Hopkins University; Ph.D. (1981) Yale University

**Hacker, Carl S.,** 1973. Adjunct Associate Professor of Statistics

B.S. (1963) College of William and Mary; Ph.D. (1968) Rice University

**Halas, Naomi J.,** 1989. Assistant Professor in Electrical and Computer Engineering

B.A. (1980) La Salle College; M.A. (1984), Ph.D. (1986) Bryn Mawr College

**Hamm, Keith Edward,** 1988. Associate Professor of Political Science

A.B. (1969) Franklin and Marshall College; M.A. (1972) Florida Atlantic University; Ph.D. (1977) University of Wisconsin

**Hammond, Michael P.,** 1986. Elma Schneider Professor of Music, Dean of the Shepherd School of Music and Associate of Hanszen College

B.A. (1959) Lawrence University; Honors B.A. (1959), M.A. (1961) Oxford University; L.H.D. (Hon.) (1975) Lawrence University

**Hanks, Milton,** 1981. Lecturer on Civil Engineering

A.S. (1964), B.B.A.S. (1964), M.Ed. (1977) University of Houston

**Hannan, John K.,** 1991. Adjunct Associate Professor of Administrative Science

B.A. (1975) Rice University; J.D. (1988) South Texas College of Law

**Hannon, James P.,** 1967. Professor of Physics and Associate of Wiess College

B.A. (1962), M.A. (1965), Ph.D. (1967) Rice University

**Harcombe, Elnora (Nonie),** 1989. Assistant Professor and Project Director, Center for Education

B.S. (1967) University of Michigan; M.Phil. (1969), Ph.D. (1975) Yale University

**Harcombe, Paul A.,** 1972. Professor of Ecology and Evolutionary Biology and Associate of Lovett College

B.S. (1967) Michigan State University; Ph.D. (1973) Yale University

**Hardt, Robert M.,** 1988. W. L. Moody, Jr. Professor of Mathematics

B.S. (1967) MIT; Ph.D. (1971) Brown University

**Harland, Peter W.,** 1989. Adjunct Professor of Chemistry

B.Sc. (1968) University of Wales, Aberystwyth; Ph.D. (1971) Edinburgh University

**Harter, Deborah A.,** 1990. Assistant Professor of French

B.A. (1973) University of California at Los Angeles; M.A. (1980), Ph.D. (1989) University of California at Berkeley

**Hartley, Peter Reginald,** 1986. Professor of Economics and Associate of Will Rice College

B.A. (1974), M.Ec. (1977) Australian National University; Ph.D. (1980) University of Chicago

**Harvey, F. Reese,** 1968. Edgar Odell Lovett Professor of Mathematics

B.S., M.A. (1963) Carnegie Institute of Technology; Ph.D. (1966) Stanford University

**Haskell, Thomas L.,** 1970. Samuel G. McCann Professor of History

B.A. (1961) Princeton University; Ph.D.(1973) Stanford University

**Hauge, R.H.,** 1967. Distinguished Faculty Fellow in Chemistry

B.A. (1960) Loras College; Ph.D. (1965) University of California at Berkeley

**Hauser, Nickolaus,** 1986. Lecturer on Administrative Science

B.S. (1971), M.S. (1973) Polytechnic Institute of Brooklyn; M.B.A. (1985) University of Houston

**Havens, Neil,** 1964. Professor of Drama and Honorary Associate of Jones College

B.A. (1956) Rice Institute; M.A. (1959) Indiana University

**Hayes, Edward F.,** 1987. Adjunct Professor of Chemistry

B.S. (1963) University of Rochester; M.A. (1965), Ph.D. (1966) Johns Hopkins University

**Haymes, Robert C.,** 1964. Professor of Space Physics and Astronomy and Master of Brown College

B.A. (1952), M.S. (1953), Ph.D. (1959) New York University

**Hazlewood, Carlton F.,** 1970. Adjunct Professor of Biophysics in Physics

B.S. (1957) Texas A&M University; Ph.D. (1962) University of Tennessee Medical Units at Memphis

**Heitman, Elizabeth,** 1987. Adjunct Assistant Professor of Religious Studies

B.A. (1979), M.A. (1985), Ph.D. (1988) Rice University

**Hellums, Jesse David,** 1960. A.J. Hartsook Professor of Chemical Engineering and Associate of Wiess College

B.S. (1950), M.S. (1958) University of Texas; Ph.D. (1961) University of Michigan

**Hempel, John,** 1964. Professor of Mathematics

B.S. (1957) University of Utah; M.S. (1959), Ph.D. (1962) University of Wisconsin

**Henson, Troy F.,** 1987. Lecturer on Electrical and Computer Engineering

B.S. (1965), M.S. (1966), University of Arkansas; Ph.D. (1975) University of Texas

**Hewitt, Charles H.,** 1987. Adjunct Associate Professor of Administrative Science

B.S. (1951) Montana School of Mines; M.S. (1953), Ph.D. (1956) University of Michigan

**Heymann, Dieter,** 1966. Professor of Geology and Geophysics and of Space Physics and Astronomy and Associate of Lovett College

M.S. (1954). Ph.D. (1958) University of Amsterdam, The Netherlands

**Hightower, Joe W.,** 1967. Professor in Chemical Engineering and Associate of Baker College

B.S. (1959) Harding College; M.A. (1961), Ph.D. (1963) Johns Hopkins University

**Hill, Albina Serebryakova,** 1982. Lecturer on Russian and Associate of Will Rice College

M.A. (1959) Sverdlorsk Pedagogical Institute

**Hill, Thomas W.,** 1979. Distinguished Faculty Fellow in Space Physics and Astronomy

B.A. (1967), M.S. (1971), Ph.D. (1973) Rice University

**Hirasaki, George J.,** 1989. Professor in Chemical Engineering

B.S. (1963) Lamar University; Ph.D. (1967) Rice University

**Hitchcock, Christopher R.,** 1993. Assistant Professor of Philosophy

A.B. (1986) Princeton University; M.A. (1990), Ph.D. (1993) University of Pittsburgh

**Hobby, William P.,** 1989. Radoslav A. Tsanoff Professor of Public Affairs

B.A. (1953) Rice University

**Hockett, Charles F.,** 1991. Adjunct Professor of Linguistics

B.A. (1932), M.A. (1936) Ohio State University; Ph.D. (1939) Yale University

**Holloway, Clyde,** 1977. Professor of Music

B.Mus. (1957), M.Mus. (1959) University of Oklahoma; D.S.M. (1974) Union Theological Seminary

**Horton, Wendell, Jr.,** 1967. Adjunct Professor of Space Physics and Astronomy

B.S. (1963) University of Texas at Austin; M.S. (1965), Ph.D. (1967) University of California at San Diego

**House, Waylon V.,** 1986. Adjunct Associate Professor of Chemical Engineering

B.S. (1966) MIT; M.S. (1969), Ph.D. (1974) University of Pittsburgh

**Howard, Richard,** 1991. Adjunct Professor of English

B.A. (1951), M.A. (1952) Columbia University

**Hsi, Bartholomew P.,** 1973. Adjunct Professor of Statistics
M.A. (1962), Ph.D. (1964) University of Minnesota

**Huang, Huey W.,** 1973. Professor of Physics
B.S. (1962) National Taiwan University; Ph.D. (1967) Cornell University

**Huberman, Brian Michael,** 1975. Associate Professor of Art
Certificate (1974) National Film School of Great Britain

**Hudspeth, C. M.,** 1947. Lecturer on Political Science and Associate of Wiess College
B.A. (1940) Rice Institute; J.D. (1946) University of Texas

**Hulet, Randall G.,** 1987, Associate Professor of Physics and Associate of Jones College
B.S. (1978) Stanford University; Ph.D. (1984) MIT

**Huston, J. Dennis,** 1969. Professor of English and Master of Hanszen College
B.A. (1961) Wesleyan University; M.A. (1964), Ph.D. (1966) Yale University

**Hutchinson, John S.,** 1983. Associate Professor of Chemistry and Associate of Lovett College
B.S. (1977), Ph.D. (1980) University of Texas

**Hwu, Shiou-Jyh,** 1988. Assistant Professor of Chemistry and Associate of Will Rice College
B.S. (1978) Fu-Jen Catholic University; Ph.D. (1985) Iowa State University

**Hyman, Harold M.,** 1968. William P. Hobby Professor of History and Associate of Lovett College
B.A. (1948) University of California at Los Angeles; M.A. (1950), Ph.D. (1952) Columbia University

**Iammarino, Nicholas K.,** 1978. Professor of Human Performance and Health Sciences, Associate of Sid Richardson College, and Premed Advisor
B.S. (1973) University of Dayton; M.Ed. (1975) University of Toledo; Ph.D. (1978) Ohio State University

**Ikenberry, David L.,** 1990. Assistant Professor of Administrative Science and Associate of Jones College
B.S. (1983) Pennsylvania State University; M.M. (1985) Northwestern University; Ph.D. (1990) University of Illinois

**Ingersoll, Richard J.,** 1986. Assistant Professor of Architecture
B.A. (1979), Ph.D. (1985) University of California at Berkeley

**Isle, Walter Whitfield,** 1962. Professor of English
A.B. (1955) Harvard University; M.A. (1957) University of Michigan; Ph.D. (1961) Stanford University

**Jaber, Thomas I.,** 1988. Associate Professor of Music and Director of Choral Ensembles
B.M.E. (1974) Arkansas State University; M.Mus. (1976) Indiana University

**Jansson, Birger,** 1975. Adjunct Professor of Statistics
B.A. (1946), Ph.D. (1965) University of Stockholm

**Johnson, Don Herrick,** 1977. Professor in Electrical and Computer Engineering and Statistics and Associate of Will Rice College
S.B., S.M. (1970), E.E. (1971), Ph.D. (1974) MIT

**Johnston, Dennis A.,** 1974. Adjunct Associate Professor of Statistics
B.S. (1965) Arlington State College; M.A. (1966) University of Texas; Ph.D. (1971) Texas Tech University

**Johnston, Holly Hanson,** 1990. Assistant Professor of Accounting
B.A. (1980) Westminster College; M.S. (1983), Ph.D. (1990) Carnegie Mellon University

**Jones, B. Frank, Jr.,** 1962. Noah Harding Professor of Mathematics
B.A. (1958) Rice Institute; Ph.D. (1961) Rice University

**Jones, Elizabeth A.,** 1989. Lecturer on Communication

B.A. (1973) Wayland Baptist University; M.A. (1976) University of Houston

**Jones, Roy G.,** 1967. Associate Professor of Slavic Studies

B.A. (1954), M.A. (1954) East Texas State University; Ph.D. (1965) University of Texas

**Jones, Samuel,** 1973. Professor of Music and Honorary Associate of Lovett College

B.A. (1957) Millsaps College; M.A. (1958), Ph.D. (1960) Eastman School of Music, University of Rochester

**Jump, J. Robert,** 1968. Professor of Electrical and Computer Engineering and Honorary Master of Lovett College

B.S. (1960), M.S. (1962) University of Cincinnati; M.S. (1965), Ph.D. (1968) University of Michigan

**Kamins, Benjamin C.,** 1987. Artist Teacher of Bassoon

**Karff, Samuel E.,** 1979. Lecturer on Religious Studies

A.B. (1949) Gratz College of Jewish Studies; A.B. (1953) Harvard College; M.A.H.L. (1956), D.H.L. (1961) Hebrew Union College

**Kauffmann, Robert Lane,** 1976. Associate Professor of Spanish and Associate of Hanszen College

B.A. (1970) Princeton University; Ph.D. (1981) University of California, San Diego

**Keeley, Jack W.,** 1980. Adjunct Professor in Environmental Science and Engineering

B.S. (1957) University of Oklahoma; M.S. (1958) Harvard University

**Kelber, Werner H.,** 1973. Isla Carroll Turner and Percy E. Turner Professor of Religious Studies

M.T. (1963) Princeton Theological Seminary; M.A. (1967), Ph.D. (1970) University of Chicago

**Kelly, Joseph L.,** 1991. Lecturer on Mechanical Engineering and Materials Science

B.A. (1954), B.S.M.E. (1955), M.S. (1961) Rice University

**Kemmer, Suzanne E.,** 1993. Assistant Professor of Linguistics

B.A. (1980) Rice University; M.A. (1985), Ph.D. (1988) Stanford University

**Kendall, Richard P.,** 1981. Adjunct Professor of Computational and Applied Mathematics

B.A. (1963), M.A. (1969) University of Texas; M.A. (1970), Ph.D. (1972) Rice University

**Kennedy, Kenneth W., Jr.,** 1971. Noah Harding Professor of Mathematics in the Department of Computer Science

B.A. (1967) Rice University; M.S. (1969), Ph.D. (1971) New York University

**Kimmel, Marek,** 1990. Associate Professor of Statistics

M.S. (1977), Ph.D. (1980) Silesian Technical University

**Kimura, Mineo,** 1988. Adjunct Associate Professor in Physics

B.S. (1970) Waseda University, Japan; M.Sc. (1972) University of Tokyo; Ph.D. (1981) University of Alberta, Canada

**King, Garry C.,** 1988. Adjunct Assistant Professor of Biochemistry and Cell Biology

B.S. (1980), Ph.D. (1984) University of Sydney, Australia

**Kinsey, James L.,** 1987. D.R. Bullard-Welch Foundation Professor of Science in Department of Chemistry, Dean of Natural Sciences and Associate of Sid Richardson College

B.A. (1956), Ph.D. (1959) Rice University

**Kiperman, Anita,** 1976. Lecturer on Spanish and Associate of Hanszen College

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**Kirk, David E.,** 1982. Lecturer on Music, Tuba

B.M. (1982) Juilliard School of Music

**Klein, Anne C.,** 1989. Associate Professor of Religious Studies

B.A. (1969) State University of New York at Binghamton; M.A. (1971) University of Wisconsin; Ph.D. (1981) University of Virginia

**Klineberg, Stephen L.,** 1972. Professor of Sociology and Associate of Lovett College

B.A. (1961) Haverford College; M.A. (1963) University of Paris; Ph.D. (1966) Harvard University

**Kobayashi, Riki,** 1951. Louis Calder Professor in Chemical Engineering and Associate of Will Rice College

B.S. (1944) Rice Institute; M.S.E. (1947), Ph.D. (1951) University of Michigan

**Krentel, Mark,** 1987. Assistant Professor of Computer Science and Associate of Will Rice College

B.S. (1978), M.S. (1980) Clarkson University; Ph.D. (1987) Cornell University

**Krishen, Kumar,** 1986. Adjunct Associate Professor of Electrical and Computer Engineering

B.A. (1959) Jammu & Kashmir University; M.S. (1966), Ph.D. (1969) Kansas State University

**Krouskop, Thomas A.,** 1990. Adjunct Professor in Mechanical Engineering and Materials Science

B.A. (1967), M.A. (1969), Ph.D. (1971) Carnegie Mellon University

**Kulstad, Mark,** 1975. Associate Professor of Philosophy and Associate of Hanszen College

B.A. (1969) Macalester College; Ph.D. (1975) University of Michigan

**Lairson, Bruce M.,** 1993. Assistant Professor in Mechanical Engineering and Materials Science

B.A. (1983), M.S. (1984) Cornell University; Ph.D. (1991) Stanford University

**Lairson, David Robert,** 1977. Adjunct Associate Professor of Economics

B.A. (1970), M.A., Ph.D. (1975) University of Kentucky

**Lamb, Sydney M.,** 1981. Agnes Cullen Arnold Professor of Linguistics and Semiotics

B.A. (1951) Yale University; Ph.D. (1958) University of California at Berkeley

**Lamos, Colleen R.,** 1989. Assistant Professor of English

B.A. (1978) State University of New York at Binghamton; Ph.D. (1988) University of Pennsylvania

**Lane, David M.,** 1976. Associate Professor of Psychology and Statistics and Associate of Lovett College

B.A. (1971) Clark University; M.A. (1973) Tufts University; Ph.D. (1977) Tulane University

**Laughery, Kenneth R.,** 1982. Henry R. Luce Professor of Psychology

B.S. (1957), M.S. (1959), Ph.D. (1961) Carnegie Mellon University

**Laux, Lila F.,** 1988. Adjunct Lecturer on Psychology

B.S. (1961) Rice University; M.S. (1979) University of Southwestern Louisiana; Ph.D. (1986) Rice University

**Lavenda, Richard A.,** 1987. Associate Professor of Theory and Composition and Associate of Baker College

B.A. (1977) Dartmouth College; M.Mus. (1979) Rice University, D.M.A. (1983) University of Michigan

**Leal, Maria Teresa,** 1965. Professor of Spanish and Portuguese and Resident Associate of Will Rice College

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**Ledley, Tamara A.S.,** 1985. Senior Faculty Fellow in Space Physics and Astronomy

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**Lee, Eva J.,** 1969. Professor of Human Performance and Health Sciences, and Associate of Jones College

B.S. (1962) North Texas State University; M.Ed. (1967) Sam Houston State University; Ed.D. (1974) Louisiana State University

**Leeman, William P.,** 1977. Professor of Geology and Geophysics and Associate of Sid Richardson College

B.A. (1967), M.A. (1969) Rice University; Ph.D. (1974) University of Orgeon

**Lerup, Lars,** 1993. Dean of the School of Architecture and Harry K. and Albert K. Smith Professor of Architecture

B. Arch. (1968) University of California at Berkeley; M. Arch. (1970) Harvard University

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B.S. (1976) University of South Carolina; M.S. (1978), Ph.D. (1984), Stanford University

**Lewis, Patricia N.,** 1993. Lecutrer on Communication

B.A. (1966) Mount Holyoke College; M.A. (1967) Harvard University; Ph.D. (1971) University of Michigan; M.B.A. (1985) Rice University

**Liang, Edison P.,** 1991. Professor of Space Physics and Astronomy

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**Lidvall, Christine A.,** 1988. Lecturer on Human Performance and Health Sciences

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A.B. (1947), A.M. (1948) University of Cincinnati; Ph.D. (1952) Columbia University

**Lohrenz, Terry,** 1992. G.C. Evans Instructor of Mathematics

A.B. (1984) Harvard University; Ph.D. (1991) Rutgers University

**Lombard, Jeanette,** 1982. Artist Teacher of Voice

Artists Diploma (1957) Teatro Lirico Sperimentale di Spoleto, Italy; Certificate (1958) Accademia di Santa Cecilia, Rome, Italy

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B.A. (1966) Stanford University; M.A. (1974), Ph.D. (1979) Brandeis University

**Long, Kelly A.,** 1988. Assistant Professor of Human Performance and Health Sciences

B.S. (1982) University of Illinois; M.S. (1983) Colorado State University; Ph.D. (1988) Kansas University

**Longino, Helen,** 1990. Associate Professor of Philosophy

B.A. (1966) Barnard College; M.A. (1967) University of Sussex; Ph.D. (1973) Johns Hopkins University

**Luca, Sergiu,** 1983. Dorothy Richard Starling Professor of Violin

Artists Diploma (1966) Curtis Institute of Music

**Lurie, Susan,** 1987. Assistant Professor of English and Associate of Lovett College

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**Lynch, Edward C.,** 1970. Adjunct Professor in the Biomedical Engineering Laboratory

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**Maas, Michael,** 1984. Associate Professor of History and Associate of Baker College

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**Mackie, Hilary S.,** 1993. Assistant Professor of Classics

B.A. (1987) Cambridge University; Ph.D. (1993) Princeton University

**Malone, David R.,** 1983. Lecturer in Music, Double Bass

B.Mus. (1981), M.Mus. (1981) Rice University

**Manca, Joseph,** 1989. Associate Professor of Art and Art History

B.A. (1978) University of Rochester; M.A. (1980), M.Phil. (1982), Ph.D. (1986) Columbia University

**Mandel, James P.,** 1986. Lecturer on Accounting

B.S. (1967), M.B.A. (1969), Ph.D. (1973) University of Illinois

**Marcus, George E.,** 1975. Professor of Anthropology

B.A. (1968) Yale University; Ph.D. (1976) Harvard University

**Mardis, Jerlyn Leigh,** 1988. Lecturer on Communication

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**Marenchin, Leslie M.,** 1990. Mellon Assistant Professor of Philosophy

B.A. (1976) Millersville University; M.A. (1983), Ph.D. (1987) Rice University

**Margrave, John L.,** 1963. E.D. Butcher Professor of Chemistry

B.S. (1948), Ph.D. (1951) University of Kansas

**Martin, Randi C.,** 1982. Professor of Psychology and Associate of Baker College

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**Martin, William C.,** 1968. Professor of Sociology and Associate of Sid Richardson College

B.A. (1958), M.A. (1960) Abilene Christian College; B.D. (1963) Harvard Divinity School; Ph.D. (1969) Harvard University

**Massimino, Michael J.,** 1992. Adjunct Assistant Professor in the Department of Mechanical Engineering and Materials Science

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**Massey, Richard P.,** 1989. Lecturer on Electrical and Computer Engineering and Associate of Will Rice College

B.A. (1953), B.S. (1954) Rice University; M.S. (1962) Columbia University

**Masters, Quentin S.,** 1991. Professor of Naval Science

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**Matherly, Cheryl A.,** 1992. Lecturer on Humanities

B.A. (1989) University of New Mexico; M.S. (1991) Indiana University

**Matthews, Kathleen Shive,** 1972. Harry C. Wiess and Olga Keith Wiess Professor of Biochemistry

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**Matusow, Allen Joseph,** 1963. William Gaines Twyman Professor of History and Dean of the School of Humanities

B.A. (1958) Ursinus College; M.A. (1959), Ph.D. (1963) Harvard University

**McCormack, John,** 1989. Adjunct Professor of Administrative Science

**McDonald, Edward D.,** 1990. Adjunct Professor of Administrative Science

B.S. (1962), M.S. (1964) Rice University

**McEvilley, Thomas,** 1969. Visiting Lecturer on Art History

B.A. (1963) University of Cincinnati; M.A. (1965) University of Washington; Ph.D. (1968) University of Cincinnati

**McIntire, Larry V.,** 1970. E.D. Butcher Professor of Chemical and Biomedical Engineering

B.Ch.E., M.S. (1966) Cornell University; M.A. (1968), Ph.D. (1970) Princeton University

**McIntosh, Roderick J.,** 1980. Professor of Anthropology

B.A. (1973) Yale University; M.Litt. (1975), Ph.D. (1979) Trinity College, University of Cambridge

**McIntosh, Susan Keech,** 1980. Professor of Anthropology

B.A. (1975) Girton College, University of Cambridge; M.A. (1976), Ph.D. (1979) University of California at Santa Barbara

**McKee, Elysabeth Y.B.,** 1990. Assistant Professor of Architecture

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**McKenny, Gerald P.,** 1989. Assistant Professor of Religious Studies

A.B. (1979) Wheaton University; M.Div. (1982) Princeton; Ph.D. (1989) University of Chicago

**McLellan, Rex B.,** 1964. Professor of Materials Science and Associate of Brown College

B.Met. (1957) Sheffield University; Ph.D. (1962) Leeds University

**McNeil, Linda M.,** 1984. Associate Professor of Education and Associate of Jones College

B.A. (1966), Texas Tech University; M.A. (1968), Baylor University; Ph.D. (1977) University of Wisconsin at Madison

**Meade, Andrew, J.,** 1989. Assistant Professor of Mechanical Engineering

B.S. (1982) Rice University; M.S. (1984), Ph.D. (1989) University of California at Berkeley

**Meakin, Christopher H.,** 1992. Lecturer on Administrative Science

B.B.A. (1983) Texas A&M University; J.D. (1987) University of Houston; M.A. (1988) Rice University

**Meconi, Honey,** 1987. Associate Professor of Musicology in the Shepherd School of Music

A.B. (1974) Pennsylvania State University; A.M. (1980) Harvard University; Ph.D. (1986) Harvard University

**Meixner, John,** 1968. Professor of English and Associate of Sid Richardson College

B.A. (1951) City College of New York; M.A. (1953), Ph.D. (1957) Brown University

**Mellor-Crummy, John M.,** 1989. Faculty Fellow in Computer Science

B.S.E. (1984) Princeton University; M.S. (1986), Ph.D. (1989) University of Rochester

**Mersereau, Rebecca,** 1991. Assistant Professor of Art and Art History

B.A. (1978) Indiana University; M.A. (1982) University of Missouri; M.A. (1986), Ph.D. (1991) Bryn Mawr College

**Merwin, John E.,** 1955. Professor of Civil Engineering

B.A. (1952), B.S.M.E. (1953), M.S.M.E. (1955) Rice Institute; Ph.D. (1962) University of Cambridge

**Michel, F. Curtis,** 1963. Andrew Hays Buchanan Professor of Astrophysics in the Departments of Space Physics and Astronomy and of Physics and Associate of Jones College

B.A. (1955), Ph.D. (1962) California Institute of Technology

**Michie, Helena,** 1990. Professor of English

B.A. (1979) Princeton University; Ph.D. (1984) University of Pennsylvania

**Miele, Angelo,** 1964. A.J. Foyt Family Professor in Engineering in the Department of Mechanical Engineering and Materials Science and the Department of Computational and Applied Mathematics

Dr. C.E. (1944), Dr. A. E. (1946) University of Rome

**Mieszkowski, Peter,** 1981. Allyn R. and Gladys M. Cline Professor of Economics and Finance

B.S. (1957), M.A. (1959) McGill University; Ph.D. (1963) Johns Hopkins University

**Miettinen, Hannu E.,** 1977. Associate Professor of Physics

Fil. Kand. (1967), Fil. Lic. (1971) University of Helsinki; Ph.D. (1975) University of Michigan

**Mikos, Antonios G.,** 1991. Assistant Professor of Chemical Engineering and Associate of Sid Richardson College

Diploma (1983) Aristotle University of Thessaloniki, Greece; M.S. (1985), Ph.D. (1988) Purdue University

**Milburn, Ellsworth,** 1975. Professor of Music and Associate of Baker College

A.B. (1962) University of California at Los Angeles; M.A. (1968) Mills College; D.M.A. College-Conservatory of Music, University of Cincinnati

**Miller, Christopher M.,** 1991. Assistant Professor of Administrative Science and Associate of Jones College

B.A. (1982), M.S. (1983) University of Santa Cruz; Ph.D. (1990) University of Oregon

**Miller, Clarence A.,** 1981. Professor in Chemical Engineering and Associate of Baker College

B.A., B.S. (1961) Rice University; Ph.D. (1969) University of Minnesota

**Miller, Leslie M.,** 1993. Faculty Fellow in Education

B.S. (1969) University of Texas; M.S. (1970) Florida State University; Ph.D. (1972) University of Texas

**Miller, Mindi,** 1989. Lecturer on Human Performance and Health Sciences

B.S. (1973) Southern Missionary College; M.S. (1976) University of Florida; M.A. (1980) University of New Mexico; Ph.D. (1985) Rice University

**Milun, Kathryn,** 1991. Assistant Professor of Anthropology

B.A. (1978), M.A. (1988), Ph.D. (1991) University of Minnesota

**Minter, David,** 1990. Libbie Shearn Moody Professor of English and Master of Jones College

B.A. (1957), M.A. (1959) North Texas State University; B.D. (1961), Ph.D. (1965) Yale University

**Mitchell, E. Douglas,** 1981. Adjunct Professor of Linguistics

B.A. (1952) Baylor University; Ph.D. (1966) University of Texas

**Moorhead, Louise C.,** 1986. Adjunct Assistant Professor of Chemical Engineering

B.A. (1969) University of South Florida; M.D. (1973) University of Florida at Gainesville

**Morgan, T. Clifton,** 1987. Associate Professor of Political Science and Associate of Sid Richardson College

B.A. (1978) University of Oklahoma; M.A. (1980), Ph.D. (1986) University of Texas at Austin

**Morris, Wesley Abram,** 1968. Professor of English

B.A. (1961), M.A. (1963) University of Kentucky; Ph.D. (1968) University of Iowa

**Morrison, Donald Ray,** 1988. Associate Professor of Philosophy and Resident Associate of Sid Richardson College

B.A. (1977) Carleton College; Ph.D. (1983) Princeton University

**Morshedi, A. Michael,** 1987. Adjunct Professor of Computational and Applied Mathematics

B.S. (1969), M.S. (1971), Ph.D. (1973) University of Missouri

**Murphree, Dennis E.,** 1992. Lecturer on Administrative Science

B.A. (1969) Southern Methodist University; M.B.A. (1971) University of Pennsylvania

**Murray, Russell,** 1990. Visiting Assistant Professor of Music History and Musicology

B.A., B.M.E. (1978), University of the Redlands; M.M.E. (1980), Ph.D. (1989) University of North Texas

**Murray, William B.,** 1992. Associate Professor of Voice

B.A. (1956) Adelphi University; Certificate (1958) Università de Perugia; Certificate (1958) Yale University School of Languages; Certificate (1960) Goethe Institut, Blaubeuren, Germany

**Mutchler, Gordon S.,** 1968. Professor of Physics

B.S. (1960), Ph.D. (1966) MIT

**Naficy, Hamid,** 1993. Assistant Professor of Art and Art History

B.A. (1968) University of Southern California; M.F.A. (1971), Ph.D. (1990) University of California at Los Angeles

**Napier, H. Albert,** 1983. Associate Professor of Administrative Science and Psychology

B.A. (1966), M.B.A. (1968), Ph.D. (1971) University of Texas at Austin

**Neagley, Linda E.,** 1993. Assistant Professor of Art and Art History

B.A. (1971) Russell Sage College; M.A. (1976), Ph.D. (1983) Indiana University

**Nelson, Deborah Hubbard,** 1974. Professor of French and Associate of Brown College

B.A. (1960) Wittenberg University; Certificat d'etudes Francaises, Ier Degré (1961) University of Grenoble, France; M.A. (1964), Ph.D. (1970) Ohio State University

**Newman, James H.,** 1985. Adjunct Assistant Professor of Space Physics and Astronomy

B.A. (1978) Dartmouth College; M.A. (1982), Ph.D. (1984) Rice University

**Newton, Norma,** 1982. Artist Teacher of Voice

B.Mus. (1958) Syracuse University; M.Mus. (1962) University of Texas

**Nikonowicz, Edward P.,** 1993. Assistant Professor of Biochemistry and Cell Biology

B.S. (1985) St. Louis University; Ph.D. (1990) Purdue University

**Nirenberg, David,** 1992. Assistant Professor of History

B.A. (1986) Yale University; M.A. (1989), Ph.D. (1992) Princeton University

**Nordgren, Ronald P.,** 1989. Herman and George R. Brown Professor of Civil Engineering and Mechanical Engineering and Materials Science and Associate of Will Rice College

B.S. (1957), M.S. (1958) University of Michigan; Ph.D. (1962) University of California at Berkeley

**Norlander, Peter,** 1989. Associate Professor of Physics

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**O'Dell, Charles Robert,** 1982. Andrew Hays Buchanan Professor of Astrophysics in the Department of Space Physics and Astonomy

B.S.Ed. (1959) Illinois State University; Ph.D. (1962) University of Wisconsin

**Odhiambo, Atieno,** 1988. Professor of History

B.A. (1970) Makerere University College; Ph.D. (1973) University of Nairobi

**Oldow, John Steven,** 1978. Professor of Geology and Geophysics

B.S. (1972) University of Washington; Ph.D. (1978) Northwestern University

**Olson, John Steven,** 1973. Professor of Biochemistry and Cell Biology and Associate of Hanszen College

B.S. (1968) University of Illinois; Ph.D. (1972) Cornell University

**Oraevsky, Alexander A.,** 1993. Faculty Fellow in Electrical and Computer Engineering

B.S. (1977), M.S. (1980) Moscow Physics and Engineering Institute; Ph.D. (1986) USSR Academy of Sciences, Moscow

**O'Sullivan, Elizabeth C.,** 1993. Assistant Professor of Communications

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**Overall, John E.,** 1983. Adjunct Professor of Psychology

B.S. (1954) Trinity University; M.A. (1956), Ph.D. (1958) University of Texas at Austin

**Page, Paula,** 1985. Artist Teacher, Harp

B.Mus. (1969) Cleveland Institute of Music

**Palmer, Graham A.,** 1974. Professor of Biochemistry and Cell Biology and Associate of Sid Richardson College

B.S. (1957), Ph.D. (1962) University of Sheffield

**Parry, Ronald J.,** 1978. Professor of Chemistry

B.A. (1964) Occidental College; Ph.D. (1968) Brandeis University

**Parsons, Spencer W.,** 1969. Associate Professor of Architecture

B.A. (1953) University of Michigan; M.Arch. (1963) Harvard University

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B.A. (1979) Brandeis University; M.Div. (1982) Yale University; Ph.D. (1993) University of Chicago

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B.S. (1950) Louisiana State University; M.S. (1952) Rice University; Sc.D. (1955) MIT

**Patten, Robert L.,** 1969. Professor of English

B.A. (1960) Swarthmore College; M.A. (1962), Ph.D. (1965) Princeton University

**Peaceman, Donald W.,** 1983. Adjunct Professor of Computational and Applied Mathematics

B.Ch.E. (1947) College of the City of New York; Sc.D. (1952) MIT

**Pearson, James Boyd, Jr.,** 1965. J.S. Abercrombie Professor in Electrical and Computer Engineering

B.S.E.E. (1958), M.S.E.E. (1959) University of Arkansas; Ph.D. (1962) Purdue University

**Perez, J. Bernardo,** 1979. Associate Professor of Spanish and Associate of Sid Richardson College

Licenciatura (1972) Universidad de Granada, Spain; M.A. (1974), Ph.D. (1982) University of Iowa

**Perry, John,** 1983. Artist Teacher, Piano

B.Mus. (1956), M.Mus. (1957) Eastman School of Music, University of Rochester

**Peters, Albert W.,** 1983. Lecturer on Human Performance and Health Sciences

**Pfeiffer, Paul E.,** 1947. Professor of Computational and Applied Mathematics and Associate of Brown College

B.S.E.E. (1938) Rice Institute; B.D. (1943) Southern Methodist University; M.S.E.E. (1948), Ph.D. (1952) Rice Institute

**Pharr, George M.,** 1980. Professor of Materials Science and Engineering and Master of Wiess College

B.S.M.E. (1975) Rice University; M.S.M.S. (1977), Ph.D. (1979) Stanford University

**Phenix, Linda G.,** 1981. Instructor of Human Performance and Health Sciences

B.F.A. (1977) University of Texas; M.A. (1978) Sam Houston State University

**Phillips, Jr., George N.,** 1987. Professor of Biochemistry and Cell Biology

B.S. (1974), Ph.D. (1976) Rice University

**Philpott, Charles William,** 1964. Professor of Ecology and Evolutionary Biology and Master of Wiess College

B.A. (1957), M.S. (1958) Texas Technological College; Ph.D. (1962) Tulane University

**Pier, Stanley M.,** 1974. Adjunct Associate Professor of Environmental Science

B.S. (1948) Brooklyn College; Ph.D. (12952) Purdue University

**Piper, William Bowman,** 1969. Professor of English

B.A. (1951) Harvard University; M.A. (1952) Columbia University; Ph.D. (1958) University of Wisconsin

**Poindexter, Hally Beth W.,** 1965. Professor of Human Performance and Health Sciences and Associate of Jones College

B.A. (1947) Rice Institute; B.S. (1949) University of Houston; M.A. (1950) University of Northern Colorado; Ed.D. (1957) Columbia University

**Polanyi, Livia,** 1988. Associate Professor of Linguistics

B.A. (1969) Goddard College; M.A. (1975), Ph.D. (1978) University of Michigan

**Polking, John C.,** 1968. Professor of Mathematics and Associate of Baker College

B.S. (1956) University of Notre Dame; M.S. (1961), Ph.D., (1966) University of Chicago

**Pomerantz, James R.,** 1988. Elma W. Schneider Professor of Psychology, Dean of the School of Social Sciences and Associate of Lovett College

B.A. (1968) University of Michigan; Ph.D. (1974) Yale University

**Pope, Albert H.,** 1986. Associate Professor of Architecture

B.Arch. (1978) Southern California Institute of Architecture; M.Arch. (1986) Princeton University

**Poulos, Basilios N.,** 1975. Professor of Art and Associate of Brown College

B.F.A. (1965) Atlanta School of Art; M.F.A. (1968) Tulane University

**Pyung-Soo, Kim,** 1981. Lecturer on Human Performance and Health Sciences

B.A. (1963) Han Kuk University, Korea

**Qian, Nanxiu,** 1993. Assistant Professor of Linguistics

M.A. (1982), M.Ph. (1991), Nanjing University

**Queller, David C.,** 1989. Assistant Professor of Ecology and Evolutionary Biology

B.A. (1976) University of Illinois; M.S. (1978), Ph.D. (1982) University of Michigan

**Quillen, Carol E.,** 1989. Assistant Professor of History

B.A. (1983) University of Chicago; Ph.D. (1991) Princeton University

**Quinones, Miguel A.,** 1993. Assistant Professor of Psychology

B.S. (1987) Texas A&M University; M.A. (1991), Ph.D. (1993) Michigan State University

**Quiocho, Florante A.,** 1972. Adjunct Professor of Biochemistry and Cell Biology

B.S. (1959) Central Philippine University; M.S. (1961) Howard University; Ph.D. (1966) Yale University

**Rabson, Thomas Avelyn,** 1959. Professor of Electrical and Computer Engineering

B.A. (1954), B.S.E.E. (1955), M.A. (1957), Ph.D. (1959) Rice Institute

**Rachleff, Larry,** 1991. Associate Professor of Conducting

B.S. (1977) University of Connecticut; M.M. (1979) University of Michigan

**Ramaswamy, Balasubramaniam,** 1989. Assistant Professor in Mechanical Engineering and Materials Science and Associate of Sid Richardson College

B.S. (1980) University of Madras; M.S. (1982) Indian Institute of Technology; Ph.D. (1987) Chuo University

**Rankine, Graeme,** 1990. Assistant Professor of Accounting and Associate of Brown College

B.Ec. (1975) Australian National University; Ph.D. (1987) University of Washington

**Rau, Carl,** 1983. Professor of Physics

Diplom-Physiker (1967), Dr.rer.nat. (1970) Technical University, Munich, Germany

**Rau, Hsiu-hua,** 1992. Assistant Professor of Economics

B.A. (1977), M.A. (1979) National Taiwan University; M.A. (1984), M.Ph. (1989), Ph.D. (1992) Yale University

**Raymond, Richard L.,** 1986. Adjunct Professor of Environmental Science

B.S. (1947), M.S. (1951) University of Illinois

**Rea, Joan,** 1968. Associate Professor of Spanish and Portuguese

B.A. (1954) New York University; M.A. (1964) University of Houston; Ph.D. (1970) University of Texas

**Reiff, Patricia H.,** 1992. Professor of Space Physics and Astronomy

B.S. (1971) Oklahoma State University; M.S. (1974), Ph.D. (1975) Rice University

**Reiner, Martin A.,** 1985. Lecturer on Architecture

B.A. (1966) City College of City University of New York; M.P.A. (1968) Ph.D. (1973) Maxwell School, Syracuse University

**Reiser, Stanley J.,** 1983. Adjunct Professor of Religious Studies

A.B. (1959) Columbia University; M.D. (1963) State University of New York, Downstate Medical Center; M.P.A. (1966) John F. Kennedy School of Government, Harvard University; Ph.D. (1970) Harvard University

**Reuben, Jeffrey D.,** 1988. Adjunct Assistant Professor in Mechanical Engineering and Materials Science

B.S.M.E. (1973) Lehigh University; M.D., Ph.D. (1973-1981) Case Western Reserve University

**Riese, W.C. Rusty,** 1985. Adjunct Assistant Professor of Geology and Geophysics

B.S. (1973) New Mexico Institute of Mining and Technology; M.S. (1977), Ph.D. (1980) University of New Mexico

**Risser, William L.,** 1988. Adjunct Professor of Human Performance and Health Sciences

B.A. (1960) Harvard College; M.A. (1968) Harvard University; M.D. (1972) Yale Medical School

**Robert, Mark A.** 1984. Professor in Chemical Engineering

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**Roberts, Jabus B., Jr.,** 1975. Professor of Physics

B.A. (1965) Columbia University; Ph.D. (1969) University of Pennsylvania

**Rodarte, Joseph R.,** 1990. Adjunct Professor in Mechanical Engineering and Materials Science

B.A. (1960) Rice Institute; M.D. (1964) Harvard Medical School

**Roediger, Henry L.,** 1988. Lynette S. Autrey Professor of Psychology

B.A. (1969) Washington & Lee University; Ph.D. (1973) Yale University

**Rose, Beatrice S.,** 1977. Lecturer on Music, Harp

**Ross, David, III,** 1979. Lecturer on Administrative Science

B.A. (1962) Yale University; M.B.A. (1970) Harvard University

**Rosthal, Susan S.,** 1993. Lecturer on Communication

B.A. (1968) University of Puget Sound; M.A. (1971) Columbia University; M.B.A. (1989) Rice University

**Roux, Robert,** 1990. Associate Professor of Piano and Chair, Keyboard

B.Mus. (1970) Loyola University; M.Mus. (1978), D.M.A. (1980) University of Texas at Austin

**Rudolph, Frederick B.,** 1972. Professor of Biochemistry and Cell Biology

B.S. (1966) University of Missouri; Ph.D. (1971) Iowa State University

**Ryan, Frank, 1990.** Vice President for External Affairs and Professor of Mathematics and Computational and Applied Mathematics

B.S. (1958), M.S. (1961), Ph.D. (1965) Rice University

**Samuels, Danny M.,** 1981. Visiting Professor of Architecture

B.Arch. (1971) Rice University

**San, Ka-Yiu,** 1984. Associate Professor in Chemical Engineering and Associate of Sid Richardson College

B.S. (1978) Rice; Ph.D. (1984) California Institute of Technology

**Sanborn, Hugh W.,** 1973. Adjunct Assistant Professor of Religious Studies

A.B. (1962) Muhlenberg College; B.D. (1967) Andover Newton Theological Seminary; Ph.D. (1975) University of Iowa

**Sanborn, Robert D.,** 1989. Lecturer on Humanities

B.A. (1980) Florida State University; M.S. (1985) Northern Illinois University

**Sanders, Paula,** 1987. Associate Professor of History

B.A. (1977) Northwestern University; M.A. (1981), Ph.D. (1984) Princeton University

**Sass, Ronald L.,** 1958. Professor of Ecology and Evolutionary Biology, Chemistry, and Education and Honorary Associate of Hanszen College and Associate of Jones College

A.B. (1954) Augustana College; Ph.D. (1957) University of Southern California

**Sauerbrey, Roland,** 1985. Professor in Electrical and Computer Engineering

Dip. (1978); Ph.D. (1981) University Wuerzburg, West Germany

**Savit, Carl H.,** 1988. Adjunct Professor of Geology and Geophysics

B.S. (1942), M.S. (1943) California Institute of Technology

**Sawyer, Dale S.,** 1988. Associate Professor of Geology and Geophysics

B.S. (1976) Purdue University; Ph.D. (1982) MIT

**Schaezler, Donald J.,** 1979. Adjunct Associate Professor of Environmental Science and Engineering and Chemical Engineering

B.A. (1966), B.S. (1967), Ph.D. (1970) Rice University

**Schäffer, Alejandro A.,** 1988. Assistant Professor of Computer Science

B.S. (1983), M.S. (1983) Carnegie Mellon University; Ph.D. (1988) Stanford University

**Schnoebelen, Anne,** 1974. Joseph and Ida Kirkland Mullen Professor of Music

B.A. (1958) Rosary College; M.Mus. (1960), Ph.D. (1966) University of Illinois

**Schroepfer, George J., Jr.,** 1972. Ralph and Dorothy Looney Professor of Biochemistry and Cell Biology and Chemistry

B.S. (1955), M.D. (1957), Ph.D. (1961) University of Minnesota

**Schuler, Douglas A.,** 1992. Assistant Professor of Administrative Science

B.S. (1985) University of California at Berkeley; Ph.D. (1992) University of Minnesota

**Scott, David W.,** 1979. Professor of Statistics

B.A. (1972), M.A., Ph.D. (1976) Rice University

**Scuseria, Gustavo E.,** 1989. Associate Professor of Chemistry

M.S. (1979), Ph.D. (1983) University of Buenos Aires

**Sears, David A.,** 1983. Adjunct Professor in the Biomedical Engineering Laboratory

B.S. (1953) Yale University; M.S. (1958), M.D. (1959) University of Portland Medical School

**Sedlak, John M.,** 1990. Lecturer on Civil Engineering

B.A. (1973), M.S. (1974) Pennsylvania State University

**Seed, Patricia,** 1982. Associate Professor of History

B.A. (1971) Fordham University; M.A. (1975) University of Texas; Ph.D. (1980) University of Wisconsin

**Sellers, James,** 1971. David Rice Professor of Ethics

B.E.E. (1947) Georgia Institute of Technology; M.S. (1952) Florida State University; Ph.D. (1958) Vanderbilt University

**Semmes, Stephen W.,** 1987. Professor of Mathematics

B.S. (1980) Armstrong State College; Ph.D. (1983) Washington University

**Shaddix, Mallory Campbell,** 1991. Lecturer on Administrative Science

B.A. (1972), M.B.A. (1975) University of Texas at Austin

**Shank, C. Dean, Jr.,** 1984. Artist Teacher of Secondary Piano and Piano Technology and Associate of Sid Richardson College

B.Mus. (1968), M.Mus. (1971) North Texas State University

**Shanks, Jacqueline V.,** 1988. Associate Professor in Chemical Engineering

B.S. (1983) Iowa State University; Ph.D. (1989) California Institute of Technology

**Sher, George,** 1991. Herbert S. Autrey Professor of (Humanities) Philosophy

B.A. (1964) Brandeis University; Ph.D. (1972) Columbia University

**Sherman, Daniel J.,** 1990. Assistant Professor of French and History

A.B. (1980) Harvard University; M.A. (1981), Ph.D. (1985) Yale University

**Sherman, William H.,** 1986. Associate Professor of Architecture

A.B. (1977) Princeton University; M.Arch. (1982) Yale University

**Shirley, Dennis L.,** 1988. Associate Professor of Education and Master of Will Rice College

B.A. (1977) University of Virginia; M.A. (1981) New School for Social Research; Ed.D. (1988) Harvard University

**Shockley, Richard L., Jr.,**1992. Assistant Professor of Administrative Science

B.S. (1984) University of Virginia; Ph.D. (1992) University of Indiana

**Sickles, Robin,** 1985. Professor of Economics and Statistics

B.S. (1972) Georgia Institute of Technology; Ph.D. (1976) University of North Carolina

**Silverstein, Gordon,** 1992. Assistant Professor of Administrative Science and Political Science and Resident Associate of Lovett College

B.A. (1981) Cornell University; Ph.D. (1991) Harvard University

**Sinclair, James B.,** 1978. Associate Professor of Electrical and Computer Engineering and Associate of Brown College

B.S.E.E. (1973), M.E.E. (1974), Ph.D. (1979) Rice University

**Sisson, Virginia B.,** 1992. Assistant Professor of Geology and Geophysics

A.B. (1979) Bryn Mawr; M.A. (1981), Ph.D. (1985) Princeton University

**Skaggs, Ray H.,** 1972. Adjunct Professor of Human Performance and Health Sciences

B.A. (1942) Rice Institute; M.D. (1945) University of Texas

**Skura, Meredith,** 1978. Professor of English

B.A. (1965) Swarthmore College; Ph.D. (1971) Yale University

**Smayling, Michael C.,** 1989. Lecturer on Electrical and Computer Engineering

B.S. (1972) University of Minnesota; M.S. (1975), Ph.D. (1981) Rice University

**Smalley, Richard E.,** 1976. Norman and Gene Hackerman Professor of Chemistry and Professor of Physics

B.S. (1965) University of Michigan; M.A. (1971), Ph.D. (1973) Princeton University

**Smith, David P.,** 1982. Adjunct Professor of Sociology

B.A. (1962) University of California at Berkeley; Ph.D. (1979) Harvard University

**Smith, George,** 1981. Associate Professor of Art

B.F.A. (1969) San Francisco Art Institute; M.A. (1972) Hunter College

**Smith, Gordon W.,** 1968. Professor of Economics

A.B. (1956) Washington University; Ph.D. (1966) Harvard University

**Smith, Ken A.,** 1975. Distinguished Faculty Fellow in Space Physics and Astronomy and in Physics

B.A. (1970), M.S. (1973), Ph.D. (1975) Rice University

**Smith, Richard J.,** 1973. Professor of History and Associate of Hanszen College

B.A. (1965), M.A. (1968), Ph.D. (1972) University of California at Davis

**Snow, Edward A.,** 1981. Professor of English and Associate of Hanszen College

B.A. (1964) Rice University; M.A. (1966) University of California at Riverside; Ph.D. (1969) State University of New York at Buffalo

**Soligo, Ronald,** 1967. Professor of Economics and Associate of Lovett College

B.A. (1958) University of British Columbia; Ph.D. (1964) Yale University

**Sorensen, Danny C.,** 1989. Professor of Computational and Applied Mathematics

B.S. (1972) University of California at Davis; M.A. (1975), Ph.D. (1977) University of California at San Diego

**Spanos, Pol D.,** 1984. Lewis B. Ryon Professor of Mechanical Engineering and Civil Engineering

Dip. (1973) National Technical University (Greece); M.S. (1974), Ph.D. (1976) California Institute of Technology

**Sparagana, John,** 1989. Assistant Professor of Art

B.G.S. (1980) University of Michigan; M.F.A. (1987) Stanford University

**Spence, Dale W.,** 1963. Professor of Human Performance and Health Sciences

B.S. (1956) Rice Institute; M.S. (1959) North Texas State University; Ed.D. (1966) Louisiana State University

**Stebbings, Ronald F.,** 1968. Professor of Space Physics and Astronomy and of Physics

B.Sc. (1952), Ph.D. (1956) University College, London

**Stein, Robert M.,** 1979. Professor of Political Science and Associate of Jones College

B.A. (1972) Ohio Wesleyan University; M.A. (1974), Ph.D. (1977) University of Wisconsin at Milwaukee

**Stern, Michael,** 1991. Assistant Professor of Biochemistry and Cell Biology

B.S. (1978) Stanford University; Ph.D. (1985) University of California at San Francisco

**Stevenson, Paul M.,** 1984. Professor of Physics and Associate of Brown College

B.A. (1976) Cambridge University; Ph.D. (1979) Imperial College

**Stewart, Charles R.,** 1969. Professor of Biochemistry and Cell Biology and Associate of Jones College

B.S. (1962) University of Wisconsin; Ph.D. (1967) Stanford University

**Stice, Earl K.,** 1990. Assistant Professor of Accounting and Associate of Hanszen College

B.S. (1981), M.A. (1982) Brigham Young University; M.S. (1986), Ph.D. (1988) Cornell University

**Stokes, Gale,** 1968. Professor of History

B.A. (1954) Colgate University; M.A. (1965), Ph.D. (1970) Indiana University

**Stoll, Richard J.,** 1979. Professor of Political Science and Associate of Jones College

A.B. (1974) University of Rochester; Ph.D. (1979) University of Michigan

**Stong, Richard,** 1993. Assistant Professor of Mathematics

B.A. (1985). M.A. (1985) Washington University; Ph.D. (1990) Harvard University

**Stormer, John C., Jr.,** 1983. Croneis Professor of Geology

A.B. (1963) Dartmouth College; Ph.D. (1971) University of California at Berkeley

**Strassmann, Joan E.,** 1980. Professor of Ecology and Evolutionary Biology and Associate of Wiess College

B.A. (1974) University of Michigan; Ph.D. (1979) University of Texas

**Stroup, John M.,** 1988. Harry and Hazel Chavanne Professor of Religious Studies

A.B. (1968) Washington University; M.Div. (1972) Concordia Seminary; M.Phil. (1975), Ph.D. (1980) Yale University

**Subtelny, Stephen,** 1968. Professor of Ecology and Evolutionary Biology and Associate of Brown College

B.A. (1949) Hobart College; M.A. (1952), Ph.D. (1955) University of Missouri

**Sullivan, Sonja Rebecca,** 1990. Assistant Professor of Philosophy

A.B. (1981) Dartmouth College; M.A. (1985), Ph.D. (1991) Yale University

**Sutton, Neal S.,** 1989. Adjunct Associate Professor of Administrative Science

B.A. (1969), J.D. (1972) University of Houston

**Swint, John Michael,** 1977. Adjunct Associate Professor of Economics

B.A. (1968) California State University at Humboldt; M.A., Ph.D. (1972) Rice University

**Symes, William W.,** 1984. Professor of Computational and Applied Mathematics

B.A. (1971) University of California at Berkeley; M.A., Ph.D. (1975) Harvard University

**Talwani, Manik,** 1985. Schlumberger Professor of Geophysics

B.Sc.Hons. (1951), M.Sc.(1953) Delhi University; Ph.D. (1959) Columbia University; Ph.D. (Honoris Causa) (1981) Oslo University

**Taner, M. Turhan,** 1988. Adjunct Professor of Geology and Geophysics

M.S. (1950) Technical University of Istanbul

**Tapia, Richard A.,** 1970. Noah Harding Professor of Computational and Applied Mathematics

B.A. (1961), M.A. (1966), Ph.D. (1967) University of California at Los Angeles

**Taylor, Julie M.,** 1981. Associate Professor of Anthropology

B.A. (1966) Harvard University; Diploma (1969), Ph.D. (1973) Oxford University

**Taylor, Ronald N.,** 1983. George R. Brown Professor of Administration and Professor of Psychology and Associate of Baker College

B.A. (1960) Westminster College; M.A. (1964) University of Nebraska; Ph.D. (1970) University of Minnesota

**Temkin, Larry S.,** 1980. Associate Professor of Philosophy and Associate of Jones College

B.A. (1975) University of Wisconsin; Ph.D. (1981) Princeton University

**Thames, Howard D., Jr.,** 1975. Adjunct Professor of Statistics

B.A. (1963), Ph.D. (1970) Rice University

**Thomas, David Q.,** 1990. Assistant Professor of Human Performance and Health Sciences

B.S. (1980) Pennsylvania State University; M.S. (1982), Ph.D. (1985) Arizona State University

**Thompson, Ewa M.,** 1970. Professor of Slavic Studies

B.A. (1963) University of Warsaw; M.F.A. (1963) Sopot Conservatory of Music, Poland; Ph.D. (1967) Vanderbilt University

**Thompson, James R.,** 1970. Professor of Statistics and Associate of Lovett College

B.Eng. (1960) Vanderbilt University; M.A. (1963), Ph.D. (1965) Princeton University

**Tittel, Frank K.,** 1967. J.S. Abercrombie Professor in Electrical and Computer Engineering and Associate of Hanszen College

B.A. (1955), M.A., Ph.D. (1959) Oxford University

**Tobin, Mary L.,** 1979. Lecturer on English

B.A. (1963) Carleton College; M.A. (1966) Columbia University; Ph.D. (1973) Rice University

**Tomson, Mason B.,** 1977. Professor in Environmental Science and Engineering

B.S. (1967) Southwestern State College; Ph.D. (1972) Oklahoma State University

**Tonegawa, Yoshihiro,** 1993. G. C. Evans Instructor of Mathematics

B.S. (1989) Brown University; Ph.D. (1993) New York University

**Torczon, Linda M.,**1985. Faculty Fellow in Computer Science and Associate of Brown College

B.S. (1980), M.S. (1984), Ph.D. (1985) Rice University

**Trepel, Shirley,** 1975. Professor of Music

B.Mus. (1945) Curtis Institute of Music

**Tsuchitani, Chiyeko,** 1986. Adjunct Professor of Electrical and Computer Engineering

B.A. (1961) University of California at Berkeley; Ph.D. (1966) University of Louisville

**Tyler, Stephen A.,** 1970. Herbert S. Autrey Professor of Anthropology and Linguistics

B.A. (1957) Simpson College; M.A. (1962), Ph.D. (1964) Stanford University

**Udden, Mark M.,** 1983. Adjunct Assistant Professor in the Biomedical Engineering Laboratory

S.B., M.A. (1973) MIT; M.D. (1977) Southwestern Medical School, University of Texas, Dallas

**Uecker, Wilfred C.,** 1984. Harmon Whittington Professor of Accounting, Associate Dean for Academic Affairs of the Jesse H. Jones Graduate School of Administration and Associate of Will Rice College

B.A. (1968), M.B.A. (1970), Ph.D. (1973) University of Texas at Austin

**Urrutibeheity, Hector N.,** 1967. Associate Professor of Spanish and Linguistics

Profesorado (1956) La Plata National University, Argentina; Ph.D. (1968) Stanford University

**Vail, Peter R.,** 1986. W. Maurice Ewing Professor of Oceanography

A.B. (1952) Dartmouth College; M.S. (1953), Ph.D. (1959) Northwestern University

**Valenzuela, Angela,** 1990. Assistant Professor of Sociology

B.A. (1981) San Angelo State University; M.A. (1983) University of Texas, Austin; M.A. (1985), Ph.D. (1990) Stanford University

**Vandaveer, Vicki V.,** 1989. Adjunct Assistant Professor of Psychology

B.A. (1975), M.A. (1981), Ph.D. (1981) University of Houston

**Vandenberg, Kristy,** 1989. Lecturer on Human Performance and Health Sciences

B.S. (1975) University of Michigan

**Van Helden, Albert,** 1970. Lynette S. Autrey Professor of History

B.Eng. (1962), M.S. (1964) Stevens Institute of Technology; M.A. (1967) University of Michigan; Ph.D. (1970) London University

**Varman, Peter J.** 1983. Associate Professor in Electrical and Computer Engineering

B.Tech. (1978) Indian Institute of Technology, Kanpur; M.S.E.E. (1980); Ph.D. (1983) University of Texas at Austin

**Vella, Francis G. M.,** 1990. Assistant Professor of Economics

B.A. (1983) University of Sydney; M.A. (1985) Australian National University; Ph.D. (1990) University of Rochester

**Veech, William A.,** 1969. Milton B. Porter Professor of Mathematics

A.B. (1960) Dartmouth College; Ph.D. (1963) Princeton University

**Veletsos, Anestis S.,** 1964. Brown and Root Professor in Civil Engineering

B.S. (1948) Robert College, Turkey; M.S. (1950), Ph.D. (1953) University of Illinois

**Ver Muelen, William.,** 1990. Artist Teacher of Horn

**Viebig, V. Richard, Jr.,** 1969. Lecturer on Accounting

B.A. (1962), M.Acc. (1977) Rice University

**Visser, Pieter A.,** 1979. Adjunct Lecturer on Music

**Voigt, Gerd-Hannes,** 1980. Distinguished Faculty Fellow in Space Physics and Astronomy

Diploma of Physics and Geophysics (1970), Ph.D. (1975) University of Braunshweig, Germany

**von der Mehden, Fred R.,** 1968. Albert Thomas Professor of Political Science and Professor of Administrative Science and Associate of Wiess College

B.A. (1948) University of the Pacific; M.A. (1950) Claremont Graduate School; Ph.D. (1957) University of California at Berkeley

**Walker, Ian D.,** 1989. Assistant Professor in Electrical and Computer Engineering and Associate of Jones College

B.S. (1983) University of Hull; M.S. (1985), Ph.D., (1989) University of Texas

**Wallace, Kristine Gilmartin,** 1966. Associate Professor of Classics

B.A. (1963) Bryn Mawr College; M.A.(1965), Ph.D. (1967) Stanford University

**Wallace, Stephen,** 1990. Adjunct Professor of Linguistics

B.A. (1968) Rice University; M.A. (1974), Ph.D. (1976) Cornell University

**Walters, G. King,** 1963. Professor of Physics and of Space Physics and Astronomy

B.A. (1953) Rice Institute; Ph.D. (1956) Duke University

**Wamble, Mark,** 1991. Assistant Professor of Architecture

B.S. (1983) Texas A&M University; M.A. (1988) Harvard University

**Wang, Chao-Cheng,** 1968. Noah Harding Professor of Computational and Applied Mathematics and Professor of Mechanical Engineering

B.S. (1959) National Taiwan University; Ph.D. (1965) Johns Hopkins University

**Ward, Calvin H.,** 1966. Professor of Ecology and Evolutionary Biology and Environmental Science

B.S. (1955) New Mexico State University; M.S. (1958), Ph.D. (1960) Cornell University; M.P.H. (1978) University of Texas School of Public Health

**Ward, Daniel S.,** 1990. Assistant Professor of Political Science

B.A. (1984) Purdue University; M.A. (1986), Ph.D. (1989) New York University

**Warren, Joe D.,** 1986. Associate Professor of Computer Science

B.A. (1983), M.S. (1985) Rice University; Ph.D. (1986) Cornell University

**Warren, Scott K.,** 1979. Adjunct Assistant Professor of Computer Science

B.A. (1972), M.A. (1974), Ph.D. (1976) Rice University

**Waters, David L.,** 1976. Artist Teacher of Trombone

B.M.E. (1962) University of Houston; M.Mus. (1964) University of Texas

**Watkins, Michael J.,** 1980. Professor of Psychology

B.Sc. (1965, 1969), Ph.D. (1972) University of London

**Wedemeyer, Phil D.,** 1990. Adjunct Associate Professor of Accounting

B.B.A. (1971) Baylor University

**Weinberg, Armin D.,** 1980. Adjunct Professor of Human Performance and Health Sciences

B.A. (1966), Ph.D. (1971) Ohio State University

**Weisheit, Jon C.,** 1988. Professor of Space Physics and Astronomy

B.S. (1966) University of Texas at El Paso; M.S. (1969), Ph.D. (1970) Rice University

**Weisman, R. Bruce,** 1979. Professor of Chemistry

B.A. (1971) Johns Hopkins University; Ph.D. (1977) University of Chicago

**Weissenberger, Klaus H.M.,** 1971. Professor of German and Associate of Sid Richardson College

B.A. (1959), M.A. (1965) University of Hamburg, Germany; Ph.D. (1967) University of Southern California

**Wells, Raymond O., Jr.,** 1965. Professor of Mathematics and Associate of Baker College

B.A. (1962) Rice University; M.S. (1964), Ph.D. (1965) New York University

**Wendt, Richard Ernest,** 1991. Lecturer on Electrical and Computer Engineering

A.B. (1976), M.B.A. (1977) University of Chicago; M.S. (1980), Ph.D. (1982) Rice University

**Westbrook, Robert A.,** 1989. William Alexander Kirkland Professor of Administration and Associate of Hanszen College

A.B. (1969), M.B.A. (1971), Ph.D. (1975) University of Michigan

**Westheimer, Alan D.,** 1983. Lecturer on Accounting

B.S.E. (1965) University of Pennsylvania; M.B.A. (1966) University of California at Berkeley

**Wheeler, Mary Fanett,** 1974. Noah Harding Professor of Computational and Applied Mathematics

B.A., B.S. (1960), M.A. (1963) University of Texas; Ph.D. (1971) Rice University

**White, Frank S.,** 1982. Lecturer on Architecture

B.S. (1977) Rochester Institute of Technology

**White, Robert A.,** 1981. Adjunct Associate Professor of Statistics

B.A. (1966) New Mexico State University; Ph.D. (1970) University of Chicago

**Whitmire, Kathryn J.,** 1992. Tsanoff Lecturer on Public Affairs and Director of the Rice Institute for Policy Analysis

B.B.A. (1968), M.S. (1970) University of Houston

**Whitmire, Kenton H.,** 1982. Associate Professor of Chemistry and Associate of Brown College

B.S. (1977) Roanoke College; Ph.D. (1982) Northwestern University

**Widrig, Walter M.,** 1969. Associate Professor of Art History

B.A. (1951) Yale University; M.A. (1956) Columbia University; Ph.D. (1975) New York University

**Wiener, Martin J.,** 1967. Mary Gibbs Jones Professor of History

B.A. (1962) Brandeis University; M.A. (1963), Ph.D. (1967) Harvard University

**Wiesner, Mark R.,** 1988. Associate Professor of Environmental Science and Engineering

B.A. (1978) Coe College; M.S. (1980) University of Iowa; Ph.D. (1985) Johns Hopkins University

**Wilde, T. Jesse,** 1993. Assistant Professor of Human Performance and Health Sciences

B.A. (1982); LL.B. (1985) University of Alberta; M.S. (1990) University of Massachusetts

**Wilford, Michael,** 1978. Visiting Professor of Architecture

Honors Diploma (1960) Northern Polytechnic School of Architecture, England; Diploma (1967) Regent Street Polytechnic Planning School

**Wilkinson, Harry E.,** 1990. Visiting Professor of Administrative Science

B.A. (1952) Princeton University; M.B.A. (1957) Washington University; D.B.A. (1960) Harvard University

**Williams, Donald L.,** 1988. Adjunct Associate Professor of Administrative Science

B.S. (1957) University of Kentucky; B.Arch. (1962) University of Illinois at Champaign/Urbana; M.S. (1971) University of Louisville

**Williams, Edward E.,** 1978. Henry Gardiner Symonds Professor of Administrative Science

B.S. (1966) University of Pennsylvania; Ph.D. (1968) University of Texas

**Wilson, James L.,** 1966. Adjunct Professor of Geology and Geophysics

B.A. (1942), M.A. (1944) University of Texas; Ph.D. (1949) Yale University

**Wilson, John T.,** 1980. Adjunct Associate Professor of Environmental Science and Engineering

B.S. (1969) Baylor University; M.A. (1971) University of California at Berkeley; Ph.D. (1978) Cornell University

**Wilson, Joseph B.,** 1954. Professor of German

B.A. (1950), M.A. (1953) Rice Institute; Ph.D. (1960) Stanford University

**Wilson, Lon J.,** 1973. Professor of Chemistry and Associate of Richardson College

B.A. (1966) Iowa State University; Ph.D. (1971) University of Washington at Seattle

**Wilson, Richard L.,** 1985. Associate Professor of Art History and Associate of Hanszen College

B.A. (1981) Franklin and Marshall College; M.A. (1981), Ph.D. (1985) University of Kansas

**Wilson, Rick K.,** 1983. Associate Professor of Political Science and Statistics and Associate of Sid Richardson College

B.A. (1975), M.A. (1977) Creighton University; Ph.D. (1982) Indiana University

**Wilson, William L,. Jr.,** 1972. Professor in Electrical and Computer Engineering and Resident Associate of Wiess College

B.S. (1965), M.S. (1966), Ph.D. (1972) Cornell University

**Wilt, James,** 1990. Artist Teacher, Trumpet

B.Mus. (1984) University of Cincinnati; M.Mus (1990) Eastman School of Music

**Wincenc, Carol,** 1990. Visiting Professor of Flute

Diplomas of Honor (1966 and 1977) Accademia di Santa Cecila (Italy); Diploma (1968) Chigiana Conservatory (Italy); B.Mus. (1971) Manhattan School of Music; M.Mus. (1972) Juilliard School of Music

**Windsor, Duane,** 1977. Lynette S. Autrey Professor of Management, Associate Dean for Student Affairs of the Jesse H. Jones Graduate School of Administration and Associate of Will Rice College

B.A. (1969) Rice University; A.M. (1973), Ph.D. (1978) Harvard University

**Winkler, Kathleen,** 1992. Associate Professor of Violin

B.Mus. (1972) Indiana University; M.Mus. (1974) University of Michigan

**Winkler, Michael,** 1967. Professor of German

B.A. (1961) St. Benedict's College; M.A. (1963), Ph.D. (1966) University of Colorado

**Winningham, Geoffrey L.,** 1969. Professor of Art and Honorary Associate of Wiess College

B.A. (1965) Rice University; M.S. (1968) Illinois Institute of Technology

**Winningham, J. David,** 1970. Adjunct Professor of Space Physics and Astronomy

B.S. (1963); M.S. (1965), Ph.D. (1970) Texas A&M University

**Wittenberg, Gordon G., Jr.,** 1979. Associate Professor of Architecture and Master of Sid Richardson College

B.F.A. (1968) Trinity College, Connecticut; M.Arch. (1972) Washington University

**Wolf, Michael,** 1988. Associate Professor of Mathematics and Associate of Sid Richardson College

B.S. (1981) Yale University; Ph.D. (1986) Stanford University

**Wolf, Richard A.,** 1967. Professor of Space Physics and Astronomy

B.Eng.Phys. (1962) Cornell University; Ph.D. (1966) California Institute of Technology

**Wolin, Richard,** 1984. Professor of History

B.A. (1974) Reed College; M.A. (1976), Ph.D. (1980) York University

**Wood, Philip R.,** 1990. Associate Professor of French

B.A. (1974) University of Cape Town; M.A. (1980) University of York; Ph.D. (1988) Yale University

**Wood, Susan,** 1981. Professor of English and Master of Lovett College

B.A. (1968) East Texas State University; M.A. (1970) University of Texas at Arlington

**Wright, Anthony A.,** 1980. Adjunct Associate Professor of Psychology

B.A. (1965) Stanford University; M.A. (1970), Ph.D. (1971) Columbia University

**Wright, James E.,** 1989. Associate Professor of Geology and Geophysics

B.S. (1971) Clemson University; M.S. (1974) Virginia Polytechnic Institute; Ph.D. (1980) University of California

**Wu, Kenneth K.** 1984. Adjunct Professor in the Biomedical Engineering Laboratory

M.D. (1966) National Taiwan University; M.S. (1968) Yale University

**Wunder, R. Stephen,** 1984. Adjunct Assistant Professor of Psychology

B.A. (1970) Creighton University, M.A. (1976), Ph.D. (1979) Wayne State University

**Wyschogrod, Edith,** 1992. J. Newton Rayzor Professor of Philosophy and Religious Thought

A.B. (1957) Hunter College; Ph.D. (1970) Columbia University

**Yamal, Ricardo,** 1986. Associate Professor of Spanish and Associate of Jones College

B.A. (1979) Universidad Catolica, Chile; M.A. (1978), Ph.D. (1982) University of Pittsburgh

**Yatsu, Frank M.,** 1984. Adjunct Professor in the Biomedical Engineering Laboratory

A.B. (1955) Brown University; M.D. (1959) Case Western Reserve University

**Yi, Kei-Mu,** 1990. Assistant Professor of Economics and Associate of Sid Richardson College

B.S. (1983) MIT; M.A. (1985), Ph.D. (1989) University of Chicago

**Yim, Chi Kin (Bennett),** 1989. Assistant Professor of Administrative Science and Associate of Brown College

B.B.A. (1983) Chinese University of Hong Kong; Ph.D. (1989) Purdue University

**Young, James F.,** 1990. Associate Professor in Electrical and Computer Engineering and Associate of Hanszen College

B.S. (1965), M.S. (1966) MIT; Ph.D. (1970) Stanford University

**Yunis, Harvey E.,** 1987. Associate Professor of Ancient Studies

B.A. (1978) Dartmouth College; B.A. (1982), M.A. (1985) University of Cambridge; Ph.D. (1987) Harvard University

**Zeff, Stephen A.,** 1978. Herbert S. Autrey Professor of Accounting and Executive Associate of Sid Richardson College

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B.A. (1952) Rice Institute; M.S.L.S. (1965) Catholic University of America; M.A. (1979) Rice University

**Caswell, Jean L.,** 1986. Automation Librarian
B.A. (1974) New Mexico Institute of Mining and Technology; M.A.L.S. (1976) Northern Illinois University

**Charles, Elizabeth D.,** 1983. Executive Director, Friends of Fondren
B.A. (1963) University of Texas

**Edwards, Sandra E.,** 1985. Head of Satellite Collections
B.A. (1980) Grinnell College; M.A. (1982), M.A.L.S. (1984) University of Missouri

**Flowers, Kay A.,** 1978. Assistant University Librarian for Automated Services
B.A. (1977) Rice University; M.S. (1984) University of Illinois

**Geran, Jennifer M.,** 1988. Interlibrary Loan Librarian
B.A. (1985) University of Kentucky; M.S.L.S. (1988) University of Illinois at Urbana

**Gourlay, Una M.,** 1986. Director, Department of Community Services
B.Sc. (1958) University of Glasgow

**Halbert, Martin D.,** 1988. Head of Networked Systems
B.A. (1984) Rice University; M.L.I.S. (1987) University of Texas

**Hatfield, Joseph W.,** 1984. Assistant to the University Librarian for Building Services
A.A. (1966) Lon Morris College

**Hunter, John H.,** 1990. Science Librarian
B.S. (1972) Wiley College; M.L.S. (1974) Indiana University

**Hyman, Ferne B.,** 1968. Assistant University Librarian for Special Services and University Associate of Baker College
B.A. (1948) University of California at Los Angeles; M.A. (1969) Loyola University of Los Angeles; M.S.L.S. (1969) University of Illinois

**Keck, Kerry A.,** 1985. Coordinator, Collection Development and Electronic Information Resources
B.A. (1980) University of Colorado; M.S.L.S. (1982) University of Illinois; M.B.A. (1991) University of Houston

**Kile, Barbara,** 1971. Director, Department of Government Publications and Special Resources and Assistant to the University Librarian for Public Relations/Development

B.A. (1967), M.S.L.S. (1968) University of Illinois

**Kuo, Jiun-Huei Chern,** 1985. Catalog Librarian

B.A. (1978) National Taiwan University; A.M.L.S. (1982) University of Michigan

**Lindquist, Janice,** 1993. Acquisitions Librarian

B.A. (1979) California State University at Northridge; M.L.S. (1981) University of Washington

**Lowman, Sara,** 1985. Head of Reference

B.A. (1984) Carleton College, M.A.L.I.S. (1985) University of Iowa

**Marsales, Rita,** 1973. Catalog Maintenance Librarian

B.A. (1957) Louisiana State University; M.L.S. (1973) University of Texas; M.A. (1992) Rice University

**Orkiszewski, Paul T.,** 1992. Music Librarian

B.A./M.A. (1988) Rice University; M.L.I.S. (1989) University of Texas at Austin

**Prendeville, Jet Marie,** 1979. Art and Architecture Librarian

B.A. (1972) Memphis State University; M.A. (1975) University of Michigan; M.S.L.S. (1979) University of Illinois

**Reagor, Melinda A.,** 1992. Head of Cataloging, Cataloging Department

A.B. (1977) Wellesley College; M. Div. (1980) Yale Divinity School; M.L.I.S. (1982) University of Texas at Austin

**Sabin, Robert G.,** 1988. Science and Engineering Librarian and University Associate of Hanszen College

B.S. (1967) University of North Dakota; M.S.L.S. (1968) Clarion University

**Schwartz, Charles A.,** 1987. Social Sciences Librarian

B.A. (1968) Denison University; Ph.D. (1972) University of Virginia; M.L.S. (1985) Indiana University

**Segal, Jane D.,** 1990. Social Sciences Librarian

B.A. (1970) Kalamazoo College; M.L.S. (1977) Western Michigan University; M.A. (1992) University of Houston

**Shapiro, Beth J.,** 1991. University Librarian

B.S. (1968) Michigan State University; M.A. (1972) Michigan State University; M.S.L. (1974) Western Michigan University; Ph.D. (1982) Michigan State University

**Spare, Amy L.,** 1993. Coordinator of Government Publications and Microforms

B.A. (1980) Temple University; J.D. (1983) Northeastern University School of Law; M.L.S. (1993) University of Teaxs

**Shaw, Peggy A.,** 1986. Business Librarian

B.A. (1970), B.S. (1972) Louisiana State University; M.L.S. (1982) North Texas State University

**Silversteen, Sophy,** 1965. Catalog Librarian

B.A. (1952) Rice Institute; M.S.S.W. (1954), M.L.S. (1965) University of Texas

**Stewart, Barbara C.,** 1991. User Education and Government Publications Librarian

B.A. (1981) Texas Woman's University; M.L.S. (1991) University of North Texas

**Tibbits, Randolph K.,** 1987. Information Librarian

B.A. (1970); M.A. (1977) Washington University; M.L.S. (1980) University of Texas

**Wetzel, Shirley,** 1983. Cataloging Librarian

A.A. (1960) Navarro College; B.A. (1968) Texas Technological College; M.A. (1980) Rice University

## Emeritus

**Adler, Marianne G.,** 1974. Director Emerita, Division of Processing Services
B.A. (1973) Rice University; M.L.S. (1974) University of Texas; M.A. (1977) Rice University

**Perrine, Richard H.,** 1960. Assistant University Librarian for Planning and Adjunct Associate Professor of Architecture, Emeritus
B.F.A. (1940) Yale University; M.L.S. (1961) University of Texas

**Redmon, Alice Jane,** 1962. Special Processing Librarian Emerita
B.A. (1937) University of Denver

**Zingler, Gilberta,** 1953. Acquisitions Librarian Emerita
A.B. (1932) Butler University; B.L.S. (1935) University of Illinois

## Professional Staff of Information Systems

**Barton, Rosana,** 1992. Computer Operator

**Boyes, David E.,** 1989. Systems Programmer
B.A. (1988), M.A. (1988) University of Oregon

**Chien, Jien-Cheng,** 1989. Computer Operator
B.S. (1972) Chung-Hsing University

**Cohn, Sheldon,** 1973. Computer Operator

**Cosgriff, Carolyn E.,** 1991. Microcomputing/Documentation Specialist
B.A. (1988) University of Texas at Austin

**Cox James,** 1992. Technical Specialist

**Deigaard, William,** 1992. Systems Programmer
B.A. (1993) Rice University

**Dunham, A. Darren.,** 1992. Microcomputer Consulting Specialist
B.A. (1992) Rice University

**Foulston, Catherine A.,** 1990. Network Specialist
B.A. (1989) Rice University

**Fullmer, Robert,** 1992. Consulting Specialist
B.S. (1990) MIT

**Gerbode, Farrell E.,** 1974. Director, Networking & Computing Systems
B.A. (1973) Rice University, M.A.M.S (1977) Rice University

**Halbert, Martin D.,** 1988. Computing Reference Area Librarian
B.A. (1984) Rice University; M.L.I.S. (1987) University of Texas at Austin

**Hardy, Christopher,** 1990. Systems Programmer

**Harris, Mayfield,** 1991. LAN Specialist/Trainer
B.S. (1978) Southern University

**Humphrey, Patrick L.,** 1989. Computer Operator
B.A. (1977) University of Houston

**Huston, Priscilla Jane,** 1969. Director, Computing Information Services
B.A. (1964) Mount Holyoke College

**Istre, Mitchell,** 1988. Systems Analyst
A.A.S. (1983) Texas State Technical Institute

**Jankovsky, Karel,** 1991. Database Administrator
B.S. (1977), M.B.A. (1984) University of Witwatersrand

**Johnson, Michelle,** 1991. Computing Reference Area Operations Coordinator
B.A. (1993) Rice University

**Kittrell, Jr. Aubery L.,** 1987. Senior Systems Analyst
B.A. (1979) University of West Florida
**Kowis, Thelma I.,** 1981. Data Control Coordinator
**Larratt, Glenn,** 1993. LAN Specialist
B.A. (1993), B.S.S.E. (1993) Rice University
**Li, Jian, Q.,** 1991. Network Specialist
B.S. (1983), M.S. (1989) University of Kansas
**Linscott, Stephen,** 1989. Computing Resource Center Programmer/Trainer
B.A. (1960) University of Texas
**Long, Kevin B.,** 1992. Acting Director, Computing Information Services
B.A. (1985), M.S. (1989) Rice University
**Manning, William C.,** 1991. Network Specialist
B.S.B.A. (1989) Kennedy Western University
**Martin, Andrea,** 1979. Assistant Director, Computing Information Services
B.S.E.E. (1979), M.Mus. (1984) Rice University
**Martinez, Hortencia,** 1990. Systems Analyst
A.S. (1979) Laredo Junior College
**McDonald, Victor,** 1990. Computer Operator
**McKinin, Katherine,** 1985. Computing Resource Center Programmer
B.A. (1976), M.A. (1978) Indiana University; M.B.A. (1983) University of Missouri
**Metrowsky, Nicholas J.,** 1991. Systems Programmer
B.A. (1979) Ohio State University, M.B.A. (1988) Amber University
**Mullett, Kevin,** 1993. Network Specialist
**Murray, Thomas,** 1990. Information Analyst
**Narayanan, Devi,** 1992. VM Consulting Specialist
**Nichols, Patricia,** 1978. Computer Operator
**Pietsch, Robert,** 1991. Unix Consulting Specialist
B.B.A. (1989) Eastern Michigan University
**Ramos, Alfredo,** 1990. Computer Operator
**Randolph, Valeria F.,** 1991. Systems Analyst
B.A. (1973) Institute of Economics (Kharvov, USSR)
**Richard, Charles A.,** 1973. Manager, Computer and Network Operations
**Riddle, Prentiss A.S.,** 1991. Systems Programmer
B.A. (1984) University of Texas at Austin
**Rodriguez, Arthur A.,** 1988. Technical Support Specialist
A.S. (1982) New York Regents
**Russell, Kenneth,** 1988. Computing Resource Center Programmer
B.S. (1978) Prairie View A&M University
**Schafer, Richard A.,** 1974. Manager, Networking and Systems Support
B.A. (1973), M.A.M.S. (1974) Rice University
**Scott, P. Renae,** 1990. Senior Systems Analyst
B.S. (1984) Memphis State
**Siddiqui, Zahoor,** 1989. Computer Operator
B.S. (1981) University of Washington
**Smith, N. Elizabeth,** 1987. Computing Resource Center Programmer
B.A. (1985) University of Delaware
**Spradley, Geoffrey,** 1990. Unix Consulting Specialist
B.A. (1984) Rice University

**Stien, Marie-Pierre,** 1990. Senior Systems Analyst
B.A. (1986) F.C. Lyon; M.B.A. (1986) University of Texas at Austin
**Troth, Richard,** 1989. Systems Programmer
B.S. (1993) Texas A&M University
**Tunison, Jeffrey,** 1989. Systems Programmer
B.A. (1991) Rice University
**Vasquez, Michael,** 1978. Computer Operator
**Watters, Joseph,** 1990. Deputy Director, Owlnet
B.S.E.E. (1985) Rice University
**White, Carolynne M.,** 1988. Computing Training Coordinator
B.S. (1964) Springfield College
**Williamson, Mark R.,** 1971. Assistant to the Director for Technical Affairs
**Yueh, Leon F.,** 1991. System Analyst
B.S. (1981), M.S. (1983) University of Alabama at Birmingham

## Professional Staff of Student Affairs

**Anderson, David,** 1990. Director, Student Center
B.B.A. (1983) Southwest Texas State University
**Browning, Julie,** 1990. Director, Office of Admission
B.A. (1977), M.S. (1978) University of Tennessee at Knoxville
**Clack, Catherine E.,** 1981. Director, Office of Multicultural Affairs
B.A. (1981) St. Edwards University
**Crawford, Sarah Nelson,** 1987. Director, Office of Student Activities
B.S. (1979) Texas Woman's University, M.A. (1983) Bowling Green State University
**Dunham, Jane,** 1986. Director of International Services
B.A. (1964) Cornell University, M.A. (1987) University of Houston
**Hunt, G. David,** 1976. Director, Office of Financial Aid
B.A. (1950) DePauw University, M.S. (1954) Indiana University
**Lanier, Cynthia,** 1989. Director, Health Education Office
R.N. (1978) Brackenridge School of Nursing, B.A. (1985) University of Texas at Austin; M.P.H. (1987) University of Texas Health Science Center
**Martin, Patricia S.,** 1982. Associate Dean of Student Affairs and Director, Office of Academic Advising
B.S.Ed. (1959) Abilene Christian University; M.A. (1977), Ph.D. (1982) Rice University
**Sanborn, Robert D.,** 1988, Associate Dean of Student Affairs and Director, Career Services Center
B.A. (1980) Florida State University; M.S.Ed. (1985) Northern Illinois University; E.D.D. (1990) Columbia University
**Scheid, Mark S.,** 1984. Associate Director of Academic Advising
B.A. (1967), Ph.D. (1972) Rice University
**Williamson, J. G.,** 1981, Registrar
B.S. (1964), M.S. (1964), Ph.D. (1968) Ohio State University

## Staff of the Counseling Center

**Baker, Deborah A.,** 1991. Associate Director, Rice Counseling Center
Ph.D. (1989) Colorado State University

**Doran, Lindley E.,** 1991. Director, Rice Counseling Center
Ph.D. (1976) University of Illinois

**Winters, Michael R.,** 1992. Staff Psychologist, Rice Counseling Center
Ph.D. (1991) Memphis State University

## Staff of the Athletic Department

**Blankenship, D. Paul,** 1980. Women's Tennis Coach
B.A. (1972) Texas Christian University; M.Ed. (1991) University of Houston

**Butler, James E., M.D.,** 1977. Chief Team Physician
B.S. (1956) Sewanee College; M.A. (1957) Southwest Texas State University; M.D. (1962) University of Texas

**Castaneda, James A.,** 1961. Faculty Representative and Golf Coach
B.A. (1954) Drew University; M.A. (1955), Ph.D. (1958) Yale University

**Chen, Henry C.,** 1993. Head Women's Volleyball Coach
B.A. (1982) Colgate University; M.S. (1991) Northern Michigan University

**Cousins, William A.,** 1983. Assistant Athletic Director/Media Relations
B.S. (1971) New Mexico State University

**Eggert, Allen,** 1968. Head Athletic Trainer
B.S. (1963) Rice University; M.A. (1967) California Western University

**Goldsmith, Fred H.,** 1989. Head Football Coach
B.S. (1967), M.Ed. (1972) University of Florida

**Graham, Wayne L.,** 1991. Head Baseball Coach
B.S. (1970) University of Texas; M.Ed. (1973) University of Houston

**Griswold, Julie L.** 1986. Academic Coordinator
B.A. and B.S. (1981) Miami University; M.S. (1986) Indiana University

**Hawthorne, Martha E.,** 1979. Assistant Athletic Director for Women
B.A. (1960), B.S. (1961), M.S. (1964) Louisiana State University

**Kidd, Stephen.,** 1990. Recruiting Coordinator
B.A. (1987) Rice University

**Lopez, Victor M.,** 1980. Head Women's Track and Field Coach
B.S. (1971) University of Houston; M.S. (1975) Texas Southern University

**May, John Robert,** 1967. Director of Athletics
B.Comm. (1965) Rice University

**McKinney, Mary Cristine,** 1993. Head Woman's Basketball Coach
B.S. (1979) North Carolina State University ; M.A. (1982) Western Carolina University

**Moniaci, Steve,** 1980. Assistant Athletic Director for Administration
B.S. (1975) Ball State University; M.S. (1976) Ohio University

**Steele, David B.,** 1984. Assistant Athletic Director/Business
B.A. (1982) Rice University; M.A. (1984) Ohio University

**Straub, Stephen M.,** 1974. Head Men's Track and Field Coach
B.Comm. (1972) Rice University

**Stringham, Beth Ann,** 1993. Head Strength and Conditioning Coach
B.S. (1982) Slippery Rock University; M.A. (1989) Southwest Texas State University

**Turville, Lawrence C.,** 1979. Men's Tennis Coach
B.S. (1971) Georgia Tech
**Wilson, Willis T.,** 1992. Head Men's Basketball Coach
B.A. (1982) Rice University
**Wingenroth, Kristin B.,** 1983. Swimming Coach
B.A. (1976) Rice University; M.Ed. (1983) University of Houston

# University Standing Committees for 1993-94

The president is an *ex officio* member of all committees.

Committee on Admission
Committee on Affirmative Action
Committee of the College Masters
Committee on Community Affairs
Committee on Computers
Education Council
Committee on Environmental Health and Safety
Committee on Examinations and Standing
Faculty Council
Committee on Faculty and Staff Benefits
Graduate Council
Committee on the Honor Council
Committee on the Library
Committee on Public Lectures
Committee on Religious Activities
Research Council
Residential Colleges Management Advisory Committee
Rice University Athletics Committee
Rice University Marshals Committee
Rice University Press Review Board
R.O.T.C. Committee
Committee on Salary Equity
Committee on Scholarships and Awards
Committee on Student Financial Aid
Committee on Student Health
Committee on the Undergraduate Curriculum
Committee on Teaching
University Council
University Review Board

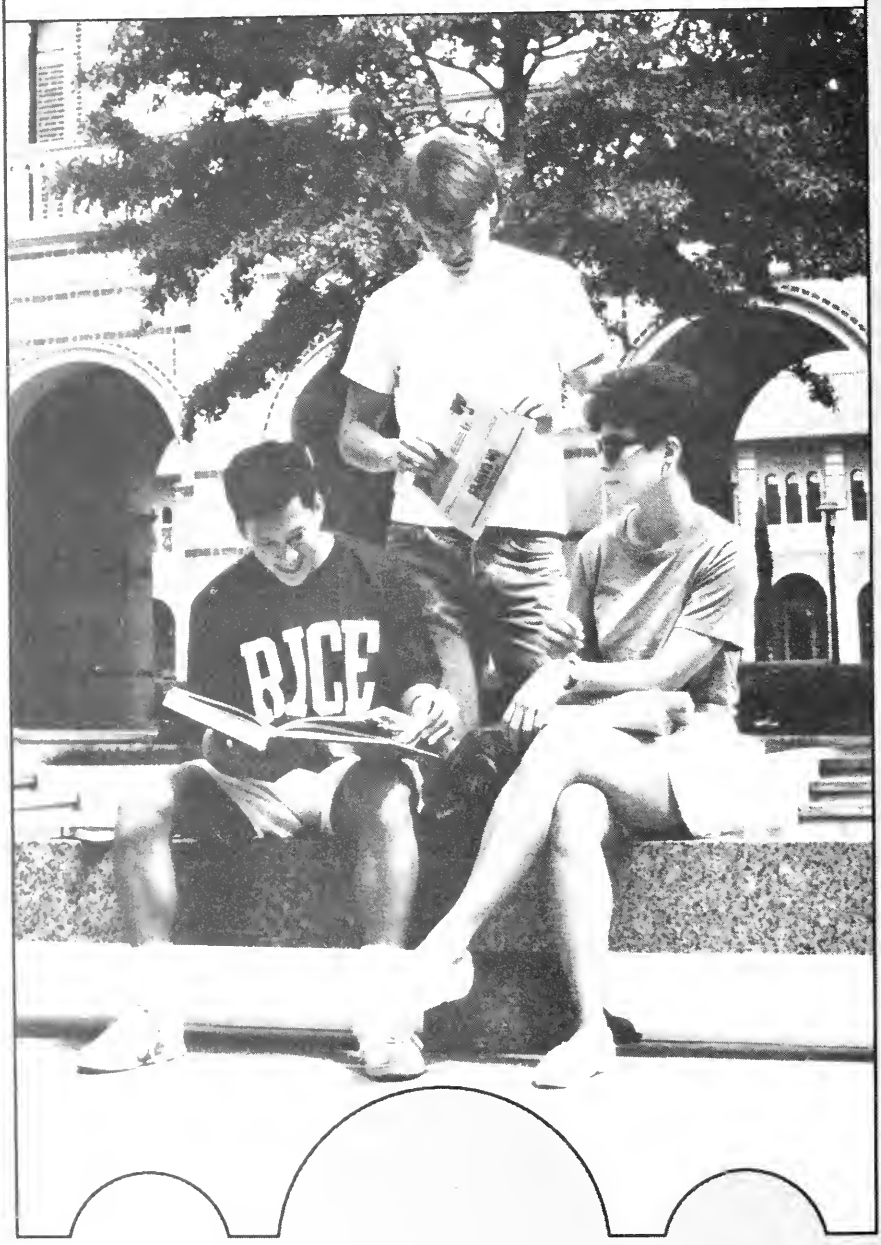
# Chairs and Lectureships

Throughout its history, Rice University has been especially fortunate in the number of its friends and benefactors. Some of these are memorialized in the names of buildings and special physical facilities; others have generously provided for the enrichment of the university's intellectual life by establishing chairs and lectureships either on a temporary or permanent basis. Rice takes pleasure in recognizing on these pages some of these contributors to its academic excellence.

J. S. Abercrombie Chairs in the School of Engineering
Agnes Cullen Arnold Chair in Humanities
Visiting Asian Scholars Lectureship Fund
Herbert S. Autrey Chair in Administration
Herbert S. Autrey Chair in Humanities
Lynette S. Autrey Chairs in Humanities
Herbert S. Autrey Chairs in Social Sciences
Lynette S. Autrey Chair in Social Sciences
Lynette S. Autrey Chair in Humanities—Music
Lynette S. Autrey Chair in Management
Gene Brice Colloquium Fund for Electrical Engineering
Brown and Root Chair in Engineering
George R. Brown Chair in Administration
Herman and George R. Brown Chair in Civil Engineering
Andrew Hays Buchanan Chairs in Astrophysics
D. R. Bullard—Welch Foundation Chair in Science
E. D. Butcher Chairs
Louis Calder Chair in Chemical Engineering
Harry S. Cameron Chair in Mechanical Engineering
Harry and Hazel Chavanne Chair in Religious Studies
Allyn R. and Gladys M. Cline Chair in Economics and Finance
Allyn R. and Gladys M. Cline Chair in History
John W. Cox Chair in Biochemical and Genetic Engineering
Carey Croneis Chair in Geology
Craig Francis Cullinan Chair
G. C. Evans Instructorships in Mathematics
W. Maurice Ewing Chair in Oceanography
Laurence H. Favrot Chair in French
Anna Smith Fine Chair in Judaic Studies
Henry S. Fox, Sr., Chair in Economics
Gladys Louise Fox Chair in English
Lena Gohlman Fox Chair in Political Science
Foyt Family Chair in Engineering
Gene and Norman Hackerman Chair in Chemistry
Noah Harding Chairs in Mathematics
Noah Harding Chair in Computer Science
Reginald Henry Hargrove Chair in Economics
A. J. Hartsook Chair in Chemical Engineering
William Pettus Hobby Chair in American History
Jesse H. Jones Distinguished Appointments in the Jones School of Administration
Jesse H. Jones Chair in Management
Mary Gibbs Jones Chair in History

W. M. Keck Foundation Chair in Geophysics
William Alexander Kirkland Chair in Administration
Ralph and Dorothy Looney Chair
Edgar Odell Lovett Chair in Mathematics
Henry R. Luce Chair in Engineering Psychology
Samuel G. McCann Chair in History
Carolyn and Fred McManis Chair in Philosophy
Burton J. and Ann M. McMurtry Chair in the School of Engineering
Harris Masterson, Jr., Chair in History
Andrew W. Mellon Junior Humanities Scholars
Andrew W. Mellon Chair in the Humanities
Libbie Shearn Moody Chair in English
W. L. Moody, Jr., Chair in Mathematics
Stanley C. Moore Chair in Engineering
Joseph and Joanna Nazro Mullen Chair in Fine Arts
Joseph and Ida Kirkland Mullen Chair in Music
H. Joe Nelson III Chair in the Jesse H. Jones Graduate School of Administration
George A. Peterkin Chair in Political Economy
Milton B. Porter Chair in Mathematics
J. Newton Rayzor Chair in Philosophy and Religious Thought
Lewis B. Ryon Chair in Engineering
Allison Sarofim Distinguished Teaching Professorship in the Humanities
Fayez Sarofim Professorship in Science and Engineering
The Schlumberger Chair in Advanced Studies and Research
Elma Schneider Chair in Music
Harry K. and Albert K. Smith Chair in Architecture
Dorothy Richard Starling Chair in Classical Violin
Henry Gardiner Symonds Chair in Administration
Albert Thomas Chair in Political Science
Radoslav A. Tsanoff Chair in Public Affairs
William Gaines Twyman Chair in History
Isla and Percy Turner Chair in Biblical Studies
Robert A. Welch Chair in Chemistry
Harmon Whittington Chair in Administration
Harry Carothers Wiess Chair in Geology
Harry Carothers and Olga Keigh Wiess Chair in Natural Sciences
Sam and Helen Worden Chair in Physics
Gus Sessions Wortham Chair in Architecture
Brown Foundation—J. Newton Rayzor Lectures
Carroll Camden Lectureship in English Literature
William Wayne Caudill Lecture Series in Architecture
English Department Distinguished Professor Lectureship
Joe L. Franklin Lectureship in Physical Chemistry
Hanszen College Fund for Aaron Seriff Lectures
W. V. Houston Lectureship
Ervin Frederick Kalb Lectureship in History
Thomas W. Leland Visiting Lectureship in Chemical Engineering
W. Oscar Neuhaus Memorial Lectures in the Jones School
The Rockwell Lectures
The Harold E. and Margaret R. Rorschach Memorial Lectures in Legal History
Tsanoff Lectureship in the Humanities
Dr. Thomas J. and Jane A. Vanzant Lectureship
Paul C. Wilber Lectureship in Chemical Engineering

# INFORMATION · FOR UNDERGRADUATE · STUDENTS



# Degree Requirements, Majors, and Curricula

All degrees conferred by Rice University, both graduate and undergraduate, are awarded solely in recognition of educational attainments, not as warranty of future employment or admission to other programs of higher education.

The Bachelor of Arts degree at Rice is awarded with a designated major in some field of architecture, the humanities, music, social sciences, science, engineering, or with a specified interdepartmental major or an approved area major. The general university requirements for the B.A. degree, as well as the options open to students in their choice of majors, are described in the following section.

Similarly, the Bachelor of Science degree at Rice is awarded with a designated major in the various engineering departments. The requirements for this degree, which is the ABET accredited degree, are described in the following section.

The Bachelor of Music, which is offered by the Shepherd School of Music, may be taken as a separate undergraduate degree or in conjunction with the Master of Music when both are awarded simultaneously on completion of a five-year program of professional studies.

The Jesse H. Jones Graduate School of Administration offers a Master of Accounting degree program that may be completed in one year of graduate study if students have taken a prescribed set of prerequisite courses by the end of their senior year. No specific undergraduate degree is required.

For students interested in teaching in secondary schools, a program of teacher training leading to certification in the State of Texas may be completed together with the B.A. degree. This program is administered by the Department of Education.

Programs that satisfy the requirements for admission to medical, dental, or law school are available in conjunction with the various majors.

## Degree Requirements and Majors

### Graduation and University Credit Requirements

Students completing a Bachelor of Arts degree must pass a minimum of 120 semester hours. In establishing an undergraduate major for the Bachelor of Arts degree, departments must specify a minimum of 18 semester hours for majors in the humanities and social sciences and a minimum of 24 semester hours for majors in science. No department may specify more than 80 semester hours (related laboratories, required courses, and prerequisites included). For a Bachelor of Arts degree in any discipline other than architecture, students must pass a minimum of 60 semester hours in addition to major requirements specified by their department. Architecture majors must pass at least 38 semester hours in addition to their major requirements.

To fulfill the requirements for the degree of Bachelor of Science in one of the several branches of engineering, with the exception of chemical engineering, students must pass no fewer than 134 semester hours. Students fulfilling the requirements for the Bachelor of Science in chemical engineering must pass up to 137 semester hours, depending on accreditation requirements. In establishing a departmental major for the degree of Bachelor of Science in one of the various branches of engineering, with the exception of chemical engineering, no department may specify more than 92 semester hours (required courses, prerequisites, and related laboratories included). In establishing the departmental major for the B.S. in chemical engineering, the department may

specify no more than the semester hours necessary to meet the requirements of the accrediting agency, up to a maximum total of 104 semester hours (required courses, prerequisites, and related laboratories included).

For any bachelor's degree, no fewer than 48 semester hours completed in fulfillment of the degree requirements must be on an advanced level (numbered 300 or higher) and more than 50 percent of these hours must be completed at Rice. Furthermore, students must complete more than 50 percent of the advanced-level requirements in their major field at Rice. Within major requirements, departments may specify that a higher proportion of advanced-level work must be taken at Rice.

After students have fulfilled university distribution requirements, the major requirements, the physical education requirement, and the English composition requirement, all remaining courses in their degree programs are free electives. Students must assume the responsibility for meeting all deadlines and determining if their distribution requirements are met.

Transfer students must be registered at Rice for at least four full semesters during the fall and spring terms and, like all Rice undergraduates, must complete no fewer than 60 semester hours at Rice for a Rice degree.

To be recommended for graduation, all students must complete their degree requirements with a minimum GPA of 1.67 in all Rice courses and a minimum GPA of 2.00 for those courses presented in fulfillment of their major requirements.

The Committee on Examinations and Standing reviews student records at the time of graduation and recommends to the faculty outstanding students to be granted degrees *cum laude, magna cum laude,* or *summa cum laude.*

## University Distribution Requirements

1. At Rice University, undergraduate majors are divided into six divisions: humanities, social sciences, natural sciences, engineering, architecture, and music. Humanities majors comprise Group I; the social sciences make up Group II; and engineering and natural sciences fall under Group III. Music and architecture majors meet unique and specific requirements outlined below. Interdepartmental majors except cognitive sciences have been assigned to one of the three groups for distribution purposes.

Humanities Majors (Group I)

- Ancient Mediterranean Civilizations
- Art and Art History
- Asian Studies
- Classics
- English
- French
- German
- Human Performance/Health Sciences
- Medieval Studies
- Philosophy
- Russian
- Religious Studies
- Spanish
- Study of Women and Gender

Social Science Majors (Group II)

- Anthropology
- Economics
- History
- Linguistics
- Managerial Studies
- Mathematical Economic Analysis
- Policy Studies
- Political Science
- Psychology
- Sociology

Natural Science Majors (Group III)
- Biochemistry and Cell Biology
- Chemical Physics
- Chemistry
- Ecology and Evolutionary Biology
- Geology
- Geophysics
- Mathematics
- Physics

Engineering Majors (Group III)
- Chemical Engineering
- Civil Engineering
- Computer Science
- Electrical and Computer Engineering
- Environmental Sciences
- Materials Science
- Computational and Applied Mathematics
- Mechanical Engineering
- Statistics

2. Undergraduate students must complete at least 12 credit hours in each of the three subject groups listed below:

| | |
|---|---|
| Group I. | Literature and language, art and art history, classics, philosophy (except logic), religion, music, and humanities. |
| Group II. | Economics, history, political science, anthropology, linguistics, psychology, and sociology. |
| Group III. | Biological science, physical science, engineering, mathematics, mathematical sciences, logic, statistics, and computer science. |

This requirement is fulfilled by taking Foundation Courses or their equivalents, as specified for each major, and other approved courses.

3. Foundation Courses are offered in each distribution group. They are primarily intended to provide a sound basis for completing distribution requirements, but may also be explicitly required for completion of some majors. It should be noted that directors of the foundation courses are empowered to waive the foundation course requirements for individual students.

Humanities 101, 102: These courses will introduce students to disciplines in the humanities and arts by studying representative works primarily of Western culture from ancient Greece through the modern era. There is no equivalent course.

Social Science 102: This course will offer a broad historical introduction to thought about human society. There is no equivalent course.

Natural Sciences 101, 102: These courses will provide an introduction to the principles underlying physics, chemistry and mathematics. The foundational requirement in the natural sciences can also be satisfied by: (a) successful completion of 3 credit hours of mathematics (Math 101, 102, 111 or 112), 3 credit hours of physics (Phys 101, 102, 121 or 122), and 3 credit hours of chemistry (Chem 101, 102, 111 or 112) or (b) successful completion of 6 credit hours each in two of these three areas.

4. University Foundation Course Requirements:
   A. Group I majors must complete Natural Science 101, 102 or equivalent.
   B. Group II majors must complete Natural Science 101, 102 or equivalent.

C. Group III majors must complete Humanities 101, 102 and Social Science 102.
D. Architecture majors must complete Humanities 101, 102, Social Science 102, and Natural Science 101, 102 or equivalents.
E. Cognitive Sciences majors must complete Humanities 101 and 102. Students who double major in a Group I or Group II major are not required to take any foundations courses.
F. Music majors must complete Humanities 101, 102, Social Science 102, and Natural Science 101, 102 or equivalents.
G. Area majors must be classified as Group I, II or III at the time of approval. They are then subject to the foundation course requirements of the assigned Group.
H. A student who double majors in a Group I or II discipline and a Group III discipline is not required to take any of the foundation courses.
I. A student who double majors in Music and a Group I, II or III subject is required only to meet the foundation course requirements of the Group I, II or III major.
J. A student who double majors in Architecture and a Group I, II or III subject is required only to meet the foundation course requirements of the Group I, II or III major. Note, however, that completion of specified Foundation Courses may be required for the Architecture major.

5. In addition to the foundation courses appropriate to their major, students must complete the distribution requirements in each subject group by taking other courses that appear on the list of approved courses in effect at the time of course registration. A complete list is published annually in the *Schedule of Courses Offered*. Copies are also available in the Registrar's Office and in the Office of Academic Advising.

## Coherent Minors

A coherent minor comprises an approved sequence of three or four courses that build on the foundation courses and are designed to encourage exploration of a subject in depth from a variety of interrelated perspectives that lie outside the division of major study. Successful completion of a coherent minor will be noted on a student's transcript. Coherent minors are available on an optional basis, subject to the following rules.

A. A student with a major in a Group I or Group II subject may choose a coherent minor only from Group III upon successful completion of Natural Sciences 101-102 or their equivalents.
B. A student majoring in a Group III subject may choose only a Group I or II coherent minor upon successful completion of both Humanities 101-102 and Social Sciences 102.
C. Students majoring in architecture, music, and certain area majors, who are required to complete all five foundation courses, may elect a coherent minor from Group I, II, or III.
D. Courses included in the coherent minor will be considered on a course-by-course basis for purposes of satisfying distribution requirements.
E. No courses that are submitted for a coherent minor may be taken on a pass-fail basis, and a minimum grade point average of 2.00 must be achieved in the courses presented for the coherent minor.
F. Transfer courses, if their Rice equivalents are among the courses included in the coherent minor, may be accepted for the minor, but at least one-half of the courses submitted for the minor must be taken at Rice University.

G. Each coherent minor will be the responsibility of the appropriate academic dean, who will be responsible for approving any course substitution that he or she deems to be proper in exceptional cases, and for giving official verification of a student's satisfactory completion of the requirements of the minor.
H. In order to have the successful completion of a coherent minor noted on the student's transcript, the student should obtain a form to verify that completion at the Registrar's Office. The form must be approved and signed by the appropriate dean or designee and returned to the Registrar's Office by the end of the tenth week of the last semester in a student's academic career.

The current list of coherent minors is given below. New coherent minors are proposed from time to time by the faculty, supported by the appropriate dean and given final approval by the provost of the university upon recommendation of the Undergraduate Curriculum Committee. The Registrar's Office and the Office of Academic Advising have updated lists of all approved coherent minors.

Group I/II Minors:
**Ancient Greece** considers the history and culture of archaic and classical Greece. Three Courses: Hist 201 or Clas 211; one of Clas 222, Clas 315, Clas 352; one of Clas 335, Clas 336, Hart 306, Phil 301.

**Archaeology** provides a foundation of knowledge about ancient peoples and cultures, along with the methodological and theoretical approaches through which such knowledge is attained. Four Courses: Anth 205; two of Anth 211, Anth 216, Anth 312, Anth 362; one of Reli 205, Hart 305, Hart 306, Hart 308.

**Asian Studies** addresses the historical, religious, and cultural aspects of Buddhism and Confucianism. Three Courses: Huma 211; two of Anth 353, Anth 355, Hart 482 or Reli 322, Hist 250/450.

**Engineering Psychology** introduces students to the fundamentals of human information processing as they affect the design and operation of modern technologies. Four Courses: Psyc 101; Psyc 203; Psyc 350 or Psyc 351; Psyc 470.

**Formal Institutions** acquaints students with the study of the formal institutions society has established to serve its needs. Four Courses: Econ 430 or Econ 436; two of Poli 317, Poli 318, Soci 370.

**History of Western Philosophy** offers students the opportunity to study and discuss critically the classic works of Western philosophy. Three Courses: Phil 201, Phil 202, Phil 301, Phil 302, or Phil 308.

**Imperialism: Ancient and Modern** explores the workings of imperial systems in different epochs and considers the premises from which history examines them. Four Courses: Hist 307 or Hist 282; Hist 410 or Hist 232; Hist 425; Hist 469.

**Interpretive Anthropology** involves the translation of the meanings that members of societies give to their own institutions into analytic models of how culture shapes social action in historical context. Four Courses: Anth 333; Anth 336; two of Anth 327, Anth 340, Anth 348, Anth 406.

**Language and Cognition** explores the interconnections between language and thought from the perspectives of linguistics, philosophy, psychology, and information systems. Four Courses: Ling 200; one of Ling/Phil 353, Ling/Anth 406, Ling/Anth 411; Ling/Psyc 309 or Ling 412; Ling 306 or Ling 315.

**Legal Studies** provides a broad exposure to the nature of the contemporary practice of the law and to the origins of our legal system. Four Courses: either Phil 316 and Hist 337 or Hist 397 and Hist 398; two of Anth 326, Econ 438, Poli 321.

**Medieval Studies** provides interdisciplinary perspectives on the medieval world. Three Courses: Hist 202; two of Engl 323 or Engl 328, Hart 319, Hist 337, Phil 201.

**Microeconomic Policy Analysis** provides an understanding of the core of economic reasoning together with its applications to significant areas of economic life. Four Courses: Econ 211; Econ 370 or Econ 372; two of Econ 415, Econ 435, Econ 436, Econ 438, Econ 461, Econ 483.

**Modern British and American Literature** offers students a survey of major British and American writers of the modern period and the opportunity to explore one aspect of that literature in greater depth. Three courses: Engl 252; Engl 261; one of Engl 363, Engl 364, Engl 383, Engl 384, Engl 387.

**Modern Germany** introduces students to the history, politics, literature and culture of Germany in the 20th century. Three Courses: two of Germ 313, Germ 314, Germ 376, Poli 360 or Hist 355; one of Germ 361, Germ 391, Hist 376, Phil 308.

**Music Studies** offers theoretical discussions and applications that will provide a background for music history and literature or for creative work. Three Courses: Musi 317; either Musi 318 and Musi 328, Musi 327 and Musi 328, or Musi 318 and Musi 307.

**Peace and Conflict Studies** introduces students to the causes of conflict, its possible positive aspects, and the possibilities for resolving it. Four Courses: Poli 373; Poli 378; Hist 293 or Hist 294; Phil 101 or Soci 411.

**Social Inequality** introduces students to major perspectives on social inequality, with an emphasis on the distribution of scarce resources. Four Courses: Soci 301; Econ 211; Econ 415 or Econ 450; one of Hist 430, Poli 309, Soci 306, Soci 309.

**Social Order and Change** provides students with a set of conceptual tools with which to confront the problems of stability and change in modern societies.Four Courses: Soci 203; three of Soci 301, Soci 306, Soci 311, Soci 370, Soci 411.

**Twentieth-Century Art: History and Studio** offers students exposure to the nature of art history and to two different studio courses. Three Courses: Arts 225; one of Hart 356, Hart 463, Hart 475; one of Arts 205, Arts 301, Arts 311, Arts 365.

**Women's Studies** introduces students to the ways in which feminist scholarship has served both as cultural critique and as a challenge to traditional disciplines. Three Courses: Huma 270; Hist 244/Hist 344; one of Engl 304, Engl 321, Engl 413, Hist 423, Hist 438, Huma 385, Reli 357, Soci 306, Soci 334.

Group III Minors:
**Earth Systems** promotes an understanding of the earth as a single complex system in which the atmosphere, the oceans, the crust, and life interact to produce the global environment. Three Courses: Bios 325; Geol 101 or Geol 341; Spac 203 or Spac 443.

**Ecosystem Biology** examines the biological bases for the complex interactions of species within a variety of ecosystems. Three Courses: Bios 202, Bios 321; Bios 325.

**The Geosciences** is concerned with the surface and subsurface features of the earth, with humankind's relationship to them, and with the forces that change the earth. Three Courses: Geol 101, Geol 102, Geol 202, or Geol 341.

**Living Systems** offers students a broad view of the range of biological investigation into the nature of organisms, from the molecular to the organismic level. Three Courses: Bios 201; Bios 202; one of Bios 329, Bios 336, Bios 341, Bios 343.

**Planetary Science** compares the earth with other solar planets and the solar system with other systems in the universe. Three Courses: Geol 101, Geol 214, Spac 201.

**Space Science** explores the wide range of objects observed in the universe, the methods of studying these objects, and humankind's explorations into space. Three Courses: Spac 201 or Spac 250; Spac 202 or Spac 300 + 330; Spac 203 or 443.

**Statistical Science** provides students with the basic philosophy of modeling real-world phenomena in the light of data. Three Courses: Stat 300 or Stat 301; Stat 381 or Stat 382; one of Stat 339, Stat 400, Stat 429, Stat 480, Stat 495.

## Skills

**English Competency Requirement.** Every Rice student must demonstrate competency in English comprehension and composition. This requirement is satisfied by passing the English composition examination administered by the Department of English to all entering students during orientation week. Students who fail to pass this test are required to enroll in English 103, a one-semester course in composition that carries both degree and distribution credit. Satisfactory completion of this course then fulfills the English competency requirement.

**Physical Education.** Each student must pass two semester courses in basic health and physical education, although these courses do not count toward the semester hours required for a degree. Students with disabilities may satisfy this requirement by taking individual instruction or classes arranged specifically to meet their needs.

## Declaring Departmental Majors and Honors Programs

Students normally designate a major before preliminary registration for the junior year and will not be permitted to register for the fall semester of the junior year without having declared a major. To assist students with this selection, Majors Day is held each spring semester. Departments and preprofessional offices provide information about their programs at a central location. Once a student declares a major, the department or title of the major is then noted on the student's transcript and a faculty adviser in the major department is assigned. Introductory courses taken before formal designation of a major may be counted in fulfilling the major requirements.

In order to receive a bachelor's degree, a student must complete the requirements for at least one major. Students declare their major using a form provided by the

Registrar. The department chair or designee must sign the form acknowledging the declaration. It is expected that the department will counsel the student about the requirements that must be met 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.

Although students normally declare a major by the time of preregistration for the spring semester of their sophomore year, they are always free to change departmental majors in the junior or senior year, although this 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 prior to graduation (see Area Majors). Students and their advisers should regularly review progress toward their degrees.

For information on the specific requirements for any departmental major, students should consult the departmental listings under Courses of Instruction and seek the advice of a faculty member in the department.

Undergraduate honors programs are open to qualified students, with departmental approval, in several departments. Through small classes and seminars, independent reading or research projects, and close contact with faculty research, students in an honors program may accelerate study in their major fields and, in some cases, enter graduate courses. Information on the qualifications for admission and the content of honors programs may be found in the departmental listings under Courses of Instruction.

## Second Four-year Bachelor's degree

Both currently enrolled and former Rice students already holding a bachelor's degree from Rice may earn a *second* different four-year bachelor's degree from Rice.

Students already enrolled at Rice may begin work on a second four-year bachelor's degree before completion of the first:

1. by being accepted for the second major by the major department and fulfilling all requirements for the second degree;
2. by completing a minimum of 30 additional semester hours at Rice beyond the hours required for their first degree, to be applied to the second degree.

Current Rice students seeking admission to this program should apply to the Registrar. The application should include a written statement of both proposed majors and a course program for each. This statement should also contain a notation of approval from the chairman or undergraduate adviser from each department concerned, indicating that all major degree requirements will be satisfied with the proposed course program. Students holding a bachelor's degree from Rice may earn a different four-year bachelor's degree from Rice:

1. by being accepted for the major by the major department and fulfilling all requirements for the second degree;
2. by completing a minimum of 30 additional semester hours at Rice beyond their first bachelor's degree to be applied to the second degree;
3. by attending in full-time residence at Rice for at least two semesters during the fall or spring terms beyond their first bachelor's degree.

For Rice graduates who enroll for a second undergraduate degree, the entire undergraduate record continues cumulatively.

Former Rice students seeking admission to this program should apply to the Registrar. The application should include a written statement of the proposed major and course program for the second degree, a supporting letter from the chairman of the major

department, and an explanation of the student's reasons for seeking a second degree.

Students with a bachelor's degree from schools other than Rice may earn a four-year bachelor's degree in a different major from Rice.

1. by being accepted for the major by the major department and fulfilling all requirements for the second degree;
2. by completing a minimum of 60 semester hours at Rice to be applied to their Rice degree;
3. by attending in full-time residence at Rice for at least four semesters during the fall or spring term.

Students with a bachelor's degree from schools other than Rice should apply for admission to the Admission Office and will be considered according to the procedures and criteria for transfer students. Their application for admission must include all the materials listed above for applicants who are former Rice students plus an official transcript of the first degree.

Courses completed at Rice as a Class III student may be applied to a second undergraduate degree only on approval by the major department for that degree.

Information concerning financial aid available to participants in the second degree program may be secured from the financial aid office. Students admitted to the second degree program may request to be assigned to a college but will have lower priority for on-campus housing than students enrolled for a first four-year bachelor's program. The expectation is that such space will probably not be available.

### Summer School

Rice Summer School offers a variety of credit programs for Rice students, visiting undergraduates, graduate students, and Class III students (nondegree postgraduate study). Admission is automatic for any Rice undergraduate or graduate student in good standing. Other students will need to send official transcripts (mailed directly from their universities and colleges to the School of Continuing Studies) and complete an application. Six to eight credit hours is considered a full load.

All applicants should submit their applications with a $25 fee and a $25 per credit hour deposit by the application deadline (earlier for certain courses and trips). Because the Summer Program operates on a cost-return basis, it is essential that students apply by the deadline. Courses that do not generate an enrollment sufficient to pay costs by the deadline may be canceled. Applications may be accepted after the deadline, but before the start of classes, with an additional $25 late fee.

Tuition is $265 per semester hour of credit for undergraduate courses (100-400 level) and $390 per semester hour of credit for graduate courses (500+ level) and must be paid before classes begin. Very limited financial aid is available for Rice students only. Auditing is permitted with full payment of tuition and fees.

For more information, please contact the Rice Summer Program Office at (713) 520-6022 or 527-4803.

## Areas of Study

### Architecture

Students interested in architecture may choose from programs leading to either the Bachelor of Arts or the Bachelor of Architecture degree. The Bachelor of Arts requires four years of study with a major in architecture. Students who have completed or will complete the four-year B.A. with a major in architecture may apply for

admission to the Bachelor of Architecture program.

Students accepted into the Bachelor of Architecture program in their fifth year are assigned to a working preceptorship with an architectural firm and return to Rice to complete a sixth year of architectural study for the degree. Further information on these programs may be found under Architecture in the Courses of Instruction section.

## Engineering

The George R. Brown School of Engineering at Rice offers, through its eight departments, opportunities for a variety of curriculum and degree choices. Students interested in the engineering profession may major in chemical engineering, civil engineering, computer science, electrical and computer engineering, mathematical sciences, mechanical engineering, materials science and engineering, or statistics for both undergraduate and graduate degrees. They may also take a double major combining environmental science with another science or engineering field. These programs lead to either the B.A. or the B.S. degree and may qualify students for further study leading to a fifth-year professional master's degree, a Master of Science degree, or a Doctor of Philosophy degree.

During the first two years, engineering students should consult with the chairs of the departments of interest or with the special first- and second-year advisers appointed by each department for information and advice about details of the programs and choice of electives and about engineering as a profession.

Degree requirements and recommended programs of study are listed under the individual departments.

## Humanities

The School of Humanities offers majors in art and art history, classics, English, French, German, human performance and health sciences, history, linguistics, philosophy, religious studies, Russian, and Spanish.

An interdepartmental major in policy studies, which combines courses from the School of Humanities and the School of Social Sciences, is described on page 81.

The requirements of each major may be found in the departmental listings under Courses of Instruction and are also available from the department chair and from the Registrar's Office.

The Introduction to Humanities Foundation course and the Joint Venture Program, sponsored by the Career Services Center, are also described in the Courses of Instruction under the heading Humanities, together with other Humanities listings.

Interdisciplinary majors in Ancient Mediterranean Civilization, Asian Studies, Medieval Studies and the Study of Women and Gender are described in the courses of instruction under separate headings.

## Music

The Shepherd School of Music offers four degrees: the Bachelor of Arts degree in music; the Bachelor of Music degree in performance, composition, music history, and music theory; the Master of Music degree in performance, composition, choral and instrumental conducting, musicology and music theory; and the Doctor of Musical Arts degree in composition and selected areas of performance. Normally, four years are required for the bachelor's degrees and two years for the master's. Qualified students may elect an honors program that leads to the simultaneous awarding of the Bachelor of Music and Master of Music degrees after five years of study. The final two years of the B.Mus./M.Mus. program are devoted to specialization and can be entered

only upon passing qualifying examinations administered in the fifth or sixth semester.

More detailed information about the Shepherd School and the requirements for degrees is given under Music in the Courses of Instruction section of this catalog.

## Natural Sciences

The Wiess School of Natural Sciences comprises the departments of biochemistry and cell biology, chemistry, ecology and evolutionary biology, geology and geophysics, mathematics, physics, and space physics and astronomy. All but the space physics and astronomy department offer programs leading to the B.A. degree. Students may also elect double majors combining one of the programs in natural sciences with another science, the humanities, or an engineering field. The requirements for each major may be found in the departmental listings under Courses and are also available from the department chair and from the Registrar's Office.

## Social Sciences

The School of Social Sciences offers majors in anthropology, economics, mathematical economic analysis, political science, psychology, and sociology.

The interdepartmental major policy studies overlaps the School of Social Sciences, the School of Engineering, and the School of Humanities. The managerial studies major overlaps the School of Social Sciences, the Jones School, and the School of Engineering.

The cognitive sciences major overlaps the School of Social Sciences, the School of Humanities, and the School of Engineering.

The requirements of each major may be found in the departmental and interdepartmental major listings under Courses of Instruction and are also available from the department chair and from the Registrar's Office.

## Other Options for Undergraduate Majors

In deciding on a major, students are encouraged to select a course of study directed toward their personal goals. Several options are available besides the normal major in most departments. Further information on these may be found in the departmental listings.

1. **Areas of concentration** within departmental majors. Certain majors, including architecture, electrical engineering, German, human performance, physics, and Spanish, but not limited to these, have a choice of different areas of concentration with different course requirements within the department major.
2. **Double or triple majors** that fulfill the major requirements of two or three departments. The majors may, but need not, be in related fields: for example, computer science/math science or biology/English.
3. **Interdepartmental majors.** Interdepartmental majors combine courses taught by faculty from more than one department. A list of these majors is provided in the table located near the end of this section on Curricula and Degrees.
4. **Area majors.** Instead of selecting an established departmental major or program, students have the option of developing an area major that is closer to their particular interests and career goals if the academic resources are available at Rice. Whereas double majors must conform to the requirements of both departments, an area major is a single major that combines courses from two or more departments and forms a clearly coherent program with its

own major requirements. An area major must be distinct from other majors offered at Rice and is not to be taken as a double major along with an established major. Students who elect to take an area major must also conform to all other university graduation requirements.

An area major is normally initiated by the student and is worked out in conjunction with advisers in the Office of Academic Advising and faculty advisers from each of the departments involved. Together they design a comprehensive and substantial course of study, decide on an appropriate title, and indicate their approval with signatures. Final approval of the plan must be granted by the chairs of the involved departments and the Undergraduate Curriculum Committee.

After approval has been secured, the Office of Academic Advising officially certifies the approved major plan to the Registrar and oversees the major on behalf of the faculty advisers. Any change in the proposed requirements requires the approval of the faculty advisers and the Undergraduate Curriculum Committee.

Students who might want to develop an area major but are uncertain which departments to approach should consult with the Office of Academic Advising during the sophomore year. Area majors may not be formulated and approved within three semesters of graduation other than in exceptional circumstances that would be determined by the Committee on Examinations and Standing. Under no circumstances may an area major be declared in the final semester before graduation.

## Premedical, Prelaw, and Prebusiness Programs

In addition to the preprofessional and professional programs offered by Rice in accounting, architecture, business administration, engineering, public and nonprofit management, and music, a student may pursue a program that will satisfy the requirements for admission to graduate professional schools in business, dentistry, diplomacy and foreign affairs, health science, law, or medicine.

The health professions adviser counsels students interested in premedical or predental studies and other professional programs in the health sciences. Those interested in prelegal studies should consult the prelaw adviser. Information about a career in business, finance, or accounting can be obtained from the prebusiness adviser. These advisers may be contacted through their offices in the Ley Student Center.

Students who plan to enter medical school or other professional or any graduate school at the end of their junior year at Rice can arrange to receive a Rice four-year bachelor's degree by submitting to the Committee on Examinations and Standing a degree plan that fulfills all normal university and departmental requirements for the bachelor's degree. The degree plan must be submitted before students begin their graduate or professional training. Transfer credit for courses not to exceed the equivalent of ten courses of three or four semester hours are accepted if the individual courses are acceptable to the student's major department and the registrar according to normal procedures. Students who have entered Rice after their first year must complete the minimum residence and course requirements for transfer students before leaving. The Committee on Examinations and Standing reviews the degree plan submitted by each student and gives final approval of the student's admission to the program. In addition, business schools have begun to attach importance to coursework in calculus.

**Premedical and Predental Programs.** The entrance requirements for medical and dental colleges of the United States are limited to relatively few courses: one year each of general chemistry, organic chemistry, physics, mathematics, biology, and English and laboratories required by the foregoing science courses. Because medical and dental schools show little or no preference for any one major, students planning a medical or dental career have the opportunity to choose their major on the basis of their interests and capabilities. They should keep two objectives in mind: (1) to secure a broadly based cultural background and (2) to master the necessary skills for an alternative career. Those who elect to concentrate in the sciences or engineering will automatically satisfy most of the entrance requirements. Students concentrating in the humanities need to make some adjustments in their study plan in order to fulfill the entrance requirements. Premedical and predental students are advised to discuss their plans with the health professions adviser.

**Prelaw Studies.** The academic requirement for admission to law school is satisfied by all degree programs offered at Rice. While many students major in history, political science, or economics as a base for prelaw studies, no law school specifies particular courses or curricula as prerequisite to admission. Most require only a baccalaureate degree and the Law School Admission Test.

*The Official Guide to U.S. Law Schools*, published by the Law School Admission Council/Law School Admission Services in cooperation with the American Bar Association and the Association of American Law Schools, states that prelegal education should develop oral and written comprehension and expression as well as creative thinking and critical understanding of human values and that no one discipline is uniquely concerned with those objectives. Therefore, prelaw students should strive for development of their own capabilities within the areas of their greatest interest. Although there is no required course of study for the student interested in a legal career, the prelaw adviser recommends expository writing courses and beginning accounting and economics courses as useful to any law student.

Interested students should contact the prelaw adviser early, preferably in their first year at Rice. The official guide, reference books, and catalogs of many leading law schools are available in the prelaw office in the Ley Student Center. Prelaw students are encouraged to discuss their plans with the prelaw adviser.

**Prebusiness Studies.** Graduate business schools consider a variety of attributes when admitting students to their Master of Business Administration (MBA) programs:

1. Scholastic aptitude, as evidenced by undergraduate grades and the score on the Graduate Management Admission Test (GMAT),
2. extracurricular activities,
3. work experience, and
4. ability to communicate effectively both in writing and orally.

No one undergraduate major is favored over another. Students intending to study accounting or business administration at the graduate level are advised to select an undergraduate major (or majors) in which their academic performance is likely to be the strongest.

Regardless of one's undergraduate major, it would be wise to take Economics 211 and 212 and Accounting 305 as background courses. Since many major business schools prefer students who have relevant full-time experience, these courses will assist graduating seniors in obtaining employment in the private or public sector.

Students who are considering application to a graduate business school are encouraged to consult the prebusiness adviser early in their undergraduate years. Graduate business schools differ in their objectives, curricula, teaching methods, job placement possibilities, and admission standards, and prospective applicants should endeavor to become versed in the programs of different schools before beginning the

application process. The prebusiness adviser can also suggest the kinds of work experience that graduate business schools find to be the most useful for prospective students.

During their senior year, undergraduates may apply for the one-year Master of Accounting program offered by the Jesse H. Jones Graduate School of Administration. In order to be eligible for the program, students must have taken the following prerequisites as undergraduates: 6 hours of economics, 3 hours of industrial and organizational psychology, 3 hours of applied statistics, 3 hours of quantitative analysis, 3 hours of financial accounting, and 3 hours of management accounting. In addition, courses in corporate finance and intermediate microeconomics are recommended but not required. No specific undergraduate major is required for entrance into the program.

## Reserve Officers' Training Corps Programs

Rice University hosts a Naval Reserve Officers' Training Corps program. Students may participate in Army ROTC through a cross-enrollment program with the University of Houston. These programs seek to train college students so that upon graduation they may qualify as commissioned officers in a component of the United States Army, Navy or Marine Corps. The Navy has two categories of midshipmen, one working toward a Reserve commission and the other toward a regular commission. The Army normally awards Reserve commissions; however, certain selected distinguished military students may be offered commissions in the regular Army.

Any student suspended by the university for academic failure or other cause is immediately discharged from the ROTC programs. Any student performing unsatisfactory work in military science or naval science courses or lacking satisfactory officer-like qualities may be discharged from the ROTC programs regardless of the quality of academic work. Enrollment in the ROTC programs at Rice University is normally made at the beginning of the fall term. Courses in naval science and military science are open to all students. These courses may be counted as free electives toward satisfying degree requirements, but they may not be used to satisfy any distribution requirements or departmental major requirements. The amount of credit assigned to each course is determined by the provost, in consultation with the Committee on the Undergraduate Curriculum. All such courses shall, however, count toward the determination of probation, suspension, course load, and grade point average.

Additional information regarding the ROTC programs and available scholarships is given under Military Science and Naval Science in the Courses of Instruction section of this catalog.

## Teacher Certification

Programs of study are offered to fulfill the Texas state requirements for teaching certificates on the secondary level in art, biology, chemistry, computer science, earth science, economics, English, French, German, health education, history, Latin, mathematics or mathematical sciences, physical education, physics, political science, psychology, Russian, general science, social studies, sociology, and Spanish. See Education Department (p. 281) for information on undergraduate and master's level teacher certification programs.

# Degree Chart

| School<br>Department | Degrees Offered | Additional Options, Areas of Concentration (within majors) |
|---|---|---|
| **WIESS SCHOOL OF NATURAL SCIENCES** | | |
| Biochemistry and Cell Biology | B.A., M.A., Ph.D. | Integrated biosciences curriculum with undergraduate major in biochemistry or biology. Specialization in biochemistry, biophysical chemistry, molecular biophysics, molecular biology, genetics, cell biology, neurobiology, and developmental biology |
| Chemistry | B.A., M.A., Ph.D. | Chemistry; organic chemistry, physical chemistry, inorganic chemistry; chemical physics |
| Ecology and Evolutionary Biology | B.A., M.A., Ph.D. | Integrated biosciences curriculum with undergraduate major in biology or biochemistry. Specialization in ecology, animal behavior, evolutionary biology, molecular population genetics and systematics, plant biology, biogeochemistry |
| Geology and Geophysics | B.A. in Geology; B.A. in Geophysics; M.A., Ph.D. | Stratigraphy, sedimentation, sedimentary petrology, marine geology-oceanography, carbonate petrology, igneous petrology, geochemistry, meteoritics, structural geology, regional tectonics, rock mechanics, reflection and crustal seismology, geodynamics, isotope geology, and geochronology |
| Mathematics | B.A., M.A., Ph.D. | Complex analysis, partial differential equations, mathematical physics, differential geometry, Lie groups, topological dynamics, ergodic theory, geometric topology, algebraic topology, global analysis, and harmonic analysis |
| Physics | B.A., M.A., Ph.D. | B.A. options: Physics, applied physics, biophysics, chemical physics, and space physics and astronomy. M.A. and Ph.D. areas: Atomic, molecular, and laser physics, biophysics, condensed matter and surface physics, nuclear and particle physics, theoretical physics, and astrophysics |
| Space Physics and Astronomy | M.S., Ph.D. (For B.A., see Physics Department, space physics option) | Ground- and space-based observational astronomy; theoretical astrophysics and space plasma physics; aeronomy and Earth system science; spacecraft development and data analysis |
| **SCHOOL OF SOCIAL SCIENCES** | | |
| Anthropology | B.A., M.A., Ph.D. | |
| Economics | B.A. in Mathematical Economic Analysis, M.A., Ph.D. | Economics |
| Political Science | B.A., M.A., Ph.D. | |
| Psychology | B.A., M.A., Ph.D. | |
| Sociology | B.A. | |

| | | |
|---|---|---|
| **GEORGE R. BROWN SCHOOL OF ENGINEERING** | | |
| Chemical Engineering | B.A., B.S., M.Ch.E., M.S., Ph.D. | Biochemical, biomedical engineering; polymer science; chemical reaction engineering, interfacial phenomena, process control, thermodynamics, transport phenomena, heterogeneous catalysis, flow and transport in oil recovery and ground water cleanup |
| Civil Engineering | B.A., B.S., M.C.E., M.S., Ph.D. | Structural analysis and design, structural mechanics, environmental engineering |
| Computational and Applied Mathematics | B.A., M.A., Master of Computational and Applied Mathematics, M.C.S.E., Ph.D. | Computational science, numerical analysis, operations research, physical mathematics, applied probability, optimization |
| Computer Science | B.A., M.C.S., M.S., Ph.D. | Compiler construction, parallel computing, programming languages, programming environments, distributed systems, operating systems,complexity theory, algorithms, graphics |
| Electrical and Computer Engineering | B.A., B.S., M.E.E., M.S., Ph.D. | Bioengineering, circuits, control and communications systems, robotics, computer engineering, lasers, and solid-state electronics |
| Environmental Science and Engineering | M.E.E., M.E.S., M.S., Ph.D. (For B.A. as double major see department; B.S. see Civil Engineering and Chemical Engineering) | Biological, physical, and chemical treatment processes; hydrology and water quality modeling; water resources management; aquatic biology; inorganic and organic chemistry; atmospheric physics; physical-chemical processes, water treatment, membrane filtration |
| Mechanical Engineering and Materials Science | B.A., B.S., M.M.E., M.M.S., M.S., Ph.D. | Computer applications, thermal sciences and energy conversion, gas dynamics, fluid mechanics, stress analysis and mechanical behavior of materials, aerospace engineering, material structures |
| Statistics | B.A., M.Stat., M.A., Ph.D. | Data analysis, biomathematics, statistical computing, time series analysis, quality control, nonparametric function estimation, model building |
| **SCHOOL OF ARCHITECTURE** | | |
| | B.A., B.Arch., M.Arch., M.Arch in Urban Design, D.Arch. | |
| **SHEPHERD SCHOOL OF MUSIC** | | |
| | B.A., B.Mus., B.Mus./ M.Mus. simultaneously, M.Mus., D.M.A. | Composition, conducting, music history, performance, theory |
| **JESSE H. JONES GRADUATE SCHOOL OF ADMINISTRATION** | | |
| | Master of Business Administration, Master of Accounting (For B.A. see managerial studies. M.Acco. degree may be earned in one year if a specific set of prerequisites is taken as an undergraduate.) | Accounting, business entrepreneurship, finance, management information systems, international management, marketing, operations research, and public and nonprofit management |

| | | |
|---|---|---|
| **SCHOOL OF HUMANITIES** | | |
| Art and Art History | B.A., B.F.A., M.A. | Art history, studio art, archaeology, film and photography |
| Education | Master of Arts in Teaching | Teacher preparatory programs in 28 subject areas |
| English | B.A., M.A., Ph.D. | |
| French Studies | B.A., M.A., Ph.D. | |
| German and Slavic Studies | B.A., M.A., Ph.D.<br>B.A. | |
| Human Performance and Health Sciences | B.A. | Physical education; sport science, sport medicine, sport management, teaching, coaching; health education as teaching field only |
| History | B.A., M.A., Ph.D. | |
| Linguistics | B.A., Ph.D. | Anthropological, English, Germanic, and Romance linguistics; semiotics, cognitive and computational linguistics |
| Philosophy | B.A., M.A., Ph.D. | |
| Religious Studies | B.A., M.A., Ph.D. | |
| Hispanic and Classical Studies | B.A., M.A.,<br>B.A. | Language and literature, language,<br>Latin American studies |
| **INTERDEPARTMENTAL MAJORS** | | |
| Area Majors | B.A. | Two or more departments and the Office of Academic Advising |
| Ancient Mediterranean Civilizations | B.A. | Anthropology, art and art history, classics, history, philosophy, political science, religious studies. |
| Asian Studies | B.A. | Anthropology, art and art history, history, humanities, linguistics and semiotics, languages (Chinese, Japanese, Korean, Sanskrit), political science, religious studies |
| Chemical Physics | B.A. | Chemistry, physics |
| Cognitive Sciences | B.A. | Anthropology, computer science, electrical engineering, linguistics, philosophy, psychology, statistics |
| Managerial Studies | B.A. M.Acco. degree may be earned in one year if a specific set of prerequisites is taken as an undergraduate. (see Accounting and Administrative Science). | Accounting, computer science, economics, mathematical sciences, political science, psychology, statistics<br>(For new Managerial Studies program, see page 404.) |
| Medieval Studies | B.A. | Art and art history, classics, English, French German, history, humanities, linguistics and semiotics, music, philosophy, political science, religious studies |
| Policy Studies | B.A. | Anthropology, economics, history, mathematical sciences, philosophy, political science, psychology, sociology, statistics |
| Study of Women and Gender | B.A. | Anthropology, English, French studies, German, history, linguistics, music, philosophy, religious studies, sociology |

## Foreign Study Programs and Programs with Other Universities

### Institute of European Studies/Institute for Asian Studies

Rice is an affiliate university of the Institute for European Studies/Institute for Asian Studies, a system of centers abroad located in Durham, Freiburg, London, Madrid, Milan, Nantes, Paris, Vienna, Singapore, Adelaide, Southeast Asia, Tokyo, Taiwan, Beijing, Nagoya, and Russia. Each center offers a variety of opportunities to complement Rice major programs or to develop new interests. In most cases, the institute center is associated with a host university, and students may take a combination of courses offered by both the center and the university. Counselors and faculty from IES/IAS and the host university advise students in the selection of appropriate courses, facilitate registration at the university, arrange for university examinations, and provide transcripts to Rice. Students considering foreign study should arrange for prior approval of transfer credit through the academic department(s) involved and the Registrar.

### Butler University Institute for Study Abroad

An affiliation between Rice and Butler University Institute for Study Abroad enables Rice students to enroll directly in 18 universities in England and Scotland and 15 universities in Australia and New Zealand, either for the full academic year or for a one- or two-term stay. The universities in Great Britain include a wide array of schools, both in and out of London; the universities in the Pacific Rim include the universities of Melborne, Sydney, and Auckland. Butler University Institute for Study Abroad also sponsors one- or two-semester thematic INSTEP programs that concentrate on politics and law (London), politics and strategic studies (London), and advanced economics (Cambridge). The INSTEP program also provides for optional internships with financial institutions in the City of London at the end of the spring term.

Interested undergraduates may obtain brochures, applications, and information about transfer of credit for the Butler programs in the Office of Academic Advising.

### Beaver College Center for Education Abroad

Rice is also affiliated with Beaver College Center for Education Abroad, which provides direct access to 40 United Kingdom universities, among them various branches of the University of London, University of Bristol, University of Edinburgh, and Trinity University, Dublin. Beaver College also maintains centers in Vienna and Athens. These universities and programs offer courses of study for Rice students with majors in science, engineering, the humanities, and the social sciences. Prior approval for transfer credit should be arranged through the academic department(s) and the Registrar. Further information is available in the Office of Academic Advising.

### Intercollegiate Center for Classical Studies in Rome

Another consortial affiliation provided to enhance the Rice undergraduate experience is one centered in Rome, focusing on classical studies. Operated through Stanford University's Overseas Studies, this semester or year-long program offers undergraduate courses in Greek and Latin literature, ancient history and archaeology, and ancient art, taught by European and American professors. Majors in Ancient Mediterranean Civilization are particularly encouraged to avail themselves of this

program, although other juniors or seniors majoring in art history or classics would benefit as well. Additional information on this and other foreign programs may be obtained in the Office of Academic Advising.

### C. D. Broad Exchange Program with Trinity College, Cambridge

This exchange program, sponsored by the Student Aid Foundation Enterprises, involves both students and faculty from Rice and Trinity College, Cambridge. Student participation, available through receipt of a competitive award, confers one year of study as a visiting student at Rice or at Trinity College in alternate years. Similar but shorter exchanges of Rice and Trinity faculty members will also be arranged through the program. The provost will appoint the Rice faculty member for the exchange program.

Further information on the program may be obtained from the Office of Academic Advising.

### Rice University—University of Lancaster Exchange Program

Rice sophomores majoring in economics, managerial studies, or sociology and maintaining a minimum GPA of 2.5 may qualify for an exchange program with the University of Lancaster, a notable British university located in northwestern England, just south of the Lake District. Applications should be submitted to the Office of Academic Advising early in the spring semester prior to the school year spent abroad; finalists will be selected from among the applicants by the faculty of the departments of economics and sociology, in consultation with the Office of Academic Advising.

The Rice-Lancaster exchange occurs on a one-for-one basis, and each student pays tuition, room, and board to his or her home institution. The program must be undertaken for a full academic year.

### Rice University—University of Würzburg Exchange Program

Through an agreement between the physics and electrical and computer engineering departments at Rice and the University of Würzburg, Germany, undergraduates with a concentration in physics or electrical engineering may participate in a year-long exchange between the two schools. The exchange program at Würzburg includes an intensive German-language course taught in Germany prior to the fall term. To be eligible, Rice students must have completed at least two years of college-level German or the equivalent and must be selected through an application process in spring of the year prior to the exchange. Courses of study, usually fourth-year undergraduate level, must be arranged on an individual basis with advisors in the physics and electrical and computer engineering departments.

Applicants are generally named on a one-for-one basis of exchange. Each student must cover tuition costs at his or her home institution, to be applied to the exchange partner; other costs must be borne by the individual. Applications and general information about this exchange may be obtained in the Office of Academic Advising and in the physics department.

### Exchange Program with Federation of German-American Clubs

Students at Rice with a firm grounding in the German language, both written and spoken, are eligible to compete for an exchange program cosponsored by the Federation of German-American Clubs and Rice. Applications may be obtained from the Office of Academic Advising and should be completed by mid-March. Selection

of Rice finalists is made by the faculty of the Department of German and Slavic Studies, in cooperation with the Office of Academic Advising. The number of Rice finalists is usually limited to one or two a year, based on an even exchange with German students.

This ten-month program provides for the Rice student's enrollment at one of eighteen outstanding German universities, professional schools, or technical schools, depending on individual qualifications and field of study. The Federation of German-American Clubs makes the university assignment, based on a priority ranking by the applicant. The clubs also host several weekend gatherings in different parts of Germany throughout the year abroad and assign a host family.

Rice participants pay tuition, room, and board to Rice to be applied to their counterpart's credit; they are supplied with tuition payment and a stipend to cover room and board while in Germany.

### Rice University—Swarthmore Exchange Program

An exchange program exists between Rice and Swarthmore College for qualified students in the fall semester of their sophomore, junior or senior year. Swarthmore, which is situated on a wooded campus near Philadelphia, is a nondenominational coeducational college with academic standards similar to those at Rice. The exchange is for the fall semester only. Rice students apply in January by submitting their own letter of application and two supporting letters from faculty members. The exchange is on a one-for-one basis with each student continuing to pay all charges and fees to his or her home school.

Prior approval of transfer credit should be requested for each course from the Registrar. Courses to be taken at Swarthmore that will apply to the student's major must also be approved by the department. Students who enroll in the normal program of four four-semester-hour courses at Swarthmore receive upon satisfactory completion 16 hours (or five courses) toward their Rice degree with a notation of specific courses that may count for fulfillment of major requirements or distribution within that block credit. Further information on this program may be obtained from the Office of Academic Advising.

### Sweet Briar Junior Year in France Program

Established in 1948, the Sweet Briar Junior Year in France Program provides an opportunity for students from colleges and universities in the United States and Canada to spend a year studying at four universities and other institutions of higher education in Paris following a four-week orientation period in Tours. While some students in this program major in French, many others specialize in such areas as art and art history, comparative literature, government, history, international relations, mathematics, music, philosophy, political science, religion, theater arts, etc. Students are encouraged to experience French culture by living with families in both Tours and Paris. Application materials may be obtained in the French department or the Office of Academic Advising.

### Denmark's International Study Program

DIS offers full-year, semester, and summer programs in Copenhagen, established under the Danish Ministry of Education and the University of Copenhagen. Academic offerings focus on liberal arts, international business, and architecture and design and include study tours to Russia and Europe. Prior knowledge of the Danish language is

not required. Further information and applications are available in the Office of Academic Advising.

### Sea Education Association

Rice University's affiliation with SEA enables students to spend a Sea Semester concentrating their studies on deep water oceanography. Half the period of time is spent in laboratories at Woods Hole, Massachusetts, and the other portion aboard a sailing vessel in the Caribbean, conducting research. Through another option, Maritime Semester, students may study the development of maritime cultures and commerce in New England and Canada while operating a sailing vessel off the North American coastline.

## Academic Regulations

All undergraduate students are subject to the academic regulations of the university. Students are responsible for making certain that all departmental and university requirements are met. Students are responsible for meeting all academic deadlines. The Committee on Examinations and Standing administers the rules described below. Under unusual circumstances any student may submit a written petition to the committee requesting special consideration. All correspondence with the committee should be addressed in care of the Vice President for Student Affairs.

### Registration

Currently enrolled students preregister in March or April for the fall semester and in November for the spring semester and complete registration at the beginning of each semester. Entering students complete their registration during Orientation for New Students the week before classes begin in August. New students must complete, sign, and return a matriculation card in order to be properly registered. New students will not be allowed to register or to attend classes unless a properly completed Health Data Form has been received. A late fee of $25 will be charged for failure to submit a fully completed Health Data Form by the required date.

Unless a special tuition plan has been elected, all tuition and fees for the fall semester must be paid by the middle of August and for the spring semester by the end of December.

A student who does not register or request from the Registrar a delay of the deadline established by the Academic Calendar is considered withdrawn from the university by default. To be readmitted, the student must be eligible to continue and must pay a late registration fee. The fee is $15 until the third week of the semester and $25 in the fourth week. No student is allowed to register after the fourth week of classes except with approval from the Committee on Examinations and Standing or the Vice President for Student Affairs for good reason shown. If approved, a late fee of $35 is assessed.

Students may change their registration by adding or dropping courses according to the proper procedure during the first two weeks of the semester without penalty fee. From the end of the second week to the end of the fourth week the student must obtain the instructor's permission to add a course. The deadline for adding courses is the end

of the fourth week and the deadline for dropping courses is the end of the tenth week of the semester. Courses in which loss of credit has been assessed by the Honor Council may not be dropped. Students who add or drop courses after the second week but before the above deadlines will be charged for each drop/add form submitted according to the following schedule:

| | | | |
|---|---|---|---|
| Week 1 | 0 | Week 6 | $6 |
| Week 2 | 0 | Week 7 | $7 |
| Week 3 | $3 | Week 8 | $8 |
| Week 4 | $4 | Week 9 | $9 |
| Week 5 | $5 | Week 10 | $10 |

No course changes may be made after the tenth week without approval of the Committee on Examinations and Standing. If approved, such changes are subject to a $15 fee. If the change is necessary because of a revision or a cancellation of the course by the department, no penalty fee will be charged.

Students will not be permitted to preregister for the fall semester of their junior year or register for that semester until they have declared a major.

## Course Programs

Students at Rice normally enroll in 15 to 17 semester hours each semester and thus in eight semesters complete the requirements for graduation in their major. Students who wish to register for more than 20 semester hours, to enroll or continue in fewer than 12 hours, or to register simultaneously for credit at another university must secure permission in writing from the Vice President for Student Affairs before filing their registrations. No student may receive credit for more than 20 semester hours in a semester, including courses taken elsewhere, unless he or she has received this prior written approval.

Students are prohibited from registering for more than one course at the same hour, unless they receive permission from the instructors involved.

## Transfer Credit Including Credit for Summer School Courses Not Taken at Rice

The basis for approval of transfer credit toward a Rice undergraduate degree for courses taken at another college or university is that they are appropriate to the Rice curriculum. This credit is normally given to courses whose content is such that they are or could be appropriately offered at Rice. The courses must be taken at an academic institution accredited by a regional accrediting agency, and the grade earned must be C- or better (for that reason students may not take courses P/F or on a similar basis at other institutions).

The Registrar, in conjunction with the academic departments, determines whether courses are appropriate for transfer to Rice. The departments may place restrictions on particular courses and/or institutions in addition to the restrictions stated above. There are also limits on the amounts of transfer credit that may be applied to the various Rice majors and degree programs, noted elsewhere in this publication. In particular, no more than 14 semester hours of transfer credit taken in summer schools other than Rice may be applied to any Rice degree.

Because of these restrictions, students are strongly advised to seek prior approval from the Registrar before taking courses elsewhere. The Registrar may require the student to secure approval from the department in case of courses in the student's major or for highly specialized courses. Without prior approval, students cannot be assured that credit taken at another institution will be transferred.

If approved, the equivalent Rice course will be entered on the student's record only after an official transcript is received by the Registrar. No grade is entered. Credit is generally determined on a pro rata basis. Transferred courses have no effect on the Rice GPA. All requirements satisfied by the equivalent Rice course are satisfied by the transferred course.

## Final Examinations

Final examinations are given in most courses, but the decision to give a final examination as a required part of the course rests with the instructor and the department.

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 three hours duration. Faculty who, under exceptional circumstances, wish to give longer examinations can 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.

The Committee on Examinations and Standing also recommends that hour exams not be given in the final week of classes in those courses in which a final is given.

All tests and examinations are conducted under the honor system.

University-sponsored events at which student attendance is required may be scheduled in or outside of Houston during the period from Monday through Saturday during the last week of classes, so 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 events 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.

## The Pass-Fail Option

An undergraduate student may register for courses on a pass/fail basis subject to the following limitations:

1. The total number of pass/fail courses taken as an undergraduate shall not exceed one for each full year of residence up to a limit of four. Students participating in off-campus programs administered through Rice will be considered in residence at Rice for the purpose of this rule.
2. The total number of pass/fail semester hours shall not exceed 14.
3. A student may register for only one pass/fail course in a semester.
4. No courses specifically required for the major, nor courses within the major department (or major area for area or interdepartmental majors) may be taken pass/fail. If such courses were taken P/F, the Registrar will automatically replace the P with the grade earned.

Courses can be taken under the pass-fail option if the student files the proper form

in the Registrar's Office no later than the end of the fourth week of classes. The student may convert any course so designated to a graded course by the deadline that is specified for resolving a grade of "other" by filing the proper form with the Registrar. Students should consider declaring pass/fail options early in the semester and changing to a grade designation later if appropriate. The Committee on Examinations and Standing rarely approves conversion to a pass/fail designation after the deadline. Students should be aware that while a P does not affect the GPA, an F for a course taken pass-fail does count in the GPA. The pass/fail option may be declared for a course taken during the Rice summer session, but this counts toward the total of four courses (14 hours).

## Grade Symbols and Designations

Courses are graded using the following symbols:

A
B
C
D
F

P pass—students successfully taking a course pass/fail receive a P.

S Students successfully completing a designated satisfactory/fail course receive an S. The grade of S indicates satisfactory completion of a course in which traditional grading procedures are not used. Unsatisfactory completion of such a course is indicated by the grade of F. Courses or labs in which traditional grading procedures are not used must be designated in the "Schedule of Courses Offered" published each semester by the Registrar. Courses so designated may be counted toward the completion of a major. Students should be aware that while an S does not affect the GPA, an F received in such a course does.

Designations for special purposes:

W withdrew
INC incomplete
## other
NG no grade reported by instructor
NC no credit granted for this course

The designations, explained below, do not affect grade averages.

Instructors are required to report a grade for all students (except auditors) whose names appear on the class list. For students who also receive a designation of "incomplete" or "other," the grade is determined on the basis of zero credit for the work not completed and does not become part of the student's record except as discussed below. For students who withdraw from the university within the last five weeks of classes, the grade, which will not appear on the student's record but will be used solely in determining eligibility for readmission, should be based on the performance of the student up to the time of withdrawal.

A designation of "incomplete" is reported to the Registrar by the instructor when a student has not been able to complete a course because of verified illness or other circumstances beyond the student's control during the semester. Such work must be completed and a revised grade submitted by the end of the fifth week of the next semester; otherwise, the Registrar's Office will record the grade originally submitted by the instructor. In fulfilling course expectations, students must be certain that tests,

papers and other materials that affect a grade or completion of a requirement are delivered by hand to the appropriate professor or office. Loss or lateness attributed to mail service is not an acceptable excuse for failing to meet academic deadlines. A student who receives two or more "incompletes" in a semester is not eligible to enroll in more than fourteen semester hours in the semester immediately following.

A designation of "other" is reported to the Registrar if a student fails to appear for the final examination after completing all the other work of a course. A designation of "other" must be resolved and a revised grade submitted by the end of the first week of classes of the second semester or by the end of the fourth week after commencement, whichever is applicable. If no revised grade is received, the Registrar's Office will record the grade originally submitted by the instructor. A designation of "other" is also reported to the Registrar if an accusation has been made to the Honor Council.

A designation of "withdrew" appears for each course for which the student was enrolled at the time of withdrawal from the university. Courses dropped by students prior to the late drop deadline are removed entirely from the transcript. A "W" is recorded for any course dropped with the approval of the Committee on Examinations and Standing after the late drop deadline. Requests for late drops that are denied by the Committee on Examinations and Standing will result in the earned semester grade's being recorded on the student's transcript. See also the section "Voluntary Withdrawal and Readmission" for rules concerning withdrawal in the last five weeks of classes.

A designation of "no grade" indicates that the instructor failed to report a grade. Instructors are asked to resolve this situation as quickly as possible.

Students with designations of "incomplete" and "other" should be aware that they may go on probation or suspension when these are changed to grades.

Students may repeat courses previously failed. The record of the first attempt (and grade) remains on the permanent record (transcript). Both grades are included in GPA calculations. If students repeat courses previously passed, credit is awarded only once unless the course is designated as repeatable for credit. Each attempt remains on the permanent record and each grade is included in the GPA.

## Grade Points and Grade Averages

| Grade | Grade Points |
|---|---|
| A | 4.0 |
| B | 3.0 |
| C | 2.0 |
| D | 1.0 |
| F | 0.0 |

Plus and minus signs may be attached to each grade except F. One-third of a grade point is added or subtracted, respectively. It is general university grading practice to give pluses and minuses.

Grade point averages (GPAs) are calculated as follows. For each course, the product of the course credit attempted and the grade points for the grade earned is calculated. These products are added for each course and the result is divided by the total credit attempted. The result is the GPA.

GPAs are reported each semester on the student's grade report and may appear on unofficial transcripts. However, GPAs are not included on official transcripts nor are they reported to any external agency. Class ranks are likewise not reported externally.

## Faculty Grading Guidelines

The following guidelines on grading have been drawn up by the Committee on Examinations and Standing for the information of faculty and students. The committee believes that the following policies have long been supported in practice by the faculty both individually and collectively:

1. 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.
2. 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.
3. 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 bears responsibility with the student both for ensuring that the work undertaken is appropriate to the span of a semester and for determining the degree credit to be received.
4. 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 Code and which are not. To prevent allegations of plagiarism on written assignments, students should be warned that all direct and indirect quotations from others 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.
5. 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 the semester for at least one month into the following semester so that students may, if they wish, review with their instructor the basis for the grade which they have received.
6. Instructors may not change a semester grade after the grade sheet has been submitted to the Registrar except for 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.
7. There is no university requirement that a final examination be given in a course. It is university policy that:
    a. 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.

b. Final examinations are normally of three hours duration. Faculty who, under exceptional circumstances, wish to give longer examinations can 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.

8. Freshmen 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 freshmen 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 GPA, but they are important indicators for students and their faculty advisers.
9. 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 Vice President for Student Affairs 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 Code should be submitted to the Honor Council.

## President's Honor Roll

Outstanding students are recognized each semester through the publication of the President's Honor Roll. In order to be eligible, students must have grades exclusive of pass-fail and satisfactory-fail in a total of 12 or more semester hours and must not have any grade of "F." Approximately 30 percent of all undergraduates are so recognized. Undergraduates enrolled in four-year bachelor's degree programs are always eligible for the Honor Roll. Students enrolled in five-year bachelor's/master's programs are eligible only during their first eight semesters.

## Academic Probation

A student is placed on academic probation if at the end of any semester:

1. the student's grade point average for that semester is less than 1.67 or,
2. the student has a cumulative grade point average less than 1.67. This requirement is waived if the GPA for that semester is at least 2.0.

The period of probation extends to the end of the next semester in which the student is enrolled at the university. A student on probation (academic or disciplinary) is not permitted to be a candidate or hold any elective or appointive office.

A student on academic probation is not allowed to enroll in more than 17 semester hours. A student who receives two or more "incomplete" grades in a semester is not eligible to enroll in more than 14 semester hours in the semester immediately following.

## Academic Suspension

A student is suspended from the university if at the end of any semester:

1. the student earns grades that would place him/her on academic probation a third time, or;
2. the student earns a grade point average less than 1.00 for the semester, except for students completing their first semester at Rice.

Students readmitted after a previous suspension will again be suspended if in any succeeding semester they fail to achieve at least one of the following requirements:

1. a cumulative and semester grade point average of at least 1.67, or;
2. a semester average of at least 2.00.

The period of a first suspension is normally one semester; the period of a second suspension is at least two semesters. Students will not be readmitted following a third suspension.

Suspension is deemed to occur as soon as a responsible university official, normally the Registrar, learns that a student's performance has been such as to place him or her on suspension. Suspension is lifted the first day of class of the semester in which the student returns to the university, or in the case of persons who have served the nominal term of suspension but do not intend to return to Rice, when they have received permission from the Committee on Examinations and Standing to have that suspension lifted.

If a student facing first or second academic suspension can demonstrate to the Registrar that he/she can complete degree requirements in one semester if permitted to return, the suspension will be reduced to probation. This ruling may be invoked only one time during the academic degree plan.

Students who graduate at the end of a semester in which their academic performance would 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

A student may be placed on probation or suspension for an honor code violation or for disciplinary reasons through action of the Dean of Students. No student may receive a degree while on disciplinary suspension (including that for an honor code violation), even if all academic requirements for graduation have been fulfilled.

## Readmission After Suspension

To obtain readmission after academic suspension, the student must address a letter of petition to the Committee on Examinations and Standing; this letter should be received at least a month before the beginning of classes. At the same time, the student should request two supporting letters from persons under whom the student has worked during the suspension period as a student or an employee. If the problems causing the previous difficulty appear to have been relieved, the student is generally readmitted. Prior to readmission, students returning from a second suspension must submit an academic program approved by the Office of Academic Advising. In some instances, approval of readmission may be postponed, or suspension may be permanent. A student desiring special consideration with regard to readmission following academic suspension should petition the committee in writing.

Petitions for readmission following a separation from the university involving disciplinary or other non-academic considerations should be submitted in writing and will be reviewed by the Dean of Students.

The Committee on Examinations and Standing does not normally place students on probation and suspension as the result of deficient performance in the Rice Summer School (although it may do so at its discretion). Students are warned, however, that grade averages are affected.

## Voluntary Withdrawal and Readmission

A student may withdraw voluntarily from the university at any time during the semester up until the last day of classes, and, if in good academic standing at the time of withdrawal, the student is normally readmitted upon written application to the Committee on Examinations and Standing. If the withdrawal is for major medical or psychological/psychiatric reasons, however, the voluntary withdrawal will be treated similarly to an involuntary withdrawal for the purposes of readmission.

Any student desiring to withdraw should inform the college master in person and give written notification of withdrawal to the Vice President for Student Affairs, who will notify other offices of the university as necessary. If the student withdraws within five weeks of the last day of classes, grades of standing as of the day of withdrawal are considered in determining eligibility for readmission. Students with grades of standing that would have placed them on suspension had they not withdrawn will, for purposes of readmission, be treated as if they had been suspended. Such students should follow the guidelines for readmission shown under the suspension rules. Students who fail to give notice of withdrawal should expect to receive failing grades.

A student may be withdrawn involuntarily from the university if, in the judgment of the Vice President for Student Affairs, the student

a. poses a threat to the lives or safety of himself/herself or other members of the Rice community,
b. has a medical or a psychological problem that cannot be properly treated in the university setting, or
c. has evidenced a medical condition or behavior that seriously interferes with the educational pursuits of other members of the Rice community.

Petitions for readmission after involuntary withdrawal should be submitted in writing to the Vice President for Student Affairs. At the same time, the student should submit evidence that the problems leading to the involuntary withdrawal have been resolved. In some cases, an interview with the director of the Counseling Center, the director of the Health Service, or their designates will be required.

## Leave of Absence

A student may request a leave of absence from the university by applying in writing to the Committee on Examinations and Standing at any time prior to the first day of classes in the semester that marks the beginning of the leave. Leave from the university after the first day of classes is considered a voluntary withdrawal.

To be readmitted following an approved leave of absence of not more than four semesters, students need only notify the Vice President for Student Affairs of their intention to terminate their leave at least one month before the beginning of the semester. After four semesters, they should apply in writing to the Committee on Examinations and Standing, as in the case of a voluntary withdrawal.

Approval of a leave of absence is always contingent on the student's satisfactory completion of course work in the semester preceding the leave; otherwise, the approved leave may be converted to suspension.

### Extended Time Graduation

Students enrolled in four- (five-) year bachelor's programs may elect to be subject to the academic regulations in effect either at the time of their intial registration at Rice or at the time of their graduation, unless they graduate more than seven (eight) years after that initial registration. In that case they will be subject to the regulations in effect at the time of their last readmission.

Courses in a student's major program completed more than seven (eight) years prior to graduation are subject to review by the appropriate departments. If the departments conclude that any such courses are no longer suitable for satisfying the requirements of the major, those courses will not be credited toward the major program, although they will remain on the student's record.

## Academic Advising and Tutorial Programs

Rice University provides for academic advising of freshmen and sophomore students through a well-developed program centered in the residential colleges, overseen by the college masters and involving more than 150 faculty members. These faculty associates are equipped to give broad, inclusive advice to students, as well as specific information about individual disciplines. Within each college, faculty members designated as "divisional advisers," representing humanities, social sciences, natural sciences, and engineering, additionally advise prospective majors in those divisions and give final approval to course schedules and to the dropping and adding of classes. Majors in music and architecture obtain course approval from academic advisers in the Shepherd School of Music and the School of Architecture, as appropriate.

Once a student designates a departmental major, usually in the fourth semester, he or she comes under the jurisdiction of an academic department (or departments, in the case of a double major) for academic advising and approval of course schedules. Area majors obtain approval from the Office of Academic Advising, which operates in cooperation with the academic departments involved in each interdisciplinary major.

The director of Academic Advising, assisted by faculty associates, serves as an administrative liaison between the academic departments and the college advising system, maintains an up-to-date file on departmental course requirements, coordinates a tutorial program, provides training for faculty and peer advisers, and organizes the exchange of academic information between students, advisers, and departments. The director oversees areas that span a range of academic disciplines—area majors, study abroad, exchange programs, preprofessional advising, and undergraduate fellowships—and arranges for programs, such as Majors Day and Orientation Week Academic Fair, which inform students about academic options within the Rice curriculum.

The Office of Academic Advising serves as a resource center for general academic information, for brochures describing study abroad and exchange programs, for information regarding prestigious undergraduate fellowships awarded on a national basis (Rhodes, Marshall, Luce, etc.) and for application packets for GRE, MCAT, LSAT, and GMAT tests. Faculty advisers counsel individual students with academic problems and questions and advise upper-class students applying to graduate school. Operating within the Office of Academic Advising, the director of International Services assists foreign students with visas and with cultural adaptation.

The Rice tutoring program provides free assistance to freshmen in any course and to upperclassmen who are having difficulty with introductory courses. Each department with major teaching assignments at the introductory level names a departmental coordinator who is responsible for organizing tutorial activities within the department and assigning students to group or individual tutoring. The departmental coordinator also approves the list of tutors and signs records of completed tutorial sessions.

Each college also selects a faculty associate who coordinates the tutoring program within the college. This faculty member seeks ways to aid communication and help advise those students who need tutoring. Both the departmental and college aspects of the tutoring program are under the supervision of the director of Academic Advising.

Normally, a student who is having academic difficulty should consult with the course instructor or the departmental coordinator to arrange for tutoring; however, college coordinators provide an alternate referral source. Further information for those who need tutoring or who would like to serve as a tutor may be secured from the Office of Academic Advising.

## Admission of New Students

From its beginning, Rice University has sought to maintain an academic program of the highest excellence for a small body of students. This number has grown with the expansion of the university's resources over the past decade, but the total number of students admitted to Rice still remains relatively small—approximately 600 students in each first-year class.

In making its selections, the Admission Committee attempts to seek out and identify students who have demonstrated exceptional ability and the potential for personal and intellectual growth. There is no discrimination whatsoever on the basis of sex, sexual preference, race, color, religion, national or ethnic origin, age, or disability, or veteran status. Decisions are based not only on high school grades and test scores but also on such qualities as leadership, participation in extracurricular activities, and personal creativity. The university's aim is diversity rather than uniformity, and it believes that students learn from each other and from life in the residential colleges as well as from their classes and laboratories.

Students are selected on a competitive basis in five academic divisions: (1) architecture, (2) humanities and social sciences, (3) engineering, (4) music, and (5) natural sciences. Applicants should give careful consideration to the category under which they wish to be considered. Students, however, are free to change from one of these areas to another, after consultation with their adviser. Music students must pursue the music program for at least the first year before changing divisions. Only architecture and music have strictly limited enrollments. Occasionally, physical limitations of other departments may make it necessary to limit enrollment of majors.

There are five basic measures generally used in evaluation of candidates for admission: (1) scholastic record as reflected by the courses chosen and the quality of performance, (2) scores on the Scholastic Aptitude and Achievement Tests administered by the College Board, (3) recommendations from teachers and counselors, (4) the recommended personal interview, and (5) the application itself. The Admission Committee is particularly interested in any information that can give insight into the extracurricular areas of development and such intangible factors as motivation, intellectual curiosity, character, and special talents.

1. **The High School Record.** The completion of no fewer than 16 acceptable units is required. The record must include the following units:

| | | | |
|---|---|---|---|
| English | 4 | Laboratory science | 2 |
| Social Studies | 2 | (biology, chemistry, physics, etc.) | |
| Mathematics | 3 | Additional credits in above- | 3 |
| A foreign language | 2 | listed subjects | |
| **Total** | **16** | | |

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.

Courses in chemistry, physics and trigonometry or other advanced mathematics courses are required of applicants for the engineering and science divisions.

2. **Entrance Examinations.** The required entrance examinations are administered by the College Board. The College Board bulletins and test applications are available from high school counseling offices or the Rice Admission Office. The applicant is responsible for making arrangements to take the examinations, and official score reports must be submitted before the student can be considered for admission (see the calendar on page 98).

The following tests are required according to the curriculum desired:

A. *Humanities, Social Sciences, Architecture, or Music*
   (1) Scholastic Aptitude Test
   (2) three achievement tests as follows:
      (a) English composition*
      (b) any two of the following:
         A foreign language
         American history
         European history and world cultures
         Literature
         Mathematics
         A science

B. *Science or Engineering*
   (1) Scholastic Aptitude Test
   (2) three achievement tests as follows:
      (a) English composition*
      (b) Mathematics (Level I, Level II, or Level IIC)
      (c) Chemistry or physics

*with or without essay

3. **Candidates must submit evaluations from a counselor and one teacher.** The necessary forms are included in the application.

4. **The Personal Interview.** Although a personal interview is *not a requirement*, we *recommend* an interview as an excellent opportunity to discuss your interests, needs, and questions. It can assist the Committee on Admission in reaching a decision based on nonacademic as well as academic aspects of the candidate's development. If an interview is desired, the calendar on page 98 should serve as a timeline. Campus interviews, which must be scheduled two weeks in advance, are held at 109 Lovett Hall between the hours of 9:00 a.m. and 4:00 p.m. Monday through Friday and from 9:00 a.m. to 11:30 a.m. on Saturday. (*Summer schedule does not include Saturday morning hours, but interviews are available throughout the week for rising seniors.) Note: During the senior year, Houston-area students who would like to interview will be assigned to one of the Rice alumni volunteers in the Houston area to schedule an off-campus interview. *No interviews will be held after January 15.* Applicants who are unable to visit the university may wish to meet with a traveling member of the admissions staff or may arrange to be interviewed by alumni interview-

ers located throughout the United States and in several foreign countries. Candidates for admission to the Shepherd School of Music must arrange for an audition with a member of the music faculty. Architecture applicants are advised but not required to interview with a faculty member in the School of Architecture and submit a portfolio.

5. **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. **Please note that no application fee is required of candidates for admission to Rice.**

## Early Decision Plan

The Early Decision Plan is open to candidates for admission who regard Rice University as their first choice and who will not apply elsewhere unless they are not admitted under our early decision plan. Students applying for fall semester 1994 under the Early Decision Plan must complete the required Scholastic Aptitude Test (SAT) on or before the October testing date in the senior year. The Achievement Tests (ACH) must be taken by the June test date in the junior year. All other materials should be filed by November 1. Admission notices will be mailed on December 1.

Requirements for admission are not altered by an Early Decision. Those accepted are expected to complete the remainder of their high school work with superior performance. Early Decision candidates should apply for financial aid using the Rice University financial aid statement. Those applying by November 1 will be notified by December 1. Late filers will be notified as soon as their information is processed.

The Admission Committee will admit, defer or deny Early Decision applicants. If the Admission Committee does not have sufficient reason for an affirmative decision in December, action on some applications will be deferred until the Regular Decision period. An additional semester of the high school record and additional College Board scores from the November, December, or January tests may be added for later consideration. The applicant will, of course, be released from the pledge to apply only to Rice. An applicant offered admission under the Early Decision Plan must make a $100 nonrefundable registration deposit within 30 days in order to hold his or her place in the incoming class. Those who desire a room on campus must make an additional $50 deposit.

## Interim Decision Plan

Applicants who complete their SAT and Achievement Tests on or by the December testing date and who file all other materials by December 1 may be considered in the Interim Decision Plan and notified of the outcome by early February. December achievement tests are usually received in time for Interim Decision considerations; however, when unforeseen circumstances delay our receipt of these scores, applicants may be deferred to Regular Decision for later consideration.

Interim Decision applicants who are offered admission should make 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 make an additional $50 deposit.

## Regular Decision Plan

Regular Decision applications postmarked by January 3 are considered by April 1. Applications received after January 3 are considered only after all earlier applications. Candidates who apply after January 3 must do so in full knowledge that they are in a less competitive position.

Regular Decision applicants who are offered admission should make 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 make an additional $50 deposit.

Financial aid applicants for Interim and Regular Decision should consult the calendar below for deadlines and notification dates. Late filers will be notified as soon as their information is processed.

## Admission Calendar

| **Early Decision** | **Interim Decision** | **Regular Decision** | **Transfer** |
|---|---|---|---|
| Application by *November 1 | Application by *December 1 | Application by *January 3 | Application by *April 1 for fall, *November 1 for spring |
| Required SAT on or by October test date in senior year, Achievement Tests on or by June test date in junior year | Required SAT and Achievement Tests completed on or by December test date | Required SAT and Achievement Tests completed on or by January test date | Required SAT if never previously taken |
| Interview (if desired) completed by November 1 | Interview (if desired) completed by December 1 | Interview (if desired) completed by January 15 | No interview |
| Notification of admission mailed December 1 | Notification of admission mailed February 1 | Notification of admission mailed April 1 | Notification by June 1 or December 15 |
| Rice University Financial Aid Statement filed by November 1, Financial Aid notification by December 1 | FAFSA** filed by January 15, Financial Aid notification by February 1 | FAFSA** filed by March 1, Financial Aid notification by April 1 | Notification when admitted; allow 1 month after filing FAFSA** |
| Deposit by January 1 nonrefundable | Deposit by May 1 (Candidates' Reply Date) nonrefundable after May 1 | Deposit by May 1 (Candidates' Reply Date) nonrefundable after May 1 | Nonrefundable $100 deposit within 15 days of admission |

NOTE: For students desiring on-campus accommodations, a $50.00 room deposit should accompany your registration deposit. The room deposit may be refunded or credited to the applicant's account until May 1. **No application fee is required of candidates for admission to Rice.**

*Rice University will accept applications for admission if postmarked by the date indicated for the respective decision plan.

** FAFSA—Free application for federal student aid

## Advanced Placement/CLEP

Entering first-year students who have done work well beyond the usual high school courses in certain subjects and who score 4 or 5 on the Advanced Placement College Board examinations prior to matriculation at Rice are given university credit toward graduation for appropriate Rice courses satisfying distribution or free elective requirements. Acceptance of such credit in fulfillment of a student's major requirements is subject to approval by the department in question.

During Orientation Week the College Level Examination Program (CLEP) test on calculus with elementary functions is given. **First-year students only may take this test.** Satisfactory performance results in credit for Math 101. (A fee of approximately $30.00 is charged for taking the CLEP test.)

Rice students who earn the International Baccalaureate diploma will, subject to approval by the relevant departments, receive credit for individual higher level exams for which they receive a score of 6 or 7. Students from high schools that offer International Baccalaureate courses but not the diploma will receive credit according to the same criteria.

Furthermore, during Orientation Week at the beginning of the academic year, entering students may take placement tests administered by various departments at Rice. On the basis of these tests, students may be advised to register in courses beyond the introductory level. In most cases, degree credit is not given for these tests.

## Transfer Students

Rice University encourages applications from students with superior records who wish to transfer from a two-year college or a four-year college or university. Interested students should request a transfer application form from the Office of Admission.

Applications for admission in the fall semester should be filed by April 1 and be accompanied by official transcripts of all high school and college work completed to date and courses in progress. Notification of admission is mailed on June 1. Applications for admission for the spring semester with the appropriate transcripts must be filed by November 1. Notification of admission is mailed by December 15. The criteria used in evaluating transfer applications are essentially the same as 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 3.2 (4.0 scale) GPA on all college work. Scholastic Aptitude Test scores are required. If candidates have not previously taken College Board tests, they must take the Scholastic Aptitude Test no later than April if they wish to apply for admission in the fall or November for the spring semester. Achievement tests are not required.

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 less than 60 semester hours for a Rice degree.

Note that *first-year candidates* may apply for entry in the fall semester only, because Rice does not accept freshmen at midyear. Transfer candidates may be admitted for either the spring or fall semesters, except for students applying to the School of Architecture, who may enter in the fall only.

For further information or application forms, prospective candidates for undergraduate admission should communicate with the Office of Admission. When requesting application forms, candidates should indicate that they are prospective transfers from another college.

## 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 should apply for admission as visiting students through the Office of Admission. The student's application should be accompanied by an official transcript of college work to date and a letter from the student's academic dean or registrar agreeing to grant transfer credit subject to satisfactory performance. Visiting student applications should be postmarked by June 1 for the fall semester and by November 1 for the spring semester.

Visiting students are assigned membership in a college 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.

## Rice/Baylor College of Medicine Premedical Scholars' Program

The Premedical Scholars' Program is designed for talented and motivated students who desire careers in medicine or biomedical science research. Up to fifteen graduating high school senior students will be admitted to Rice University and Baylor College of Medicine concurrently. This program involves the traditional four years at Rice followed by four years at Baylor College of Medicine. Applications for the program will be sent to those who indicate an interest when they apply to Rice. Notification of interviews will be sent to students in late March and decisions will be made by April. Applicants for the program must apply under the Early or Interim Decision Plans. Keep in mind that Early Decision applicants must have Rice as their first choice school, regardless of the Baylor decision to be made later in the spring. Applicants who are not admitted to the Premedical Scholars' Program are still eligible for admission to Rice and are still eligible to apply to Baylor College of Medicine upon graduation from Rice.

## Class III Students

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

## Admission of High School Students to Take Courses for Credit

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 on the same basis as Rice undergraduates. Such courses are graded for credit, and the university sends a transcript of this record by student request to any college or university. If the high school student is later admitted to Rice, any such courses are counted toward the student's undergraduate degree at Rice. Tuition for such courses is $400 per semester hour plus a $50 registration fee, the total not to exceed $4,650. These charges are for 1993-94 and are subject to change in subsequent years. Application for admission should be made to the Admission Office. 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. Audit credit does not appear on transcripts. Currently enrolled students may audit courses without charge. Rice alumni are charged a fee of $200 per course per semester. All others are charged $400 per course per semester for the privilege of auditing.

### Student Housing

Information about residence in the colleges and room application forms accompany the notice of admission sent to each new undergraduate. Room reservations cannot be made prior to notification of admission.

At present, Rice University has the capacity to house about 70 percent of its undergraduate students in the residential colleges on campus. Although the majority of students desiring to live in the colleges can be accommodated, demand usually exceeds the available number of rooms. Every effort is made 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 in each college. No student is required to live on campus. Off-campus members are encouraged to eat in their colleges and to participate in college activities.

Correspondence from new students regarding housing in the residential college should be addressed to the Office of Admission. Information concerning off-campus housing is available from the Office of Academic Advising.

## Tuition, Fees, and Expenses

The tuition for undergraduate students in 1993-94 is $9,300 per year, $4,650 payable prior to the beginning of each semester.

Students taking fewer than 12 hours by special permission are billed at the rate of $400 per semester hour for the courses in which they are enrolled plus a $50 registration fee, the total tuition and registration fee not to exceed $4,650 per semester.

Any undergraduate who withdraws or takes an approved leave of absence and is then readmitted to the university is charged the tuition in effect during the semester in which he or she returns.

### Fees

All undergraduate students and candidates for a second bachelor's degree are charged the following annual fees, payable in full at the time of the student's first tuition payment for the year or any portion of the year. An exception is the Health Service fee, which is paid in two installments, half before the beginning of the fall semester and half before the beginning of the spring semester.

| | |
|---|---|
| Student Activities Fee* | $ 62.85 |
| Athletic Events Fee | 50.00 |
| College Fee | 50.00 |
| Health Service Fee | 182.00 |
| Total basic fees | $344.85 |

*Fifth-year students working toward a second bachelor's degree may pay a reduced Student Activities Fee of $4.70, which covers the Student Association, University Court and Honor Council portions of the activity fee, and may elect not to pay the College Fee.

All Rice students are required to have health insurance. Insurance for the 1993-94 school year may be purchased at a yearly premium of $686 (Plan A) or $518 (Plan B) from the university's program developed for Rice students. Coverage will be effective from 12:01 a.m., August 15, 1993, until 12:01 a.m., August 15, 1994. Dependent coverage is also available (application and policy description can be obtained from the Cashier's Office or the Office of Student Activities and Advising). If you have other medical insurance, a waiver form showing proof of insurance must be signed and returned to the Cashier's Office by August 15 to avoid being charged for insurance.

## Special Charges

Orientation Week room and board (required for all new students) ..... $110.00
Late registration and late course changes ..... see p. 86
Late application fee for Class III ..... $50.00

## Refund of Tuition and Fees and Appeal Procedure

A student who withdraws during the first two weeks of the semester is not charged tuition or fees for that semester. A student who withdraws during the third week is charged 30 percent of the semester's tuition. The amount of the refund is reduced by 10 percent at the beginning of each successive week. No refund is made for withdrawals after the ninth week. There is no refund of fees or special charges after the second week of classes in the semester. The $100 registration deposit paid by incoming students is not refunded at any time if the student withdraws. There is no partial refund of fees paid for the full year for withdrawals or leaves of absence in the spring semester.

Students who receive approval to be enrolled in a course load below twelve hours during the first nine weeks of the semester may be entitled to a rebate of tuition.

Student requests for special consideration in connection with waivers, refunds, or adjusted payments on tuition, fees, and other charges, which cannot be satisfactorily resolved between the student and the Cashier's Office, should be forwarded to the Vice President for Student Affairs. Resolution of waivers and refunds for room and board charges should be arranged through the Vice President for Finance and Administration.

## Teacher Certification Program Fees

Students enrolling in the apprenticeship or the internship plan are charged a $100 registration fee for each semester; an additional $25 registration fee (paid to the School of Continuing Studies) is charged for each summer session.

## Delinquent Accounts

No student in arrears in any financial obligation to Rice University as of the date announced for the completion of registration for any semester can be registered. No certificate of attendance, diploma, or transcript of credit is issued 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 have moved on campus without executing a satisfactory room contract may be discharged from the university.

### Transcripts

Transcripts are issued on written request made to the Office of the Registrar. No transcript is issued without consent of the individual whose record is concerned. There is a charge of $3 for each copy, payable in advance. Those requesting transcripts by mail should include payment with the request.

### Living Expenses

Residence fees, to cover costs of dining halls and operation of residences, are established from year to year as requirements dictate. For 1993-94, the annual Room and Board charge for residence in a residential college is $5,460. This charge provides room and all the meals eaten during the year for most students. All meals are priced on an a la carte basis except four prepaid dinners that are included in the total room and board charge. Food Service provides 3 meals per day Monday through Friday and continental breakfast and brunch on Saturday and Sunday. Meals are not served during the Thanksgiving holidays, mid-year, fall, and spring mid-term recesses, and spring holidays. Information on optional meal plans is available from the College Food Service. When securing room assignments for the academic year to follow, each student is required to sign a lease agreement. To assure reservation of space, current students must sign a lease by the date established in the various colleges, but no later than April 15. New students are required to make a $50 deposit prior to May 1. These deposits are not returnable, but are applied against the following semester's charges. The balance of the residence fee is payable in installments. The exact amounts and due dates are stated in the Residential Lease Agreement that each on-campus resident is required to sign.

Students terminating their residence for any reason shall be entitled to a refund or a credit of the unspent reduced balance of board charges but are held responsible for payment of the room charge for the entire academic year. Exceptions to the room charge payment (example: academic suspension, Rice-sponsored study abroad, and family emergencies) will be dealt with on a case-by-case basis.

## Financial Aid

The financial aid program at Rice University provides assistance to meet the costs of attendance for all students who are admitted and demonstrate computed financial need. Through grants, low-interest loans, campus work opportunities, or a combination of these programs, Rice attempts to give the students sufficient aid to meet educational expenses.

The financial aid program is funded from many sources. Rice University receives contributions from alumni and friends; these funds are used to initiate and maintain scholarships and loan funds. Federal programs, both grant and loan, the state grant program, and the Rice University tuition grant also provide funds. Awards are based primarily on financial need.

The university publishes budgets that realistically summarize student expenses including living costs at home and on- or off-campus, personal expenses, and necessary travel.

Parents are expected to contribute according to their means, taking into account their income, assets, number of dependents, and other relevant factors. Students

themselves are expected to contribute from their own assets and earnings, including appropriate borrowing against future earnings.

A brochure entitled *Rice University Financial Aid* explains the program of assistance in detail. Students may secure a copy from the Office of Admission or the Office of Financial Aid. The determination of need is based on information supplied through the College Scholarship Service. Need is defined as the amount required to meet the difference between the student's total educational expenses and the family's resources.

## Application

To apply for financial assistance, the candidate must file: (1) the Rice University application for financial aid with the university, (2) the free application for Federal Financial Student Aid (FAFSA), and (3) a photocopy of the parents' and student's IRS 1040, 1040A or 1040EZ. Notification of awards will be mailed when the financial aid file is complete. When Rice University receives these forms, the applicant is considered for all appropriate assistance administered by the university, including grants, scholarships, loans and work. Early decision candidates will be mailed a Rice University Financial Aid Statement in October.

Financial aid awards are made on an annual basis and are payable as indicated on the award letter.

Since financial circumstances change from year to year, annual review and adjustment of need and awards is necessary. Therefore, continuing students must file the Rice University financial aid application with the university and the free application for Federal Financial Student Aid (FAFSA) every year in which they desire assistance.

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

## Financing

Meeting the costs of higher education in a private university may be difficult even though the usual financial analysis indicates no need for financial aid. It is understood that even though a family's financial situation may be adequate to afford the cost of tuition, fees, and room and board without financial aid, payment of relatively large sums at stated times may require rearrangement of family planning that results in hardships or sacrifice. Rice University offers two payment plans to permit financing of educational costs. Both require low interest charges.

A deferred payment plan permits the payment of each semester's charges to be divided over four payments. Arrangements are made through the Cashier's Office. Applications and details are available each semester at the time of billing.

Longer-term financing is available to eligible students through the Parent Loans for Undergraduate Students (PLUS) program. Applications are available in the Rice University Office of Financial Aid, and Rice will arrange processing if needed.

## Satisfactory Progress Policy for Financial Aid Recipients

The Higher Education Act of 1965, as amended by Congress in 1980, mandates that institutions of higher education maintain minimum standards of "satisfactory progress" in order for students to receive financial aid.

## Policy for Undergraduate Students

**1. Financial Aid Probation.** A student is placed on financial aid probation if at the end of any semester: (a) the student has a cumulative grade point average less than 1.67, or (b) the student's grade point average for that semester is less than 1.67. The period of probation extends to the end of the next semester in which the student is enrolled at the university.

**2. Financial Aid Ineligibility.** A student is ineligible for financial aid if at the end of any semester: (a) the student earns grades that would result in financial aid probation a third time, or (b) the student earns a grade point average less than 1.00 for that semester, except for students completing their first semester at Rice.

**3. Reinstatement of Financial Aid Eligibility.** The period of financial aid ineligibility is normally at least one semester. To regain eligibility, the student must address a letter of petition to the Committee on Student Financial Aid following the same instructions that apply to the readmission of suspended students as written in the Rice University *General Announcements.* Suspended students readmitted by the Committee on Examinations and Standing need not petition the Committee on Student Financial Aid if the conditions in Section 5 have been met.

**4. Requirements for Students Regaining Financial Aid Eligibility.** A student regaining financial aid eligibility will again become ineligible if in any succeeding semester he/she fails to achieve either: (a) a cumulative and semester grade point average of at least 1.67, or (b) a semester average of at least 2.00. Ineligibility a second time will result in at least two semesters without aid. Normally a student will not again receive aid after a third ineligibility.

**5. Maximum Time Frame to Complete Educational Objective.** Undergraduate students are eligible to receive financial aid for 10 semesters (except Rice Tuition Grant—see Section "C" of "Rice University—Financial Aid Policies and Procedures"). All semesters for which a student has a transcript in the Registrar's Office are counted in the 10 semester limitation even if no financial aid was received. To make normal satisfactory progress, a student must earn a minimum of 18 semester hours credit by the end of the first academic year, 44 semester hours credit by the end of the second year, 70 semester hours credit by the end of the third year, and 96 semester hours credit by the end of the fourth year. A student who is ineligible because of insufficient semester hours credit may be considered eligible for aid only when enough credits, including incomplete courses, have been completed to make up the credit shortage. The academic year commences with the first day of classes of the fall semester and continues to the first day of classes the following fall.

## Policy for Graduate Students

Satisfactory academic progress will be determined by the student's department at the end of each academic year, but the student must have at least a 2.33 cumulative GPA.

## Notification for All Students

The Office of Financial Aid will notify, by letter, any student qualifying for financial assistance who does not meet minimum satisfactory progress and who is being terminated from aid. Following the fall semester, notices are considered delivered when sent to the colleges of undergraduate students and to the departments of graduate students. Following the spring semester, notices will be sent to the most recent permanent address provided to the Registrar by the student and are considered delivered.

## Appeals for All Students

Any student deemed ineligible for financial aid due to lack of satisfactory progress has the opportunity to appeal such action to the Committee on Student Financial Aid. Appeals must be made in writing to the chairman of the committee. Mitigating circumstances will be considered.

## Student Loan Funds

Perkins Loans (fomerly NDSL) are awarded by the Office of Financial Aid to help meet the self-help portion of aid under Rice University packaging policy.

A few endowments have been established for student loans primarily as memorial tributes. These funds are in addition to the normal financial aid program. They are used for emergency loans to students who experience unexpected financial problems during a term or for a student who shows additional need beyond regular eligibility.

Karl Bailey-William Carroll Memorial Loan Fund
Frank McFadden Caldwell Loan Fund
Louise Adele Drenkle Loan Fund
Mary Alice Elliott Loan Fund
Gulf Oil Educational Foundation Loan Fund
Houston Bridge League Loan Fund
Marie Engle Johnson Scholarship Loan Fund
Benjamin S. Lindsey and Veola Noble Lindsey Memorial Loan Fund
Lora B. Peck Loan Fund
Rice Institute Loan Fund
Students Memorial Loan Fund
Owen Wister Literary Society Alumnae Loan Fund

## Student Employment

Employment is available to students interested in working part-time during the academic year. These work opportunities are available both on campus and off campus. Students seeking employment should apply directly to the Financial Aid Office.

## Vocational Rehabilitation

The Texas Rehabilitation Commission offers assistance for tuition and nonrefundable fees to students who have certain disabling conditions if their vocational objectives have been approved by a TRC counselor. Examples of such conditions are orthopedic deformities, emotional disorders, diabetes, epilepsy, and heart conditions. Other services are also available to assist the handicapped student in becoming employable. Application for such service should be made at the Texas Rehabilitation Commission. Students with visual handicaps should contact the Texas State Commission for the Blind.

# Undergraduate Scholarships and Awards

## General Awards and Scholarships

Joe L. and Barbara Allbritton Scholarship
Herbert Allen Scholars
Helen and Herbert Allen Scholarship
Florrie Ethel and M. E. Andrews Scholarship
Robert and Elaine Andrews Scholarship
Samuel S. Ashe Scholarship
Asian American Youth Organization Scholarship
Astronaut Fund
Max Autrey Memorial Scholarship
Axson Club, Ellen Axson Wilson Scholarship
Axson Club, Katie B. Howard Scholarship
Axson Club, Special Scholarship Honoring Mrs. A. S. Foote
Axson Club, Pauline M. Crouch Scholarship
Axson Club, Elanor Trotter Huddleston Scholarship
Axson Club, Sarah L. Collins Scholarship
Axson Club, Dr. Margaret Rose McLelland Scholarhip
Axson Club, Margaret Owens and Samuel K. McLelland Memorial Scholarhip
Graham Baker Studentship
James A. and Alice Graham Baker Distinguished Scholar
James A. and Alice Graham Baker Honor Scholars
James Foulds Barbour Scholarship
Eric and Arabella Beall Scholarship
H. Leroy Bell Scholarship
Bhatia Foundation Asian-American Scholarship
Mr. and Mrs. Val T. Billups Scholarship
Paul Frederick Bobb Award
Beverly and Donald Bonham Scholarship
Weldon Brigance Scholarship
Fletabel Denton Briggs Memorial Scholarships
Franz and Frances Brotzen Scholarship
Robbie N. Bruner Endowment Fund
Clyde and Ethel Butcher Scholarship
Harriana Butler Scholarship
Chapman-Bryan Memorial Scholarship
George Alva Chatfield, Sr. Scholarship
Barbara Long Chilton Scholarship
Class of 1921 Scholarship
Class of 1929 Scholarship
Class of 1930 Scholarship
Class of 1931 Scholarship
Class of 1932 Scholarship
Class of 1933 Scholarship
Class of 1934 Scholarship
Class of 1935 Scholarship
Class of 1936 Scholarship
Class of 1937 Scholarship
Class of 1938 Scholarship

Class of 1939 Scholarship
Class of 1940 Scholarship
Class of 1941 Scholarship
Class of 1942 Scholarship
Class of 1943 Scholarship
College Bowl Champions Scholarship
College Women's Club Scholarship
Arthur B. Cohn Scholarship
William Arthur Combs Scholarship
Millie Tutt Cook Scholarship
John W. Cox Research Fund for Scholarships and Fellowships in Bioengineering and Biosciences
Dr. Margaret Crofton Scholarship
Tom Crumpton Memorial Award
Kenneth Wallace Cunningham Scholarship
Daughters of the American Revolution, John McKnitt Alexander Scholarship
Daughters of the American Revolution, Fannie Bess Emery Montgomery Scholarship
Daughters of the American Revolution, Lady Washington Texas Centennial Award
Pradipta Kumar Day Scholarship
Decade 1975 Scholarship
Decade 1976 Scholarship
Thomas A. and Pauline M. Dickson Scholarship
Edith Jo Leeseman Dissinger Scholarship
Thomas P. and Maude Seeger Dow Scholarships
James H. Durbin Scholarship
C. A. Dwyer Scholarship
James H. and Minnie M. Edmonds Scholarship
T. C. Edwards Scholarship
Epoch Matching Funds
Catherine Goodrich Fay Scholarship
Thomas Flaxman Scholarship
Thomas R. and Julia H. Franklin Scholarships
Joe Gallegly Scholarship
General University Scholarship Fund
George Foundation Scholarship
Getola and Verveer Families Scholarship
Mary Parker Gieseke Scholar
Glasscock Scholarship
Herbert Godwin Endowment Fund
Richard P. Goodwin Scholarship
Richard L. Grider Scholarship
William Randolph Hearst Scholarship Endowment Fund—Minority Scholarship
James D. Henry Scholarship Fund
Annette Schreiber Hill and William Bruce Hill Scholarship
Lionel B. Hohenthal Scholarships
Honors Scholarship for Minorities
Lillian and Carl Illig Scholarships
Mercer T. Ingram Scholarship

Interfaith Charities Scholarship
Meredith H. James Scholarship
Jameson Fellowship
Alfred R. and Eleanor H. Johnson Scholarship
Gaylord Johnson Scholars
Grant William Jordan and Cora Jordan Memorial Scholarships
John T. King Scholarship
Carolyn Walker Lard Scholarship Fund
Julia Merle and Roy Lay Scholarship
Leadership Award for Minorities
A. C. Lederer, Jr. Scholarship
Patrons of E. L. Lester and Company Scholarship
Mason G. Lockwood Engineering Scholarship
The Lottman Scholarships
Daniel B. and Mary H. Lovejoy Scholarship
Genevieve Parkhill Lykes Scholarship
J. Everett McAshan Scholarship
Margaret Brokaw McCann Scholarship
John Charlton McCoy, Jr. Scholarship
William A. McElroy Scholarship
Michael Vincent McEnany Award
J. L. C. McFaddin Scholarship
W. P. H. McFaddin Scholarship
John P. McGovern Outstanding Pre-Medical Student Award
Emma S. McGree Scholarship
Bayliss McInnis and Family Scholarship
James G. and Alberta Matteson McMurtry Scholarship
Franklin G. and Harriet Chelgren Meck Scholarship
Hope and Byron Meredith Scholarship
Gilbert A. Metz, Jr. Scholarship
Achille and Malline Meyer Memorial Scholarship
John and Harriet Millington Scholarship
Mobil Scholars
Frances Black and Raymond Moers Scholarship
Elizabeth Morford Scholarship
Berney L. Morgan Scholarship
W. Kyle Morrow, Jr. Scholarship
Motheral-Neilan Scholarship
Leon M. Nad Scholarship
Ida R. and Hanna E. Nussbaum Scholarship
Rebecca Raphael and Lily G. Nussbaum Scholarship
Charles Breckenridge Parkhill Scholarship
J. H. Pearlstone Memorial Scholarship
Raymond Pearson Scholarship
Presidential Scholarship for Minorities
Elsie Rachlin Scholarship
Emanuel and Mose Raphael Scholarship
Robert H. Ray Memorial Scholarships
Ernest R. Rechel Memorial Scholarships
William J. Reckling Memorial Scholarship
Randy T. Reese Memorial Scholarship

Torkild Rieber Award
Rice Sponsored National Merit Scholarships and National Achievement Scholarships
William Marsh Rice Scholarships
Mrs. L. A. Richardson Scholarships
Daniel Ripley Scholars
Edith Ripley Scholarship
Dwane Rivers Scholarship in Chemical Engineering
Carl A. Robertus and Ellen J. Robertus Scholarship in Science
James M. and Sarah Rockwell Scholarships
Pamela Davis Rogers Scholarship
Catherine Withers Roper and Benjamin E. Roper Memorial Scholarship
Volney J. Rose Scholarship
Willie Rowell and Ruth Andrews Scholarship
The Roy Scholarships
David Miller Rulfs, Jr. Scholarship
Susan T. Scanlon Scholarship
Anita and Campbell Sewall Scholarship
Lee Sharrar Scholarship
Evelyn Slomovitz Memorial Scholarship
Society of Rice University Women Scholarship
Southland Paper Mills Foundation Scholarship
Richard Steed Scholarships
Selden D. and Virginia H. Steed Scholarship
Harriet May Stewart Endowed Scholarship Fund
Sara Stratford Scholarship
Nola McCarty Symms Scholarship
Hope Pierce Tartt Scholarship
James U. and Margot Teague Scholarship
Beth Turner Scholarship
USX Foundation Scholarship
University Scholars Scholarship
University Scholars for Minorities
Herschel M. Vaughan Student Scholarship
John B. Warren, Jr. Scholarship
Abe and Rae Weingarten Scholarship
Harris Weingarten Scholarship
Elizabeth Aldridge Wells Scholarship
Gordon R. West Scholarship
Blanche White Honor Scholars
Charles K. and Maidie Autry Wilbanks Student Fund
Leah Jean Benke Wilbanks Memorial Scholarship
Willoughby C. Williams Scholarship
Eugene L. and Annie Maye Wilson Scholarship
Ervin Kenneth Zingler Scholarship

# Awards and Scholarships in Departmental Disciplines

## Architecture

Alpha Rho Chi Award in Architecture
American Institute of Architects School Medals
AIA/AIAF Scholarship
Edward B. Arrants Award in Architecture
Rosemary Watkin Barrick Traveling Fellowship
James H. Chillman, Jr., Prizes
John Crowder Memorial Scholarship
William D. Darden Medal
M. N. Davidson Fellowships
Featherlite Scholarship in Architecture
Margaret Everson Fossi Traveling Fellowship
Gensler Scholarship
Gene Hackerman Scholarship
Jesse H. Jones Scholarship in Architecture
Jameson Fellowship
Roderick M. Jones Scholarship
McGinty Scholarship Fund
John T. Mitchell Memorial Fund
Morris R. Pitman Scholarship Fund
Louis Sudler Prize in the Arts
Texas Architectural Foundation Awards
William Ward Watkin Traveling Fellowship

## Art and Art History

Art Supply Award
Kyriakouli Bitzes Scholarship
Dawn M. Gross Award
Jameson Fellowship
Mary P.B. and John W. Lovell Endowed Scholarship
Mavis C. Pitman Memorial Prize in Art
Christine Croneis Sayres Memorial Art Award
Louis Sudler Prize in the Arts
Texas Art Supply Company Award

## Athletics (Honorary Awards)

Lester Bendix Memorial Scholarship Fund
Hubert E. Bray Scholar Athlete of the Year
George R. Brown Football Awards
Emmett Brunson Award
Jimmy Burke Memorial Scholarship Fund
Tom Crumpton Award
Billy Ed Daniels Memorial Fund
Walter W. Fondren, Jr., Memorial Scholarship
Gene Hackerman Award
Catherine Hannah Award
Joyce Pounds Hardy Award

Walter Banard Joseph and Aline L. Joseph Fund
Kay Pearson Keating Award
Eva Jean Lee Award
Joe F. Lipscomb Freshman Award
Nancy Mauney Mafrige Athletic Scholarship
George Martin Award
T. S. Martino Scholarship
Leigh Masterson Award for Golf
Harry W. McCormick Scholarship
Dell Morgan Award
Jess Neely Football Awards
Neely-Davis Scholarships
John Plumbley Memorial Award
Hally Beth Poindexter Award
Robert Pilcher Quin Award
"R" Association Award
Rice University Scholar Athlete Award
RU Honor Athlete Award
Stancliff Award
Albert M. Tomforde, Sr., Athletic Scholarship
Hugh C. Welsh Scholarship
Billy Wohn Award
also
Bing Crosby Loan Fund

### Bioengineering and Bioscience

John W. Cox Research Fund for Scholarship and Fellowships in Bioengineering and Biosciences

### Business Administration

J. Howard Creekmore Scholarships
Criterion Investment Management Company Endowed Fellowship
J. Kenneth Arthur Scholarship
Houston Society of Financial Analysts Sholarship Award
Jones Graduate School Alumni Association Scholarship
Leon Nad Memorial Scholarship
Lawrence J. O'Connor Scholarship Fund

### Chemistry

Bertha and Zevi Salsburg Awards

### Computer Science

Torczon Scholarship

### Drama/Theater/English

Academy of American Poets Prize
Barbara L. Chilton Scholarship
Susan T. Scanlon Scholarship
George Guion Williams Prize for Excellence in Creative Writing

## Economics

Blanche Randall Haden Scholarship
Omicrom Delta Epsilon Economics Essay Prize
Wall Street Journal Student Achievement Award
Ervin Kenneth Zingler Scholarship

## Education

Donald I. Wood Award

## Engineering

George Herder Allen Scholarship
Herbert Allen Merit Award
American Institute of Chemical Engineers, South Texas Section, Scholarship
Amoco Foundation Fellowships
R. C. Baker Foundation Scholarships
George R. Brown Scholarship
Brown Scholarships in Engineering
Harriana Butler Scholarship
Alan Chapman Scholarship in Mechanical Engineering
Gerard A. Dobelman Memorial Scholarship
Steven G. Dobelman Memorial Scholarship
Albert Fanestiel Scholarship
Gulf Foundation Scholarship
Joe M. Hamner Scholarship
Lillian Haynie Scholarship
Houston Engineering and Scientific Society Scholarship
Paul N. Howell Annual Award in Chemical Engineering
Charles Francis Cyrus Johnson Scholarship
Jacobs Engineering Group, Inc., Scholarship
A. C. Lederer, Jr., Scholarship in Civil Engineering
Paul Alois Lederer Scholarship in Civil Engineering
Mason G. Lockwood Engineering Scholarship
Lottman Scholarship
McDermott Incorporated Scholarship
Merritt-Gates Scholarship Fund
Gilbert A. Metz Scholarship in Mechanical Engineering
W. L. Moody, Jr., Scholarships in Engineering
Thomas W. Moore Scholarship in Chemical Engineering
Berney L. Morgan Scholarship in Mechanical Engineering
W. H. Muery Scholarship Fund in Electrical Engineering
NL Industries Scholarship
National Action Council for Minorities in Engineering
National Society of Professional Engineers Scholarship
Oshman Scholarships for Women in Engineering
Lawrence A Pelty and Lavine M. Pelty Scholarship in Civil Engineering
Meg Perkins Memorial Scholarship in Engineering
Jack C. Pollard Graduate Fellowship in Engineering
Rice Engineering Alumni Outstanding Engineering Student Awards
Hershel M. Rich Invention Award
Dwane M. Rivers Scholarship in Engineering

Shell Incentive Funds Scholarship
Mr. and Mrs. Samuel T. Sikes Scholarship in Mechanical Engineering
Samuel T. Sikes, Jr., Scholarship in Engineering
James Redding Sims Scholarship in Civil Engineering
Randy T. Reese Memorial Scholarship
Sohio Scholarship
Texaco Scholarship
USX Foundation Scholarship
Louis J. Walsh Scholarships/Fellowships in Engineering
James S. Waters Creativity Award

### English

Lady Geddes Competition in Writing
Genevieve Parkhill Lykes Scholarship

### French

Alliance Francoise Scholarship
Clyde Ferguson Bull Traveling Fellowship
Pi Delta Phi André Bourgeois Award
William J. Reckling Memorial Scholarship

### Geology and Geophysics

Chevron Scholarship
Devlin-Schnable Memorial Scholarship
Leroy Caleb Gibbon Award
Houston Geological Society Outstanding Scholar Award
W.M. Keck Foundation Fellowship in Geology and Geophysics
Eugene A. Merten Memorial Award
Torkild Rieber Award
Torkild Rieber Scholarship
W.A. Tarr Certificate
Sam P. Worden Award

### German and Slavic Studies

Max Freund Prize in German
Dr. and Mrs. Mitchel Fellowship for German and Russian Language Study Abroad

### History

Kyriakouli Bitzes Scholarship
Mary Hayes Ewing Publication Prize in Southern History
Charles Garside Memorial Award in History
Jameson Fellowship
Barbara Field Kennedy Prize in American History
Clifford Lefton Lawrence Award in British History
Captain Charles Septimus Longcope Award
Susie Smith Vandiver Scholarship
Willoughby C. Williams Scholarship

### Human Performance and Health Sciences

G. L. Hermance Award in Physical Education
Jill Pitman Jones Award

### Humanities

Catherine Goodrich Fay Scholarship

### Managerial Studies

Andersen Consulting Award in Managerial Studies
H. Russell Pitman Award in Managerial Studies
Wall Street Journal Student Achievement Award

### Mathematical Science

Torczon Scholarship

### Mathematics

Hubert E. Bray Prize in Mathematics
Frank Jones Scholarship in Mathematics
Willoughby C. Williams Scholarship

### Military Science

American Legion for General Military Excellence Awards
American Legion/Andrew Jackson Memorial Award
Houston Chamber of Commerce Military Affairs Committee Award
Armed Forces Communications and Electronics Association Award
Reserve Officer Association Award Scholarship
Society of American Military Engineers Award
Society of American Military Engineers William S. Bailey Scholarship
Sons of the American Revolution Scholarship

### Music

Ralph A. Anderson Scholarship for Chamber Music
Alice Winston Carter Music Scholarship
Dr. Leon Clark Endowed Scholarship Fund
Denson Endowed Scholarship for Percussion
Elva Kalb Dumas Prize in Music
Lillian H. Duncan Prize in Piano
Frederick Royal Gibbons Memorial Award
William E. and Elva F. Gordon Scholarship
Erwin and Emily Heinen Prize in Music
Winifred and Maurice Hirsch Memorial Scholarship Fund
Hudspeth Violin Scholarship
Mary Root Kirkland Prize in Voice
Gwendolyn Jaster Lederer Scholarship in Piano
Larry J. Livingston Prize in Violin
Bertha Mallard Scholarship for Music Composition

Willie M. Muery Scholarship in Music
Dr. Joseph A. and Ida Kirkland Mullen Scholarships
Rex Shanks, Jr. Memorial Scholarship in Music
Sallie Shepherd Perkins Prize in Music
Burt Duke Raiza Prize in Piano
Shepherd Society Awards and Scholarships
Dorothy Richard Starling Scholarships in Violin
Logan C. and Ione G. Waterman Scholarship Fund

### Naval Science

American Defense Preparedness Association Scholarship (ADPA)
Armed Forces Communications and Electronics Association Awards
Chief of Naval Education and Training Scholarship (CNET)
Distinguished Naval Graduate Award
Mary Henry Gibson Scholarship
Jesse H. Jones Naval Scholarships
Commander F.C. Johnson Award
Military Affairs Committee, Houston Chamber of Commerce Award
Navy League Award
Reserve Officers Association Award
C. Grady Smith Memorial Award
Society of American Military Engineers Award
Texas Society — Sons of the American Revolution Award
United Services Automobile Association Scholarship Award
United States Naval Academy Alumni Association Award

### Philosophy

Jacob and Babette Atlas Prize in Moral Philosophy
Frank Moser and Professor R.A. Tsanoff Scholarship
Hilda Atlas Rich Scholarship
Tsanoff Undergraduate Essay Prizes

### Physics

William and Elva Gordon Scholarship
Claude W. Heaps Prize in Physics

### Political Science

Charles Breckenridge Parkhill Scholarship in Political Science

### Religious Studies

Aparicio Prize
Edith Jo Leeseman Dissinger Scholarship

### Rice Institute for Policy Analysis

Shell Scholar in Public Policy

**Science**

Lillian and Carl Illig Scholarships
Meg Perkins Memorial Scholarship in Science

**Sociology**

Walter and Helen Hall Prize
Weber-Durkheim Prize for Excellence in Sociology

**Spanish, Portuguese, and Classics**

Barzan Scholarship for Summer Study Abroad
Ruth Lee Kennedy Fellowship for Studies in the Golden Age of Spanish Literature
Sacks Scholarship for Summer Study Abroad
Summer Program in Spain Scholarship
Tsanoff Scholarship for Summer Study Abroad
Robert Wells Scholarship for Summer Study Abroad

**College Awards (Some Honorary)**

Marie Alexander Leadership Award
Athenian Awards
Donald R. Baker Scholarships
H. E. Bray Freshman Award
Franz and Frances Brotzen Award
Patrick Gordon Memorial Award
Joe M. Hamner Scholarship
J. Dennis Huston Sports Award
Jones College Scholarships
Jones Master and President Award
Margaret J. Jordan Endowment Fund
Leeds Award for Excellence in Scholarship
John E. Parish Fellowship
Richardson College Master's Award for Excellence in Scholarship
Z. W. Salsburg Award
Jackie Schnell Memorial Scholarship
Graham C. Stebbings College Service Award
Corrinne and Radoslav Tsanoff Sophomore and Junior Prizes
Harry Carothers and Olga Keith Wiess Scholarship
Olga Keith Wiess Award
S. P. Worden Endowment for Will Rice Award

In addition to the above awards, Rice is invited to nominate students for several scholarships and fellowships which provide funds for foreign study and travel or later graduate work. Final selections for these awards are made nationally or regionally.

Ora N. Arnold Travel Fellowship
Edwin, Frederick, and Walter Beinecke Memorial Scholarship
Franz and Frances Brotzen Travel Award
Churchill Scholarships
Danforth Fellowships Fulbright-Hays Scholarships

Goliard Travel Scholarship
Latin American Scholarship Program of American Universities, Inc. (LASPAU) Scholarships
Henry Luce Scholarships
Marshall Scholarships (British)
Rhodes Scholarship (British)
Sherman, Texas Travel Award
Harry S. Truman Scholarships
Thomas J. Watson Fellowships
Woodrow Wilson Doctoral Dissertation Fellowship in Women's Studies
Zonta International Amelia Earhart Aerospace Award

## Honor Societies

The Phi Beta Kappa society was founded in 1776 at the College of William and Mary for the purpose of recognizing intellectual achievement and the love of learning among students in the liberal arts and sciences. The Rice University chapter was formally installed on March 1, 1929.

Phi Lambda Upsilon, an honorary chemical society, promotes high scholarship and original investigation in all branches of pure and applied chemistry. The Rice chapter was installed in 1927.

The Pi Delta Phi society, organized to interest students of French in competing for high standing in scholarship, authorized in May 1930 the formation of the Theta chapter of Rice.

The Society of Sigma Xi, for the promotion of research in science, established the Beta of Texas chapter at Rice on March 23, 1938.

The Tau Beta Pi Association, organized to interest engineering students in competing for high standing in scholarship, created the Gamma of Texas chapter at the university on December 18, 1940.

Delta Phi Alpha was founded to promote an interest in the German language and literature. The National Council authorized the Gamma Xi Chapter at Rice in April 1949.

Sigma Delta Pi was founded to promote an interest in the Spanish language and literature. The Rice University chapter was installed on May 14, 1953.

Tau Sigma Delta is a national honor society in architecture and applied arts. The Tau Chapter was established at Rice on May 7, 1961.

Eta Kappa Nu was founded in 1904 at the University of Illinois for electrical engineering students. The purpose was not just to stimulate and reward scholarship but to assist and encourage it members to grow professionally throughout their entire lives. The Rice chapter was installed January 1981.

Omicron Delta Epsilon was founded to promote study in economics. The Rice University chapter was established in 1981.

Psi Chi was founded in 1929 at Yale University to encourage, stimulate, and maintain excellence in scholarship and to advance the science of psychology. The Rice University chapter was installed on April 23, 1990.

# Student Life

## Student Responsibility

Each Rice student is expected to observe standards of conduct consistent with respect for the law, the fulfillment of contractual obligations, consideration for the rights of others, and a high level of personal integrity. Though the university does not intend to supervise the personal lives of its students, all members of the university community should be aware that their behavior both on and off campus will reflect on the university.

The student government, the judicial system, and the honor system depend on a willing exercise of responsibility and honor on the part of everyone.

The university reserves the right to require the withdrawal of any student whose conduct may be judged clearly detrimental to the best interests of either the student or the university. Such action is taken only after careful consideration by the appropriate authorities.

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

## The Honor System

One of the oldest and proudest traditions at Rice is an honor system administered by a student Honor Council whose members are elected annually by the student body. Adopted by a vote of the student body in 1916, the system has remained essentially unchanged except for changes in the procedures and membership of the Honor Council.

All written examinations and any specifically designated assignments are conducted under the honor code. The student body, through its commitment to the honor system, accepts responsibility for assuring the validity of all examinations and assignments conducted under the system. The Honor Council is responsible for investigtation of all reported violations and for trial in those cases when the facts warrant. The Dean of Students reviews the results of investigations and trials and acts upon recommendations for penalties. The Honor Council conducts a continuing program to orient new students and faculty to the responsibilities and privileges of the system.

## Residential Colleges

Every undergraduate student, whether living on campus or not, is a member of one of eight residential colleges, all of which are coeducational.

Each college has a faculty master who occupies a house adjacent to the college. The master, whose authority derives from the president of the university, has overall responsibility for all aspects of student life in the college. He or she is especially responsible for encouraging broad cultural and intellectual interests and for promoting self-discipline and effective self-government within the college. Other members of the faculty are invited, upon agreement of the student members and the master, to become resident and nonresident associates of the college. Faculty associates act as advisers to the members and participate in the camaraderie and activities of the college. Colleges also have nonfaculty university associates and community associates from the Houston area, drawn from various professions.

Each college is a self-governing group of students whose elected officers and representatives are responsible to the master and to the college membership for

directing a variety of cultural, social, and athletic activities, for the appropriate and responsible expenditure of college funds, and for maintaining good 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.

Upon acceptance by the university, each undergraduate student is designated a member of one of the colleges. Two students who are entering Rice for the first time may ask to be assigned to the same college but may not designate which college. A new student may request membership in the same college as a close relative. No other choice of college is allowed.

The buildings of each college 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 of the university and all academic disciplines. At present, on-campus residential space is available for most of the first-year students who request it, but space is not assured until receipt of formal notification. Continuing students draw for the available space by the priority and lottery system established in each college, since the demand exceeds the available space.

The College Food Service provides meals on an a la carte basis with the exception of prepaid dinners. The service provides three meals per day Monday through Friday and continental breakfast and brunch on Saturday and Sunday. Meals are not served during the Thanksgiving holidays, mid-year, fall and spring mid-term recesses and spring holidays. Information on optional meal plans is available from the service. Other services provided for students living in the colleges include: (1) assistance with special diets prescribed by a physician, (2) sack lunches for students who must miss a meal due to a job conflict, (3) sick trays for students when requested by the Student Health Service, and (4) alternate menu entree, whenever possible, in accordance with students' religious practices.

## College Courses

As one of their important activities, individual colleges sponsor courses and workshops open to all students. College courses are initiated by students in the colleges during the semester before they are offered. Following approval by the master and faculty associates of the college and by the Vice President for Student Affairs, they are accepted for academic credit on the same basis as departmental courses and listed by the Registrar each semester during preliminary registration.

College workshops carry no academic credit and do not appear on a student's permanent record. Generally designated for instruction in practical skills, they may meet on a regular schedule throughout the semester or be offered as short courses.

By expanding the course offerings of the departments, college courses promote the academic involvement of the colleges and provide opportunity for interdisciplinary topics of particular interest to students.

## Student Government

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

Alleged violations of university or college rules are handled in accordance with the University Code of Judicial Procedure. In most cases, original jurisdiction is assigned to student courts, appeal from whose verdict may be made to the college master, the Dean of Students, or the University Review Board as appropriate. Final

appeal is to the president of the university. The Honor Council, which is composed entirely of students, administers the honor system and conducts hearings and trials for alleged offenses against it. The university retains ultimate authority in all matters of discipline and over all actions affecting its educational function or the safety and well-being of members of the university community.

The Student Association annually presents two coveted awards, 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 Student Association who have rendered distinguished service to the student body. Selection is made by a committee of faculty and students appointed by the association. The Mentor Recognition Award recognizes extraordinary service to the student body by a current member of the faculty or staff.

## Student Activities

The Office of Student Activities, located in the RMC Cloisters, oversees various campus-wide student organizations' activities in addition to administering the student health insurance program, senior rings, student requests for facilities and party permits. Major student organizations include the Student Association, the student governing body; the Rice Program Council, which sponsors various events of current interest to the student body as well as social functions; and KTRU, the student-run radio station, operating 24 hours, seven days per week on FM stereo. Student publications include the *Rice Thresher*, newspaper; the *Campanile*, yearbook; and the *University Blue,* literary publication.

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

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

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

Rice students are also affiliated 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 Student Organizations' Office, 2d Floor, Ley Student Center, houses the mailboxes for all student organizations.

## Rice Student Volunteer Program

Established in 1985, the Rice Student Volunteer Program (RSVP) is a student-run, staffed organization that involves Rice students, staff, and faculty in community service. Volunteers tutor in area schools, help adults learn to read, get involved with environmental, hunger and homelessness issues, participate in alternative breaks, teach CPR, and develop their own programs on campus.

## The Student Health and Counseling Services

The Student Health Service fee, paid annually by undergraduate and graduate students, makes available to students both the Student Health Service and the Rice Counseling Center. The care and services provided by the Health Service and the Rice Counseling Center are described in information available from either service or from the Office of Student Activities.

The Student Health Service is an outpatient primary care clinic located on campus in the north wing of Hanszen College. The clinic is staffed by two physicians and two nurses. Clinic hours are from 8:00 a.m. to 5:00 p.m., Monday through Friday throughout the undergraduate school year.

After-hours and weekend medical care is available at a number of local hospitals. Students are encouraged to review their insurance coverage and decide which of the available options would be most appropriate in the event medical care were necessary. Students are responsible for all medical bills for blood tests, x-rays, outside physician care, etc.

In serious emergencies call the Health Service (university extension x4966 during work hours) or the Campus Police (x6000).

The Health Service is open from the first day of Orientation Week until the day before commencement. The Health Service is closed during the Christmas break and Thanksgiving and Easter weekends but is open during mid-term breaks in the mornings only.

The Health Service provides the following:

1. Primary care for illness and injury with referral to specialist when needed.
2. Maintenance of health record for all students and administration of immunizations.
3. Contraceptive counseling and routine Pap Smears.
4. Administration of allergy injections with serum provided by student after specialist allergy workup.
5. Physical examinations for employment, transfer to another school, scholarship expeditions.

**Confidentiality.** The Student Health physician/patient relationship and confidentiality is absolute, except where the individual student may be deemed a significant health risk to other students.

All Rice students are required to have health insurance. Insurance may be purchased through the University at two levels of coverage, described in a brochure that is sent to incoming and returning students each summer. Brochures and applications may also be obtained from the Cashier's Office or the Office of Student Activities. Rice's group coverage will be effective from 12:01 a.m., August 15, 1993, until 12:01 a.m., August 15, 1994. Dependent coverage is also available. If you have other medical insurance, a waiver card showing proof of insurance must be signed and returned to the Cashier's Office by August 15, prior to the beginning of classes, to avoid automatic billing for coverage.

The **Rice Counseling Center** was established to address students' psychological needs through a variety of programs and services. Located in 301 Lovett Hall, the center is open year-round except for scheduled holidays. Office hours for counseling and consultations are 8:30 A.M. - Noon, 1 - 5 P.M., Monday - Friday. Students can make appointments by calling 527-4867 or by coming by the center.

Typically, most students who utilize the center's counseling services have experienced very common college student concerns (e.g., roommate problems, breakup of a relationship, academic and/or interpersonal anxiety, family problems, confusion about personal goals, values, and identity issues, or adjusting to Rice). Issues such as substance abuse, eating disorders, sexual assault and sexual abuse,

courtship violence, depression, dealing with the coming-out process and others are also addressed at the RCC through individual and/or group counseling and educational programming.

When it is clear that prolonged or specialized counseling or treatment is necessary, the individual may be referred to an outside provider at his/her expense or as covered by health insurance.

**Eligibility for Services:** All students who have paid the Health Service Fee are eligible for initial assessment sessions, consultations, crisis intervention and educational programming. Depending upon need and appropriateness of RCC services for the student, individual and/or group counseling may also be available.

**The RCC provides the following services:**

- **Initial assessment**
- **Short-term individual and couples counseling.**
- **Group therapy and support groups** (e.g., eating disorders, relationship issues, survivors of sexual abuse, gay and lesbian issues, etc.).
- **Medication consultations** with the center's consulting psychiatrist.
- **Consultations** on various issues (e.g., how to make a referral, how to respond to a friend in distress, etc.).
- **Educational programming** (e.g., campus-wide workshops on stress management, study skills, coping with transitions, etc.; participation in campus-wide programs such as Sexual Assault Awareness Week, Unity Through Diversity Week, AIDS Awareness and Alcohol Awareness Week, etc.).
- **Crisis intervention:** Walk-in emergency consultation or counseling during regular office hours. Call 527-4867 for assistance with emergencies after hours or on weekends.

The **College Assistance Peer Program,** CAPP is administered by the Counseling Center. It involves students who have been carefully selected and trained in listening skills and mental health education. CAPP members are available to their peers as supportive listeners and referral sources. CAPP members also assist the Counseling Center in developing and presenting educational programs on mental health issues.

**Students with Disabilities:** In order to accommodate students who have physical limitations that make it difficult for them to reach the center's 3d floor location in Lovett Hall, center staff can see students in a more accessible location on campus. Arrangements to see a counselor under those circumstances can be made by calling the RCC.

**Confidentiality:** Counseling services are confidential except in cases of imminent danger to the student or others, or reports of suspected abuse or neglect of a child or an elderly person. No information about a student is released from the RCC without the student's written permission.

## Fondren Library

With a collection of some 1.5 million volumes, more than 2.2 million microforms, and 14,000 current periodical and other serial titles, Fondren Library is strongly committed to supporting the research and information needs of Rice's students and faculty, and it provides extensive resources for advanced study and research. Among the notable research collections are the Menil Collection in art and art history, the Nadler German language and literature collection, and strong collections in Austrian history, architecture, engineering, American history, French literature, and the natural sciences and engineering. Bibliographic access is provided through LIBRIS, Fondren's automated catalog.

The library is also a depository for United States Government documents and for United States patents, as well as a university affiliate for the U.S. Census data. The Woodson Research Center is the repository of the library's rare books, manuscripts,

and university archives. Special collections, including Civil War imprints, Texana, eighteenth-century English drama, the papers and scientific library of Sir Julian Huxley, the Anderson Collection on the History of Aeronautics as well as numerous literary and historical manuscript holdings, are available for research at the center. Large microform sets of research materials, such as Early American Imprints, papers of a number of United States presidents, and newspapers are also available.,

The Fondren Library's open-shelf policy enables patrons to locate materials easily. The reference/collection development librarians provide assistance in the use of library materials and in computer searches of over nine hundred subject databases. Special facilities such as individual study carrels, group study rooms, audio visual facilities, electronic workstations, microform reading carrels, and photoduplicating equipment are also available in the library.

Technological advances in electric networking and resources are increasingly important to the growth of the Fondren Library collections. Library staff are actively engaged in the development of electronic studios, and access to networked resources.

## Rice Memorial Center—Ley Student Center

The Rice Memorial Center (RMC)/Ley Student Center is a campus gathering place that strives to enhance a spirit of "community" among students, faculty, staff, and alumni by providing programs and services of a social, intellectual, and cultural nature. The Rice Memorial Chapel is an integral part of the student center complex. Housed within the center are the Association of Rice Alumni, the Career Services Center, the Rice Campus Store, Sammy's Cafeteria, the Coffeehouse, Rice University Bands, Willy's Pub, RSVP, the Office of Academic Advising, the offices of various student organizations, the Student Association, the International Student Organization, the Graduate Student Association, radio station KTRU, the *Thresher*, the *Campanile*, and the Rice Program Council. The facilities of the center are available to the university community for meetings, parties, dinners, concerts, weddings, and special events.

## Career Services Center

The Career Services Center is a full-service career center offering a variety of services to undergraduates, graduate students and alumni of the university. These services are designed to help everyone in the university community, from liberal arts majors to engineers.

Among the center's activities is career counseling for those unable to decide on a career or graduate program to pursue or explore and for those who need assistance and direction in the path they have chosen. Career testing is also available for those interested in a more analytical approach to career decision-making. Peer counselors are available to assist students with resume writing, interviewing and job search strategies. Workshops, career panels, and a number of career fairs are sponsored by the Career Services Center each year to provide information on career areas for students. Details on individual events are publicized throughout the campus and through the *Career News,* a publication of the center.

Located within the Career Services Center is the Career Library. The library has a substantial collection of resources and literature on careers and occupations in many areas, locating and securing employment, summer jobs, company information, and graduate schools. These resources are also helpful in determining areas of career exploration.

Internships may be obtained through the Joint Venture program of the Career Services Center. Internships can be a vital part of a college education, and students are encouraged to apply for these opportunities through the center.

A great many representatives from business, industry, and other employing organizations visit the center each year for prospective summer and full-time employees. Students register and schedule interview dates and times through the center. Listings for full, part-time, and summer jobs are also available in the Career Library.

## Office of Multicultural Affairs

Located in the cloisters of the Rice Memorial Center, the Office of Multicultural Affairs represents a deliberate, programmatic response to the academic, social and recreational needs of ethnic minority students at Rice. Charged primarily with providing counseling and support, the office also serves as a reference and resource center with a library of guides and information on graduate schools, jobs, fellowships, internships and other opportunities available to minority students once beyond the Rice community. The office further serves to oversee cross-cultural programming for the campus and to promote the education and celebration of issues related to cultural diversity. Programming is designed to enhance the university's efforts to recruit and retain more minority students.

## Health Education Office (HEO)

The Health Education Office delivers a variety of services to students and faculty. Programming includes, but is not limited to, sexual health awareness, substance abuse prevention, nutrition and diet, and acquaintance rape issues. Additionally, the HEO offers students private consultations and a resource room containing health-related literature (brochures, journals, posters, etc.). Students actively volunteer with the HEO for positions such as Sexual Health Peer Instructors, Students Organized Against Rape (SOAR) and Health Representatives for their colleges. The Health Education Office is located in the Rice Memorial Center Cloisters.

## Intercollegiate Athletics

A charter member of the Southwest Athletic Conference and a Division I-A member of the National Collegiate Athletic Association, Rice fields teams in football, basketball, baseball, cross-country, indoor and outdoor track, swimming, tennis, and golf for men—and in basketball, volleyball, cross-country, indoor and outdoor track, swimming, and tennis for women. Home football games are played in the beautiful 70,000-seat Rice Stadium. Autry Court for basketball and volleyball, Cameron Field for baseball, the Jake Hess Tennis Stadium and the Rice Track Stadium round out a complex of outstanding athletic facilities. Dedicated to the pursuit of high-level athletic goals for true student athletes, Rice prides itself on its dual goal of excellence in both the academic program and the athletic arena and refuses to use the rigors of either as an excuse for less than high quality performance in the other.

## Intramural Sports

The Department of Human Performance and Health Sciences offers a supervised program of intramural sports for all students, faculty and staff. An individual may participate in individual, dual, team sports, swim meets, and track and field events. Any interested students, faculty and staff may form teams for the wide variety of tournaments. A student may compete in the university intramural tournaments and/or represent his/her college in the college team sports tournaments which follow the open tournaments. In the past few years, over 6,000 entries from the student population have participated in 53 tournaments. (Students participate at their own risk.)

### Sports Clubs

The Department of Human Performance and Health Sciences administers a Sports Club Program. A sports club is a special interest group organized to engage in and promote interest in a recreational physical activity. Club organization is dependent upon student interest. In 1992 clubs were organized in badminton, cricket, cycling, fencing, lacrosse, martial arts, rowing, rugby, soccer, sailing, squash, and volleyball. These groups are formed to increase individual and team skills through a continuing instructional and competitive program. Club activities are supported by individual contributions, membership dues, university funds, and fund-raising activities. (Students participate at their own risk.)

### Student Automobiles

All student vehicles must be registered with the Traffic Division of the Rice University Police Department. Students must park in assigned areas and observe university regulations. Illegally parked or unregistered vehicles are subject to tow away and/or fines assessed by the university. Copies of the University Traffic and Parking Regulations, which detail student privileges and responsibilities, may be obtained from the Traffic Division of the University Police. Students must inform all guests of parking regulations as repeat violators are subject to towaway.

## Information Systems

### Office of Administrative Computing

The Office of Administrative Computing is in charge of providing computing services to the administrative departments and others that may request them and of coordinating the administrative computing activities and strategies across campus. The office utilizes its own local area network and is involved in a number of strategic projects to determine and fulfill present and future administrative needs throughout the university.

### Office of Networking and Computing Systems

Networking and Computing Systems designs, builds, and operates the Rice campus network, known as Rice Internet, and manages several of the major computational resources attached to it. The office also provides operational support of the SesquiNet regional network under an arrangement with its sponsors.

The Computer and Network Operations Group monitors the network and selected computer systems to assure their proper operation and maintains the public computer lab facilities supported by Information Systems. Through its Technical Services section, it is responsible for construction of the network. Staffed around the clock, the Operations Center serves as a focal point for reporting problems with the network, its external connections, and facilities managed by Information Systems.

The Network and Systems Support Group evaluates, installs, maintains, and, in some cases, creates the software to support networking, network services, and the various campus computing systems, including the ES/9000, Owlnet, Rice UNIX Facility, and Rice Advanced Visualization Laboratory. This group provides technical expertise to support the information dissemination and consulting activities of the Office of Computing Information Services and other campus groups.

## Office of Computing Information Services

Responsible for the collection and dissemination of computing information on campus, Computing Information Services provides consultation, documentation, training, and reference areas to support the computing services required for the scholarly and administrative activities of the university. Environments supported include micro, mainframe/mid-level, and high performance computers and their associated software and access systems. Computing Information Services provides assistance and information for a variety of campus and off-campus computing resources as well as information for purchasing and managing individual and departmental resources. This office also provides feedback and evaluation to providers of computing services.

Computing Information Services manages several microcomputer classrooms and laboratories open to the Rice community and provides overall business and planning services for the Information Systems offices and distributed laboratories.

Projects that benefit from campus coordination, such as site licenses, discount programs, joint proposals, campus standards, and some investigations into new software, technologies and products, are also undertaken in this office.

## Campus Computing Labs

**Mudd Lab**—microcomputer classrooms and labs open to the Rice community. Located in the west wing of the Mudd Building, this laboratory includes software libraries and demonstration materials for Apple Macintosh and IBM PS2 equipment.

**Center for Scholarship and Information**—a microcomputer classroom and lab located in Fondren Library.

**Social Science Computer Lab**—a microcomputer lab designed for the support of Social Science faculty, staff, and students located in Sewall Hall.

**Rice UNIX Facility**—an experimental lab of Sun workstations for Rice faculty and staff research located in Mudd Lab.

**Owlnet**—a campus-wide educational network for use by students. Owlnet labs are located in a number of buildings on campus, and its mission has been expanded to serve the entire student community.

**Rice Advanced Visualization Lab**—a lab of high-powered computer visualization imaging and animation tools for educational and research use located in Architecture in Anderson Hall.

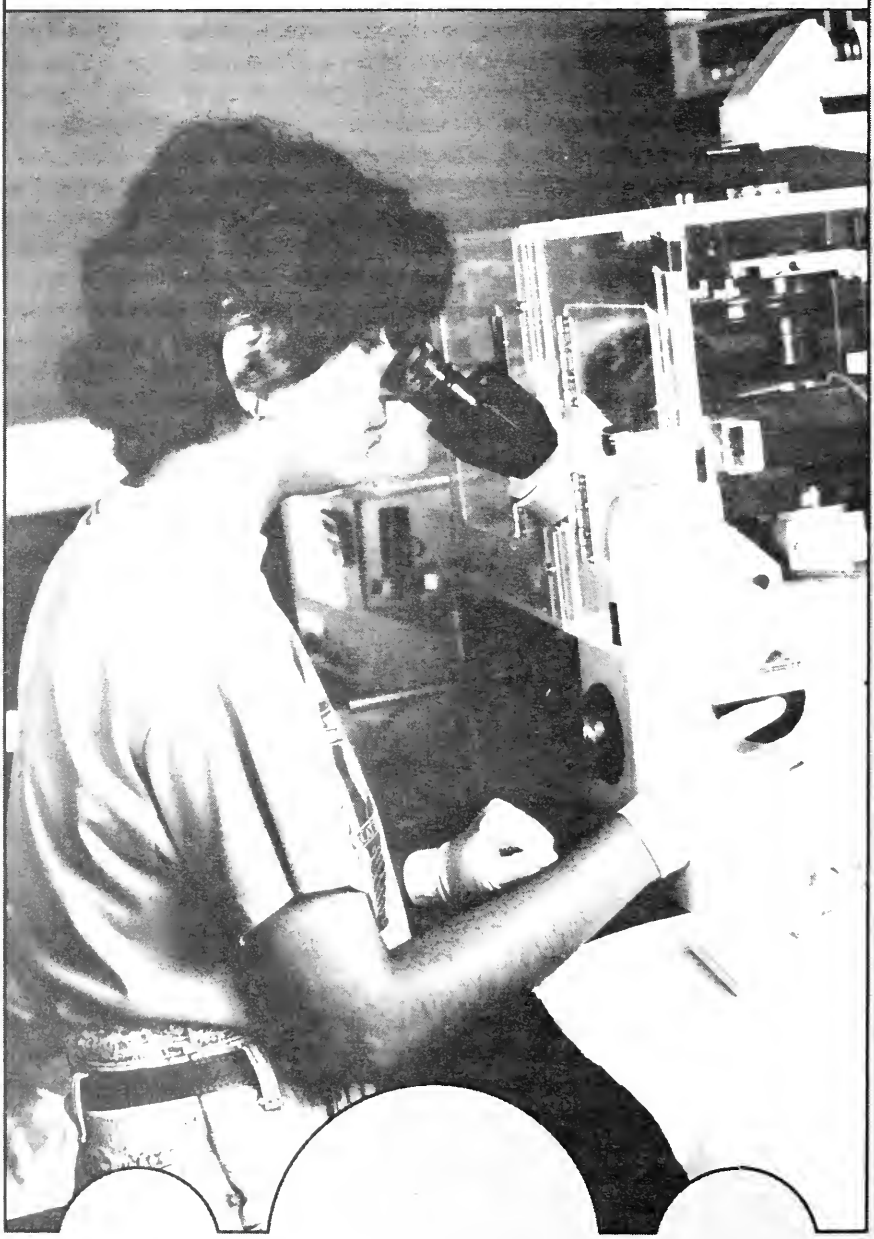
**Biosciences Computer Lab**—this Macintosh lab is designed to allow bioscience faculty to include a computing facet to their curriculum. The facility is open to reservation requests from other departments, while the remaining time periods are open to the public.

**Humanities Computer Lab**—a humanities computer lab proposed for fall 1993 will reside in 227 Rayzor Hall and will consist of five Macintosh IIs and printing facilities.

## Where To Go For Further Information

If you need more information or wish to set up a computing account, stop by the Consulting Center (x4983) in Mudd 103. Consultants are available to answer your computing questions or to guide you to additional resources.

# INFORMATION · FOR GRADUATE · STUDENTS



Since the opening of the university in 1912, the importance of graduate study and research as a principal means of advancing knowledge has been recognized. The first Doctor of Philosophy degree was awarded in 1918 in mathematics. Since that time, the graduate area has been expanding through the basic sciences, the humanities, engineering, the social sciences, architecture, music, and administration and includes interdepartmental areas. The number of graduate programs has steadily increased, and advanced degrees are now offered in 33 fields of study.

Graduate programs are of two types, research and professional. Research programs lead to the Doctor of Philosophy, Doctor of Architecture, Master of Arts and Master of Science degrees. Professional programs provide advanced course work in scientific disciplines but do not generally include independent research. They lead to the degrees of Doctor of Musical Arts, Master of Accounting, Master of Architecture, Master of Architecture in Urban Design, Master of Arts in Teaching, Master of Business Administration (which includes public and nonprofit management), Master of Chemical Engineering, Master of Computational and Applied Mathematics, Master of Civil Engineering, Master of Computer Science, Master of Electrical Engineering, Master of Environmental Engineering, Master of Environmental Science, Master of Materials Science, Master of Mechanical Engineering, Master of Music, and Master of Statistics.

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

## Research Degrees

The degree of Doctor of Philosophy is awarded for original studies in anthropology, applied physics, biochemistry, biology, chemical engineering, chemistry, civil engineering, computational and applied amthematics, computer science, economics, electrical and computer engineering, English, environmental science and engineering, French, geology, German, history, linguistics, materials science, mathematics, mechanical engineering, philosophy, physics, political science, psychology, religious studies, statistics, space physics and astronomy. In architecture, the equivalent degree is the Doctor of Architecture. These degrees are awarded after successful completion of at least 90 semester hours of advanced study and an original investigation reported in an approved thesis. As final evidence of preparation for this degree, the candidate must pass a public oral examination. The residency requirement (period of full-time study at the university) for the doctorate is four semesters.

The degree of Master of Arts is available in the various humanities listed above plus art history and Spanish and in scientific fields of study, including the social

sciences. The Master of Science degree may be obtained in the fields of chemical, civil, electrical and computer engineering, mechanical engineering, computer science, environmental science and engineering, materials science/engineering, and space physics and astronomy. The Master of Architecture, Master of Architecture in Urban Design, and Master of Music are also offered as research degrees, with a thesis option.

The Master of Arts or Master of Science degree, or the Master of Architecture or Master of Music research degree, may be awarded after completion of at least 30 semester hours of study, including the thesis, 24 of which must be done at Rice. The residency requirement is one semester. Programs generally include original work embodied in a thesis, and the candidate's preparation is evidenced by a public examination. Most students require three or four semesters to complete such a program, although some programs may be longer. In some departments, students may be awarded a master's degree on the basis of achieving candidacy for the doctoral degree. Students seeking such an award must submit a petition for the degree, signed by their department chair, to the Office of Graduate Studies prior to February 1 of the year in which the degree is to be awarded.

Foreign language requirements for the master's and doctoral degrees are established by the individual departments according to the need for foreign languages in the conduct of research and scholarship in their respective fields.

Information on candidacy, the oral defense of thesis, and thesis regulations is given under Academic Regulations, beginning on page 137. More specific information about requirements for advanced degrees in each field of study is given under department headings in the section of the catalog that begins on page 147. Additional material may be obtained from the appropriate department chair.

## Professional Degrees

Rice University offers several advanced degree programs that prepare students for positions in fields such as accounting, computational and applied mathematics, business administration, public and nonprofit management (see accounting and administrative science), architecture, computer science, engineering, and secondary education; in some departments, such degrees prepare the student for a doctoral-level program. In addition, a nonthesis Doctor of Musical Arts degree is awarded after completion of a program of advanced study and required performances or original compositions. (If the field of emphasis is composition, a major work is presented as a thesis.)

Requirements for these degrees include the successful completion of 30 semester hours or more of advanced courses (numbered 300 or higher). At least 24 of these 30 hours must be taken at Rice. Additional information is presented in this catalog under the departmental listings in the Courses of Instruction section beginning on page 147 and in the Academic Regulations section beginning on page 137. In each case, application materials are available from the department.

Admission into a professional degree program is granted separately from admission into a research or thesis program, and students who wish to change from a thesis program to a professional master's program must obtain the specific approval of the Office of Graduate Studies. Approval will not normally be granted to students who have received university graduate fellowships unless the student can demonstrate significant service to the university or its faculty through teaching or research. Professional degree programs terminate when the degree is awarded. Students who wish to continue in the graduate program after the completion of a professional program must reapply for admission into a research or thesis program.

## Accounting and Administrative Science

The Jesse H. Jones Graduate School of Administration offers two professional degrees, the Master of Business Administration (which includes concentrations in accounting, business entrepreneurship, finance, international management, management information systems, marketing, operations research, and public and nonprofit management) and the Master of Accounting. The Master of Business Administration degree program requires two academic years to complete. Students who have taken a prescribed set of prerequisite courses as undergraduates may complete the Master of Accounting degree program in one year (see page 151 for information). Those lacking the requisite background may choose to take the MBA degree program with an accounting concentration. To qualify for either degree, the student must maintain a "B" (3.0) average and may be required to pass a special examination during the last semester in residence. There is no thesis requirement.

Applicants must submit scores on the Graduate Management Admission Test (GMAT), all college transcripts, and three letters of recommendation as well as specified essays. 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 undergraduates from Rice and other universities, regardless of undergraduate major, but is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT. The MBA program requires no specific prerequisite courses for admission; however, 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 is used extensively in course work, students should have a thorough understanding of these types of software packages before enrolling. Undergraduates contemplating graduate work in accounting should take the prerequisite courses outlined on page 151 in order to complete the M.Acco. degree in one year.

The Jones Graduate School and the George R. Brown School of Engineering offer a joint MBA/Master of Engineering degree. The nonthesis engineering degree may be obtained in the departments 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 and a summer. To enter the joint-degree master's program, applicants must be accepted by both the Jones Graduate School and the engineering department in which they wish to enroll. The program requires a special application that may be obtained from the Jones Graduate School. The Graduate Record Examination (GRE) rather than the Graduate Management Aptitude Test (GMAT) is required for the joint-degree program, and some engineering departments require advanced tests as well. Students whose native language is not English must supply scores from the Test of English as a Foreign Language (TOEFL).

## Architecture

Degrees of Master of Architecture and Master of Architecture in Urban Design are offered. Completion of either degree requires two or more academic years. An applicant for admission should write to the dean of the Rice University School of Architecture for specific information about the program for which the applicant would

be qualified by education and experience. Completed application materials include the Rice University Application for Graduate Study form, transcript(s), Graduate Record Examination scores, a portfolio of the applicant's work, and a four letters of recommendation.

## Education

The Master of Arts in Teaching is a professional degree program for students wishing to qualify for secondary school teaching following a liberal undergraduate education. The program normally requires completion of 11 advanced courses with grades of "B" or higher. All courses must be approved by the Department of Education.

Admission requires that the applicant have a bachelor's degree, scholarly ability and motivation, and an interest in teaching at the secondary school level. Each applicant will be expected to take the Aptitude Test of the Graduate Record Examination. Applications are reviewed by members of the Rice University Teacher Education Council. Other requirements for the Master of Arts in Teaching are found in the Department of Education section of the Courses of Instruction listing.

Students in the program are not normally eligible for Rice University Graduate Fellowships or scholarship support since cooperating school districts pay students a salary for internship teaching. However, a limited number of tuition waivers may be available.

## Engineering

Nonthesis master's degrees are offered in the traditional branches of engineering listed below and in other departments included in the engineering division: computer science, computational and applied mathematics, and statistics. A completed bachelor's degree in a relevant field is required for admission. Candidates are required to complete 30 hours of approved advanced courses (numbered 300 or higher). These advanced courses include at least four at the 500 or 600 level, indicating professional study in-depth in a particular area. Courses counting toward these 30 hours may not be taken on a pass/fail basis. The student's major department must approve the overall program, and any departure from these guidelines must be approved in the Graduate Office.

**Chemical Engineering.** Flexibility in course planning permits specialization in such areas as economics, biochemical engineering, reservoir engineering, process control, optimization and systems analysis, applied mathematics, materials science, kinetics, and catalysis.

**Civil Engineering.** The area of concentration is structures and mechanics. Some specialization in solid mechanics, geotechnical engineering, or applied mathematics is possible within the structures and mechanics concentration.

**Computational and Applied Mathematics.** The Master of Computational and Applied Mathematics degree requires satisfactory completion of 30 semester hours of approved course work beyond a bachelor's degree in an appropriate field. Concentrations are possible in numerical analysis, computational science, operations research, and physical mathematics. Candidates for admission are evaluated on their previous academic records and their potential for success in and benefit from the professional program.

**Computer Science.** The Master of Computer Science degree requires completion of ten advanced courses approved by the Department of Computer Science in accordance with general practices stated under Engineering, above. The program for each student is formulated in consultation with a departmental adviser. The areas of concentration are algorithms, compiler construction, operating systems, and programming languages.

**Electrical and Computer Engineering.** Technical electives permit some specialization in the general areas of bioengineering, communication and control theory, electro-optics and physical electronics, and computer science and engineering.

**Environmental Science.** Major emphasis of the degree program is in the areas of environmental biology, environmental chemistry and toxicology, surface and groundwater hydrology, water and wastewater treatment, environmental geology, and environmental planning.

**Environmental Engineering.** Major emphasis of the degree program is in the areas of hydrology and water resources engineering, water and wastewater treatment design and operation, water and wastewater treatment, and numerical modeling.

**Materials Science and Engineering.** The student takes an approved program of courses in materials science and engineering or related fields plus two appropriate electives. Students may enter this degree program following undergraduate preparation in any of a number of related fields in addition to materials science/engineering.

**Mechanical Engineering.** Flexibility in course requirements permits specialization in thermal sciences and energy conversion, gas dynamics, hydrodynamics, computer-aided design, stress analysis and mechanical behavior of materials, and aerospace engineering.

**Statistics.** The Master of Statistics degree requires satisfactory completion of ten approved courses. Study is in the fields of applied probability, biomathematics, data analysis, density estimation, epidemiology, image processing, model building, quality control, statistical computing, stochastic processes, and time series analysis.

**Joint Master of Business Administration/Master of Engineering Degree Program.** The joint MBA/Master of Engineering degree program is designed to allow a student to complete an MBA and one of the professional (nonthesis) Master of Engineering degrees in approximately 2.5 years. The joint MBA degree can be taken in conjunction with any of the professional master's degrees offered in the disciplines listed above. The student will be required to complete 76 hours of courses: 24 hours in a particular professional master of engineering curriculum and 52 hours in business administration. The student must satisfy the entrance requirements of both the Brown School of Engineering and the Jones Graduate School.

## Music

The Shepherd School offers the Master of Music degree in the following areas: composition, choral and instrumental conducting, historical musicology, performance, and music theory. An audition is required as part of the admission process for instrumental and conducting applicants. Composition majors are required to submit portfolios of their works, and musicology and theory majors should submit samples

of their written work. The Graduate Record Examination (both the Aptitude and Advanced Music Tests) is required of musicology, theory, and composition majors. The faculty of the Shepherd School may determine that additional work at the undergraduate level is needed.

The precise minimum hourly requirements for the Master of Music degree vary from 43 to 57 according to major area. For a description of the requirements for a particular Master of Music degree, write to the Shepherd School of Music, Graduate Admissions.

The Doctor of Musical Arts degree, offered in selected areas, requires 90 hours beyond the bachelor's degree. The minimum residency (i.e., period of full-time study at Rice) is two semesters for the Master of Music and four semesters (beyond the Master of Music degree) for the Doctor of Musical Arts degree. For further information on the DMA program, write to the Shepherd School of Music, Graduate Admissions.

## Interdisciplinary and Cooperative Programs

**Interdisciplinary Graduate Programs.** Opportunities are available for interdisciplinary study in various aspects of systems theory, solid-state electronics, materials science/engineering, and bioengineering. For applications or additional information, contact the chair of one of the participating departments as follows: for systems theory, the Department of Chemical Engineering, Economics, Electrical and Computer Engineering, or Mathematical Sciences; for solid-state electronics and materials science/engineering, Chemistry, Electrical and Computer Engineering, Mechanical Engineering, or Physics; for bioengineering, Chemical Engineering, Electrical Engineering, or Mechanical Engineering.

**Applied Physics Program.** This joint effort of the Schools of Engineering and Natural Sciences grants Master's and Ph.D. degrees in Applied Physics. With a curriculum primarily in electrical engineering and physics, its objective is to provide a graduate education that prepares students for work in the rapidly developing new areas of physical electronics, lasers and electro-optics, and electronic and optical devices and materials. Applied Physics is academically more demanding than most graduate programs but permits substantial flexibility in an individual student's choice of courses and research topics. For further information, please contact the Rice Quantum Institute office at (713) 527-6028.

**Computational Science and Engineering Program.** The program focuses on modern computational techniques and provides a source of training and expertise in the use of new and powerful computers as an aid to research, development, and design. At the master's level, the program is designed to provide training and to produce practitioners. In addition, at the Ph.D. level it seeks to advance the field through original research. Students must fulfill the admissions requirements of one of the participating departments. For an application or additional information, contact one of the following departments: computational and applied mathematics, biochemistry and cell biology, geology and geophysics, computer science, chemical engineering, electrical and computer engineering, or statistics. (See also the program desription in the section on computational and applied mathematics).

**Joint Graduate Programs with Medical Colleges.** Joint programs with the Baylor College of Medicine and the University of Texas Medical School are designed to provide educational experiences of high quality leading to research careers in medicine. These programs lead to joint M.D./Ph.D. or joint M.D./M.A. or M.D./M.S.

degrees. Such programs can be worked out individually through various departments.

**Joint Graduate Programs in History and Law.** This selective program combines graduate work in legal and constitutional history at Rice University with professional work in law at the University of Houston Law Center or at the Thurgood Marshall School of Law of Texas Southern University. Students in their first or second year of law school may apply for admission to Rice through their law school. Participants spend one year at Rice in the Master of Arts program concentrating on legal and constitutional history. After completing this year of residence and all requirements for the M.A. except the thesis, the student returns to law school to finish his or her legal studies. During the last year of law school, the student completes a suitable M.A.-level research thesis on a topic in legal and/or constitutional history selected with the approval of the law school instructor and the student's Rice history adviser. The student who completes this program receives a law degree from his or her law school as well as an M.A. in history from Rice.

**Joint Graduate Program in Medical Ethics.** Under an agreement with the University of Texas Health Science Center at Houston, a cooperative program of graduate study in medical ethics is offered, leading to the M.A. and Ph.D. degrees in religious studies from Rice University. Also, under an agreement with the Baylor College of Medicine and the Institute of Religion, a cooperative program in medical ethics is offered, leading to the M.A. and Ph.D. degrees in philosophy from Rice.

# Nondegree Programs Class III

Students with a "B" (3.0) or better grade average and an undergraduate or graduate degree from an accredited college or university may apply for admission as Class III students to take courses for credit without being admitted to a specific degree program. Permission of instructor (and in some cases, a department) and approval by the dean of Graduate Studies are required.

Courses taken under this arrangement cannot be used to fulfill the requirements for a degree at Rice unless and until the student has been accepted into a degree program by an academic department (and, in the case of graduate students, by the dean of Graduate Studies), and the department has approved a special request that the Class III course count toward the degree. It is the student's responsibility to ensure that the proper appeals have been obtained. Normally, no more than three courses taken as a Class III student can be applied toward a graduate degree. Class III students cannot take courses on a pass/fail basis.

An application and course request form can be obtained from the Office of Graduate Programs, P.O. Box 1892, Houston, Texas 77251-1892.

Official transcripts from all colleges and universities attended should be mailed directly from previously attended institutions to the Office of Graduate Programs at Rice. A student who has attended Rice as a Class III student must still complete continuation forms for each semester and submit them by the deadlines. These materials will be sent upon request from the Office of Graduate Programs. Deadlines for all applications are the respective workdays closest to August 1 and December 1. Applications will not be considered after classes have begun.

The tuition for 1993-94 is $600 per semester hour for either undergraduate courses (100-400 level) or graduate courses (500+ level). In addition, a $50 registration fee is due each semester. All fees are payable during registration, which must be completed by the end of the second week of class. Persons submitting applications not completed by the deadline must pay a late application fee of $50. This late fee will also

be charged continuing Class III students who do not complete continuation forms by the above deadlines. For some courses students may be charged for computer time. If a class is filled with degree students, Class III students may be dropped up to the end of the third week of class. In that case, the tuition (less $25 of the registration fee) will be refunded. The minimum registration for Class III is three hours.

Because Class III is not a degree-granting program, foreign graduate students enrolled as Class III students cannot receive visas from Rice University. Persons who are B-2 visitors may be ineligible for enrollment as Class III students. A determination will be made by the dean of Graduate Studies and the Foreign Student Adviser.

Faculty/staff spouses may apply and receive a tuition waiver for undergraduate level courses only. Application materials, transcripts, grade point average of "B" or better, and a baccalaureate degree are required. Students are responsible for paying all fees and observing all deadlines.

For an application or for further information, please contact the Office of Graduate Programs at (713) 527-4002.

# Admission to Graduate Study

Graduate study is open to well-qualified students who possess adequate background in the field of study they wish to pursue. Normally, but not always, the equivalent of an undergraduate major in the field is required, but the final judgment of preparation rests with the department concerned. The emphasis is on the quality of the applicant's preparation rather than on the academic program pursued or credits earned in achieving it.

Applicants for admission to graduate study should address all communications to the chair of the appropriate department, who will provide the application form and relevant information about the program. The completed form, with transcript and recommendations, should be returned to the department chair. Scores on the aptitude portion of the Graduate Record Examination (or the Graduate Management Admission Test), and an appropriate advanced test if required by the department, should be sent directly to the admitting department. In order for these scores to be available at the time when admission decisions are normally made, applicants are strongly encouraged to take the GRE by December of the year prior to that for which application is being made. The application deadline for admission for the fall semester is February 1. However, some departments specify an earlier deadline, and departments may occasionally be able to consider late applications.

Candidates are evaluated on their previous academic records, available test scores, and letters of reference from scholars under whom they have studied. Additional evidence of qualification to pursue advanced study, such as writing samples, portfolios, or statements of purpose, may be required. In addition to any specific requirements of the department, the applicant is expected to have at least a "B" (3.0) average in undergraduate work and high scores on the Graduate Record Examination (or GMAT). Foreign applicants, whose native language is not English, must take the TOEFL test and are not normally admitted if they score below 550. Initial decisions regarding admission or denial are made by departmental committees, which send recommendations to the Office of Graduate Programs for review. Official offers of admission may be made only by the dean of Graduate Studies.

Graduate programs at Rice are designed for full-time study, but a limited number of students may be admitted on a part-time basis if the department recommends making such an exception and if the Dean of Graduate Studies approves.

Each graduate student is advised by the departmental chair or an officially designated faculty member in planning the initial semester of graduate study. As soon as possible, each student should affiliate with a faculty adviser who will help plan both the course program and the thesis or special report.

## Academic Regulations

**Residency.** The minimum residency (i.e., period of full-time study at Rice) is one semester for the M.A. or M.S., and four semesters for the doctorate.

**Leave of Absence.** Leave of absence is granted only by the Graduate Office upon the recommendation of the department and is granted only to graduate students in good standing with the university. Leave must be approved in advance of the academic semester in question; it will not be granted after the student has registered for courses or after the registration period has passed. Normally, leave of absence is granted for no more than two consecutive semesters. No work toward a degree may be done at Rice or involve Rice faculty (or facilities) during a leave of absence. A reinstatement fee of $25 is charged upon return from an official leave.

**Minimum Registration.** The minimum number of hours for which a student may register is three.

**Courses of Study.** Graduate students may register for courses of study only with the approval of their departmental advisers or chair. Similarly, students are allowed to drop or add courses only if departmental approval has been given.

**Full-time Status.** Graduate programs at Rice generally require full-time study. The semester course load for full-time students is nine hours or more, as required by the department. Full-time students may accept other employment only with the approval of the department and the Graduate Office. Students who are employed elsewhere for more than 20 hours per week are not normally eligible for full-time status at Rice.

**Part-time Study.** Part-time students are occasionally admitted by special permission, usually for non nthesis programs only. Departmental recommendation is required. Students enrolling for nine semester hours or more will be considered full-time, and full-time tuition will apply.

**Pass/Fail Option.** Graduate students may take courses on the pass/fail basis only with departmental approval. All other restrictions regarding the pass/fail option, as stated on page 87, apply equally to graduate students. Class III students may not take courses pass/fail.

**Grade Standards.** In order to graduate, students must achieve at least a B- (2.67) average on courses counted towards the graduate degree. This is a minimal requirement; some programs and some departments have more stringent standards. Grade point averages are computed as shown in the undergraduate section of this catalog, on page 89.

**Probationary Status.** A graduate student is considered to be on probationary status whenever the cumulative GPA, or the GPA for one semester, falls below 2.33. Some departments may have more stringent standards. In most cases, the student's department will send the student a letter of warning. However, the probationary status applies whether or not such a letter has been issued. A second semester of probationary status will lead to automatic dismissal by the Graduate Office unless a plea for exception is presented by the student's department and approved by the dean of Graduate Studies. A student may be dismissed after only one semester of performance at the probationary level by specific departmental action, if such action is preceded by a warning of unsatisfactory performance. (For other causes, see below.)

**Dismissal.** A graduate student may be dismissed from a program either for reasons of unsatisfactory progress or for reasons of behavior judged by the university to be disruptive or otherwise contrary to the best interest of either the university or the student.

**Appeal.** Graduate students may petition Graduate Council concerning the application of any academic regulation. Petitions should be addressed to the chair of the council but should be made only when a dispute cannot be resolved at the departmental level.

**Calendar Deadlines.** Graduate students are expected to observe all deadlines listed in the academic calendar.

**Continuous Enrollment, Readmission.** Graduate students are expected to maintain continuous involvement and enrollment, unless official leave of absence has been granted. Failure to register for any period without a leave of absence granted by the Graduate Office constitutes a *de facto* withdrawal. If the student later wishes to resume study, reapplication is required. Readmission is given only on the recommendation of the department and the approval of the dean of Graduate Studies. A readmission fee of $100 is charged.

**Departmental Service.** In most research degree programs, graduate students are assigned a limited amount of teaching or other departmental service as part of their training. The assignment should not entail more than ten hours per week, averaged over the semester, and will not be required for more than eight semesters.

**Approval of Candidacy.** A student seeking a master's or doctoral degree must submit a petition for candidacy through the departmental chair to the dean of Graduate Studies. The chair must specify the student's thesis director, recommend a thesis committee, certify that the applicant has fulfilled the departmental requirements and provide a transcript or other evidence that the work within the department is of high quality. The final oral examination in defense of the thesis can be given only after the candidacy has been approved by the dean of Graduate Studies. Applications for approval of candidacy for the doctoral degree must be filed in the Office of Graduate Programs prior to November 1 and for the master's degree prior to February 1 of the academic year in which graduation is expected. The candidacy is valid for two years for the master's degree and four years for the doctoral degree. A student whose candidacy has expired must receive specific approval from the department and from the dean of Graduate Studies in order to remain in the Graduate Program. Such approval will be given only in exceptional circumstances. A student must have been approved for candidacy for the doctoral degree before the beginning of the ninth semester of residency at Rice to be eligible for continued financial support.

**Oral Examinations, Thesis Committees.** A committee for the oral examination, known as the thesis committee, is approved by the dean of Graduate Studies at the time candidacy is approved. A thesis committee is composed of at least three members, of which two, including the committee chair, must be members of the student's department. In the case of a doctoral committee one member must be from another department within the university. At least three members, including the chair, must be tenured or tenure-track members of the Rice faculty or must be members previously certified by the provost. The committee chair need not be the thesis director but must be tenured or a tenure-track member of the major department.

Candidates are responsible for informing the members of their committee of the nature of the research and its progress; the members of the committee should review and approve the thesis in preliminary form before March 15 in order for the candidate to be eligible to receive the degree in the May commencement. After candidacy has been approved, the oral examination in defense of the thesis may be scheduled at any time in either semester, except during official examination periods. The deadline for

scheduling an oral examination of a thesis to be submitted for a degree to be conferred at the May Commencement is the last day of classes of the spring semester. For the doctoral degree, the examination must be announced in the *Rice News* at least one week in advance of the oral examination. Students should note that material to be published in the *Rice News* should be submitted at least two weeks in advance of the expected publication date. In appropriate circumstances, an oral examination for the Ph.D. may be scheduled during the summer, and in this case the posting of notice of the time and place on the bulletin board of Fondren Library the preceding week is acceptable as the public announcement. For the master's degree, public notice of the oral examination should be posted on the departmental bulletin board one week in advance.

The length of the examination and the character of the subject matter on which the candidate will be examined are left to the judgment of the committee. Should the candidate fail, the chair may schedule a second examination. In the event of a second failure, the student is required to withdraw from the university. Following the successful passing of the oral examination in defense of the thesis, two signed copies of the thesis must be submitted to the Office of Graduate Programs no later than one year from the date of the examination.

Students who pass the oral examination in defense of a thesis on or before the first day of classes of any semester do not have to register for that or any subsequent semester even though minor revisions to the final copy may be continuing. In order to be placed on the degree list, students should send a copy of the approval of candidacy form, signed by the thesis committee to signify successful defense of the thesis, to the Office of Graduate Studies immediately following the oral examination.

**Thesis Regulations and Procedures**. The thesis, which is the principal record of work for an advanced degree, will be permanently preserved in the library. Directions for standard thesis form, which must be followed in detail, are provided by the Office of Graduate Programs at the time of approval of candidacy. Students submitting a dissertation for the Doctor of Philosophy, Doctor of Architecture, or Doctor of Musical Arts degree 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. Fees for the microfilming and binding of the thesis are to be paid to the cashier prior to submission of the two copies to the Graduate Office for approval. The deadline for submission of the thesis to the Office of Graduate Programs is noon of the next-to-the-last Friday preceding commencement.

# Tuition, Fees, and Expenses

Tuition and fees for graduate students given here are for academic year 1993-94 only and are subject to change in subsequent years as the operating expenses of the University change.

Tuition for full-time students enrolled in the graduate division is $10,300 per year ($5,150 per semester) for all students through four or six semesters, as indicated below. In addition, each full-time graduate student working "on campus" pays a health service fee of $182.00 per year ($91.00 per semester), a Graduate Student Association fee of $10 ($5 per semester) and an Honor Council fee of $1. After six semesters of full-time study, students continuing any phase of their studies, including work on their dissertation, on or off campus, must be registered and are subject to tuition of $600 per year ($300 per semester). Students who are admitted with a relevant master's degree enter the reduced-tuition category after four semesters of full-time study.

Refer to page 101 for a discussion of health insurance charges.

Continuous involvement and enrollment are expected. Failure to register for any period without a leave of absence granted by the Office of Graduate Studies constitutes withdrawal. A reinstatement fee of $25 is required upon return after an official leave of absence. A readmission fee of $100 is required upon return after previous withdrawal or failure to maintain active registration.

The fee for the preceptorship programs in architecture, music, engineering, etc., which involve approved supervised work off campus to be recorded on the student transcript, is $100 per semester. Tuition for part time and Class III students is $690.00 per semester hour plus $50 registration fee each semester; total not to exceed $5,150 for Class III students. Students taking nine hours or more must be considered full-time. No scholarship or fellowship support is available to part-time students.

Graduate students and their spouses may purchase an athletic events ticket from the Cashier's Office for $50.00. The sticker admits the student or spouse to all regularly scheduled athletic events.

## Fellowships, Scholarships, and Prizes

**Memorial Fellowships, Honors, and Prizes.** Provision is 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 desire to do research. However, not all fellowships are available every year.

A partial list of graduate scholarships, fellowships, and awards includes:

Achievement Rewards for College Scientists (ARCS Foundation) Scholarships in Science and Engineering

Ora N. Arnold Fellowship for better understanding between people and governments of the United States and those of Mexico, the South American states, the West Indies, and the Philippine Islands

Nettie S. Autrey Memorial Fellowship in Science

Eleanor and Mills Bennett Fellowships in Hydrology

Ralph Budd Award for Research in Engineering

Samuel Fain Carter Fellowship in Economics

Edward F. Chavanne Fellowship in Religious Studies

Robert L. Chuoke Award in Physics

Cities Service Research Fellowship in Geology

Continental Oil Company Fellowship in Geology

John W. Cox Research Fund for Scholarships and Fellowships in Bioengineering and Biosciences

William Dunlap Darden Medal in Architecture

Environmental Protection Agency Fellowships in Environmental Science and Engineering

W. Maurice Ewing Fellowship in Marine Science

Exxon Fellowship in Geology
John W. Gardner Award in Humanities and Social Sciences
Leroy Caleb Gibbon Award in Geology and Geophysics
Louis J. Girard Foundation Fellowship for Opthalmic Research
William and Elva Gordon Scholarship in Space Physics and Astronomy
Patricia Roberts Harris Fellowships
Gulf Oil Company Fellowship in Geology
Karl F. Hasselmann Fellowship in Chemical Engineering
Marjory Meyer Hasselmann Fellowship in Chemistry
Fannie and John Hertz Foundation Fellowship in Applied Physical Sciences
Houston Gem and Mineral Society Fellowship in Geology
Houston Geological Society Outstanding Student Award
Houston Oil and Minerals Corporation Fellowship in Geology
Jameson Fellowship for American Decorative Arts
W. M. Keck Foundation Fellowship in Geology and Geophysics
Ruth Lee Kennedy Fellowship for Studies in the Golden Age of Spanish Literature
Captain Charles Septimus Longcope Awards in History
Edgar Odell Lovett Fellowships in Mathematics
Jermayne MacAgy Fellowships in Art History
Mrs. L. F. McCollum Fellowship
John P. McGovern Outstanding Pre-Medical Student Award
John W. Mecom Fellowship in Geology
Dr. and Mrs. Earl Douglas Mitchell Fellowship in German
Dr. and Mrs. Earl Douglas Mitchell Fellowship in Linguistics
William F. Marlar Scholarship in Space Science
National Institute of Health Fellowships
National Institute of Health Traineeships in Biology
National Science Foundation Graduate Fellowships
Pennzoil Company Fellowship in Geology
Petroleum Research Fund Fellowships of the American Chemical Society
Phillips Petroleum Company Fellowship in Chemistry
Mrs. L. A. Richardson Trust
Zevi W. Salsburg Awards in Chemistry
Schlumberger Foundation Fellowship in Mathematics
Shell Fellowship in Physics
Robert Parker Shubinski Award in Civil Engineering
Sigma Xi Research Awards
John Stauffer Scholarship in Chemistry
Tenneco Oil Company Fellowship in Geology
Texaco Fellowship in Physics
Radoslav A. Tsanoff Fellowship in Philosophy
Richard B. Turner Memorial Awards in Chemistry
Union Oil of California Fellowship in Geology
Lodieska Stockbridge Vaughan Fellowship
Harry Weiser Awards in Chemistry
Wiess Fellowship in Geology
Robert A. Welch Foundation Predoctoral Fellowships
H. A. Wilson Award in Physics
Wray-Todd Fellowships in Natural Sciences

## Scholarships and Prizes of the Jesse H. Jones Graduate School of Administration

Leo M. Acker Memorial Scholarship in Accounting
Andersen Consulting Scholarship
J. Kenneth S. Arthur Scholarship
Alice Pratt Brown Scholarship
Dean's Award for Academic Excellence
COMIT Scholarship in Management Information Systems
John J. Deering Loan Fund
Educational Foundation of Texas Society of Certified Public Accountants Excellence Award
David E. Farnsworth Scholarship
Financial Executives Institute Award in Administrative Science
E.F. "Gene" Florian Scholarship in Administrative Science
Bernard Fuchs Scholarship
H.H. Galloway Award in Administrative Science
Houston Society of Financial Analysts Scholarship Award
Jesse H. Jones Graduate School of Administration Award for Excellence in Taxation
Jones Graduate School Alumni Association Scholarship
Jones Scholars
William H. and Marion F. Keenan Fellowships
Cooper M. and Zava Waldrop Lochridge Scholarship in Administrative Science
Speros P. Martel Scholarship
John T. McCants Scholarship in Accounting
Vernon F. "Doc" Neuhaus, Sr., Scholarship
Lawrence J. O'Connor, Jr., Endowed Fund
Lorane T. Phillips Award for Excellence in Writing
Robert E. Phillips Award for Excellence in Oral Presentation
Rotan Mosle Loan Fund
Verne F. Simons Scholarship in Accounting
Wall Street Journal Achievement Award
M. A. "Mike" Wright Award
William Marsh Rice University Criterion Investment Management Company Endowed Fellowship Fund

**Scholarships and Prizes of the Shepherd School of Music.** See listing in the undergraduate section, page 115.

**Rice Graduate Fellowships.** Graduate students with high academic records and outstanding qualifications may receive support through awards of Rice University Fellowships. These fellowships in most cases provide a stipend plus tuition for the nine-month academic period. Special fellowships may be available to provide support during the summer months. Particularly outstanding entering students may be nominated by their department for a Rice Presidential Fellowship.

Research Assistantships, usually funded from grants and contracts, are available in many departments (especially those in the divisions of Natural Sciences and Engineering). These awards are given to qualified students (usually second-year or later) to provide assistance on faculty research projects. However, such work normally contributes to the student's thesis. In some departments, a limited number of Teaching Assistantships may be available to advanced students. Appointees to any fellowship or assistantship must be engaged in full-time graduate study.

Eligibility for support from Rice University funds is limited to five years of study for students seeking a doctorate or three years for students seeking a master's degree. However, in order to maintain eligibility in the fifth year, the student must have achieved candidacy. Doctoral students entering with a previously earned relevant master's degree will be eligible for stipend support for a maximum of four years of study and must have achieved candidacy by the beginning of the fourth year.

**Graduate Tuition Scholarships.** Students whose previous records show marked promise but for whom no graduate fellowships are available may, especially in their first year of graduate study, be awarded full or partial graduate tuition scholarships without stipend. Graduate scholars must be engaged in full-time study.

Scholarships that provide both tuition and stipends are also available for a limited number of graduate students who are participants in the Army or Navy ROTC programs. For information on these scholarships, contact the Departments of Military or Naval Science.

# Financial Aid

A limited number of tuition grants based on financial need are available. Rice engineering students who have received financial aid from the university during their undergraduate years may apply for continuation of assistance as needed for the year of study for the professional master's degree.

The Office of Financial Aid at Rice University offers limited aid to graduate students in the form of loans and work to U.S. citizens, permanent residents, and refugees.

**Stafford Loans (formerly Guaranteed Student Loans)** may be processed through Rice up to a maximum eligibility of $7,500 per annum. These are set by Rice University and the guarantor.

No interest accrues nor is payment required while a student is enrolled at least half-time at Rice or full-time in any eligible post-secondary institution or for six months after terminating attendance. Repayment begins after this period, including a 7 to 9 percent annual interest charge on the unpaid principal balance. Depending on the size of the total loan commitment, the repayment period may extend over as much as 10 years. A completed Stafford application, with supplements and 1040s, must be submitted to the Rice Financial Aid Office.

**CAVEAT:** If the student has prior undergraduate Stafford Loans, it would be in his or her best interest to obtain additional loans from the same source. Deferment forms should be filed with the holders of undergraduate loans. This applies to those who are Rice graduates as well as to students from other schools.

Supplemental Loans for Students (SLS) are available to graduate students. They may borrow up to $4,000 per annum to an aggregate of $20,000. The interest rate on SLS loans is a maximum of 12 percent per year on the unpaid balance of the loans. Ordinarily, the first payment is due within 60 days of the date of disbursement. However, graduate students may defer payment of principal and interest until termination of enrollment.

A completed SLS application, with supplements, must be submitted to the Rice Financial Aid Office.

All students may work on campus, but time is a major factor. For most, 10 to 12 hours a week is a reasonable limit. College Work/Study is available to students who meet eligibility criteria set by the federal government. A Financial Aid Form (FAF) must be filed with College Scholarship Service (CSS), and earnings will be limited to the amount shown on the award letter.

Fellowship and scholarship recipients are selected by the individual departments, subject to the approval of the Office of Graduate Programs. Applications for such awards should be made directly to the department involved.

A Gulf Oil Corporation Foundation Loan Fund and the Benjamin S. Lindsey and Veola Noble Lindsey Memorial Loan Fund are also available to students who are working toward a degree to assist them in meeting educational expenses. The funds of this loan program are limited. Interested persons may contact the Financial Aid Office. Interested students wishing to apply for a loan under any of these loan programs should commence application procedures the summer prior to the academic year for which they are seeking assistance. Detailed information and application forms are available in the Financial Aid Office.

An Emergency Loan Fund, originally provided through gifts from the Graduate Wives Club of 1972-73, the Graduate Student Association, and various faculty members, is available to help graduate students at Rice with short-term needs. Loans from this fund are limited to $150 and must be repaid within three months. In lieu of interest, a charge of $1 per $50 loaned is assessed to maintain the fund.

# Graduate Student Life

## Graduate Student Responsibility

Rice University encourages student self-discipline within the framework of its general objectives. Each member of the community is expected to govern his or her conduct by standards of good taste and ethical judgment and to exercise personal responsibility.

The university reserves the right to require the withdrawal of any students whose failure to accept responsibilities as evidenced by conduct or their scholastic achievements is considered detrimental to their own or the university's best interests.

## The Honor System

Graduate students are expected to observe the provisions of the honor code. The provisions of the honor system are summarized on page 119.

## Fondren Library

See pages 123-124.

## Graduate Student Government and Organizations

All students in the graduate program are members of the Graduate Student Association, which is the sole organ representing graduate students as a body. Part-time graduate students may become participating members of the association upon payment of the necessary fee. The governing body of this organization is the Graduate Student Association Council, consisting of a representative from each department offering graduate study, along with a president, a vice president, a secretary, and a

treasurer elected by the Council. Graduate students also participate in university affairs through their representatives on many of the standing and ad hoc university committees, such as the Graduate Council, the Research Council, and various departmental committees.

The Graduate Student Association, in its efforts to encourage social interaction among graduate students from different departments, is responsible for operation of the graduate student lounge and invites participation by all members of the graduate student body in a variety of social activities.

Graduate student organizations falling under the umbrella of the Graduate Student Association include the Jones Graduate School Student Association, and their affiliate organizations, and the graduate division of the Chinese Student Association.

## Housing

The Rice Graduate House is located on the south edge of the campus at the corner of South Main and University. The facility offers rooms, either private or shared, community kitchens, a commons and meeting rooms, and free transportation to academic buildings. Graduate students may also apply for membership in the undergraduate residential colleges. Rooms and apartments are often available for rent within walking or bicycling distance of the campus. The Office of Student Advising Activities and the Student Association keep a record of rooms and apartments about which they have been notified, and the daily newspapers list still others. Incoming graduate students are advised to arrive in Houston several days early in order to find housing. Rooms in the Graduate House must be reserved on a space-available basis by July 15 for the fall semester.

## The Student Health Service and Insurance

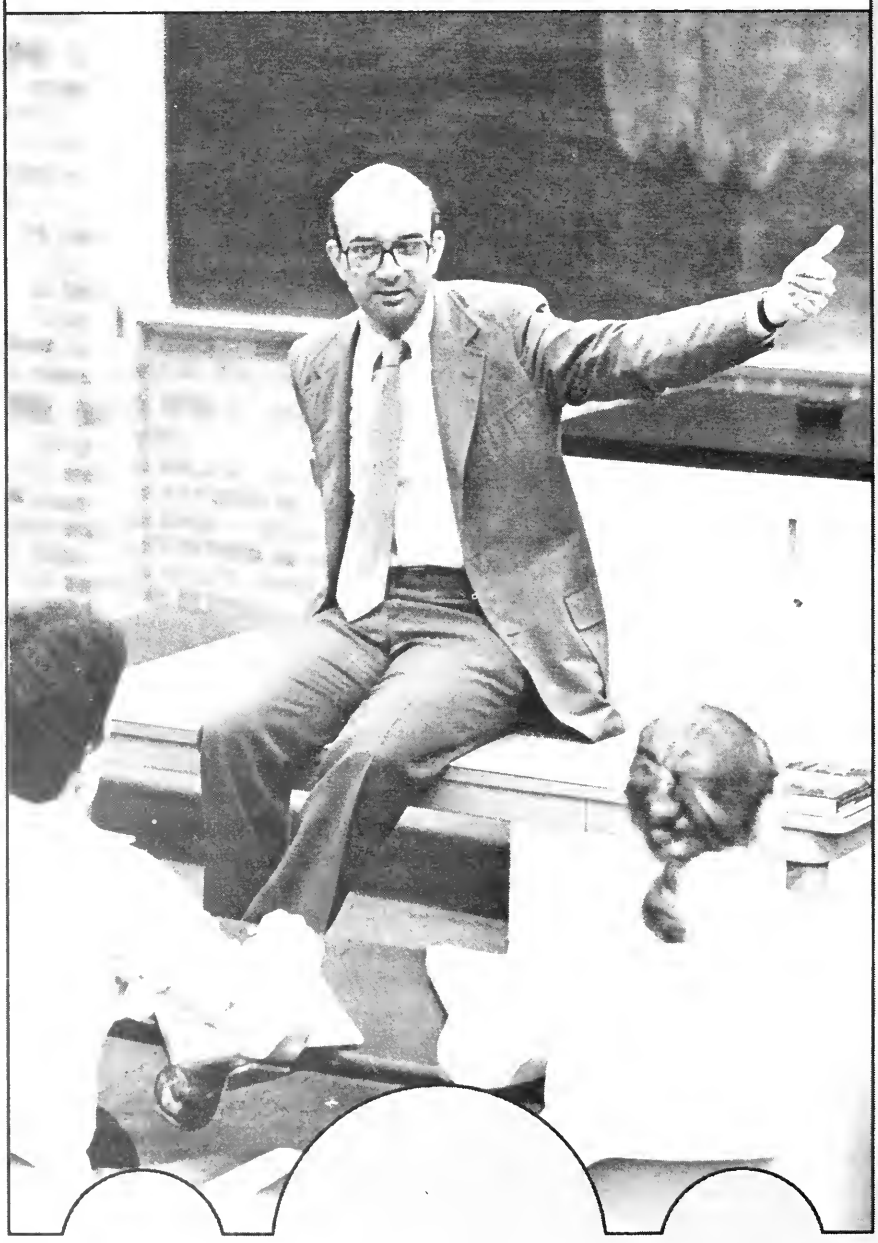
Graduate students pay the same health service fee as undergraduates. A primary care outpatient clinic, open weekdays through the undergraduate school year, is located on campus in Hanszen College. After clinic hours, medical care is available at Park Plaza Hospital emergency room and through the doctors at Park Plaza Hospital. Access to limited psychiatric consultation, including marriage counseling, is also available to graduate students through the Rice Counseling Center. For more information, refer to pages 122-123.

All Rice students are required to have health insurance. Insurance may be purchased through the university at two levels of coverage, described in a brochure that is available in the Cashier's Office and the Office of Student Activities. Rice's group coverage will be effective from 12:01 a.m., August 15, 1993, until 12:01 a.m. August 15, 1994. Dependent coverage is also available. If a student has other medical insurance, a waiver card showing proof of insurance must be signed and returned to the Cashier's Office by August 15, prior to the beginning of classes, to avoid automatic billing for coverage.

## Student Automobiles

All automobiles on campus must be registered with the Rice University Police Department. For more information, refer to page 126.

# COURSES OF INSTRUCTION



Academic departments are listed in this section alphabetically (except for the engineering departments, which are grouped together), with complete lists and descriptions of courses. Most departments also give specific requirements for students both at the undergraduate and graduate levels. These statements are supplemental to University degree requirements described on pages 65-85.

Courses numbered below 300 are lower level or introductory courses. Those numbered 300 to 499 are designated as advanced courses. Advanced courses are open to first-year and second-year students with proper prerequisites and to graduate students on approval of the student's adviser. Courses designed for graduate students are numbered 500 and above. The methods of presentation and quality of work expected make them generally unsuited to undergraduate participation. Undergaruates are permitted to enroll in graduate-level courses only after consultation with their advisers and with the instructor of the course.

F and/or S following the course number indicates the semester the course is normally given. Those courses without F and/or S preceding theri title are offered both in the fall and in the spring semesters.

Figures in parentheses following the title of each course signify the number of class hours per week, the number of lab hours per week, and the credit in semester hours for the completed course, in that order.

Certain courses are dependent upon available faculty, student demand, or funding. Uncertainty about when or whether a particular course will be offered during 1992-93 is indicated by the designation "Not offered every year."

Course descriptions in this section illustrate topics within the subject matter of the courses. Topics actually covered in the courses may vary from the examples given. Courses are subject to cancellation or modification, but cancellation of a course after final enrollment occurs only in extreme circumstances.

Students may obtain more detailed information about courses from the Registrar's Schedule of Courses Offered published each year or from the instructor of the course.

Persons using this catalog to evaluate Rice University transcripts should refer to course titles and descriptions, rather than course numbers, to determine content because course numbers are occasionally changed.

# Accounting and Administrative Science

## The Jesse H. Jones Graduate School of Administration

**Professor Bailar,** *Dean*
**Professors Barnea, Bixby, Bryant, Dipboye, Driskill, R.N. Taylor, Uecker, von der Mehden, Westbrook, E.E. Williams, Windsor, and Zeff**
**Visiting Professor Wilkinson**
**Adjunct Professors Attwell, Banks, Griffin, McCormack, and McDonald**
**Associate Professors Batsell, Dharan, and Napier**
**Adjunct Associate Professors Cramer, Flatt, Gessler, Hannan, Hewitt, Sutton, Wedemeyer, and D.L. Williams**
**Assistant Professors Abraham, Bridges, Currall, Fleming, Ikenberry, H.H. Johnston, C.M. Miller, Rankine, Schuler, Shockley, Silverstein, Stice, and Yim**
**Adjunct Assistant Professors J.W. Carroll and Duke**
**Lecturers Atherton, L. Baker, Ciliske, Crump, Friday, Gottlieb, Gow, Hauser, Lewis, Mandel, Mardis, Meakin, Murphree, O'Sullivan, D. Ross, Rosthal, Shaddix, Viebig, Westheimer, and Whitmire**

*Degrees Offered:* Master of Business Administration; Master of Accounting

The Jesse H. Jones Graduate School of Administration was established in 1974 through a gift from Houston Endowment Inc. The school is dedicated to providing unique educational opportunities for professional training in the fields of accounting, business administration, or public and nonprofit management for highly select graduate students. The curricula leading to the degrees of Master of Business Administration (which includes concentrations in public and nonprofit management and in accounting) and Master of Accounting are designed to be distinctive in terms of scope, realism, and utility.

The Jones Graduate School and the George R. Brown School of Engineering offer a joint M.B.A./Master of Engineering degree. The non-thesis engineering degree may be obtained in the departments 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 (see pages 150 and 152).

**Undergraduate Program.** No undergraduate major is offered in the Jones Graduate School; however, such undergraduate courses as accounting may be used to fulfill major requirements in the interdisciplinary program in managerial studies. This degree program is described on page 404.

Students admitted to the Honors Program in Managerial Studies may elect certain specified graduate courses in accounting and administrative science as part of their major requirements.

**Graduate Programs.** The Jones Graduate School of Administration offers the Master of Business Administration and Master of Accounting degrees. Applicants to these programs must submit recent scores on the Graduate Management Admission Test (GMAT), all official college transcripts, and three letters of recommendation. 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). Application forms are available from and should be submitted to the Office of Admissions, Jesse H. Jones Graduate School of Administration, Rice University, P.O. Box 1892, Houston, Texas 77251. Graduates from any accredited university and from a broad range of undergraduate majors are considered for either professional program. Students enrolled in the Jones Graduate School represent a wide variety of undergraduate majors, including economics, managerial studies, mathematics, computational and applied mathematics, political science, history, languages, fine arts, natural sciences, engineering, and business administration. Admission to the Jones Graduate School is highly selective and limited to those who have performed with distinction in their previous academic work and on the GMAT.

The two-year M.B.A. program requires no specific prerequisite courses for admission; however, 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 is used extensively in course work, students should have a thorough understanding of these types of software packages before enrolling. Undergraduates contemplating graduate work in accounting should have taken the prerequisite courses outlined on page 151 by the end of their senior year in order to complete the M.Acco. degree in one year.

The Jones Graduate School and the George R. Brown School of Engineering offer a joint M.B.A./Master of Engineering degree. The non-thesis engineering degree may be obtained in the departments 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 M.B.A. requires two. Joint-degree candidates, however, can fulfill requirements for both degrees in two academic years and a summer. To enter the joint-degree master's program, applicants must be accepted by both the Jones Graduate School and the engineering department in which they wish to enroll. The program requires a special application that may be obtained from the Jones Graduate School. The Graduate Record Examination (GRE), rather than the Graduate Management Aptitude Test (GMAT), is required for the joint-degree program, and some engineering departments require advanced tests as well. Students whose native language is not English must supply scores from the Test of English as a Foreign Language (TOEFL).

**Master of Business Administration (M.B.A.).** The M.B.A. program seeks to prepare students for high-level management positions in business, government, and nonprofit organizations.

Completion of the M.B.A. degree requires a minimum of two academic years in residence at Rice and 64 credit hours. The M.B.A. student must register for no fewer than 15 and no more than 18 credit hours. Any other registration requires special permission. All registration and drop/add forms require the signature of the associate dean for student affairs or his designee. All courses must be approved by the Jones Graduate School. Requirements are stated annually for each entering class.

Waivers, exemptions, and transfers of credit are solely the decision of the school. Required courses may be waived in exceptional cases where the student already has the equivalent preparation. The residence requirement is not necessarily reduced, but additional elective courses are made available.

Students must follow the curriculum of study as prescribed by the Jones Graduate School. Exceptions are granted only upon written petition to the school's Curriculum and Standards Committee, which advises the dean; the dean's decision must be appealed to the Graduate Council.

The first year of the full-time program is completely required and consists of foundation courses in accounting, communications, economics, finance, legal and governmental processes, management information systems, marketing, organizational behavior, and quantitative methods. The student must complete at least 33 approved credit hours in the first year, including Administration 501 and 502. The exact courses will be specified by the Jones Graduate School at registration. No exceptions are permitted except at the sole discretion of the school. Courses in the first year serve as prerequisites for the second year required and elective courses. Prerequisite requirements are enforced.

The second year features two case method courses on management strategy designed to integrate the foundation skills taught in the first year. The student must complete at least 31 approved credit hours in the second year, including Administration 503, 504, 591, and 592, together with 24 credit hours of approved electives.

Each student is required to complete at least one area of concentration consisting of no fewer than 12 hours of elective courses. No credit hour may be counted toward more than one concentration; no more than two concentrations may be declared. With the assistance of an adviser, each student selects courses to meet the student's goals and objectives. Most courses will be in administrative science or accounting, but they may also include graduate or upper-level offerings in other departments. Concentrations are available in accounting, business entrepreneurship, finance, international management, management information systems, marketing, operations research, and public and nonprofit management. Students concentrating in operations research may supplement the school's offerings with courses from the departments of computational and applied mathematics, economics, and statistics. Any other concentration requires a petition to the associate dean for admissions and student affairs. Specific concentration requirements are issued annually.

The **international management** concentration offers a set of elective courses in the political, economic, and legal aspects of multinational activities. Students must take courses specified in the adviser's concentration statement. They may take related courses in other departments. The international management program is particularly relevant for students with a strong background in foreign languages and cultures. Students lacking such a background are strongly advised to take additional time (including summers and possibly a third year) to acquire such skills. Language training does not qualify for graduate credit toward the M.B.A. degree.

The Jones Graduate School offers an area of concentration in **public and nonprofit management.** Students who wish to prepare for government or nonprofit service select, with the assistance of an adviser, a set of elective courses tailored to meet the student's career aims. Students may take related courses in other departments. The M.B.A. core curriculum is specifically designed to promote the transfer of management skills from the private to the public and nonprofit sectors. Students interested in **business entrepreneurship** take at least two of Administration 521, 522, or 525 and will take other related courses.

**Joint Master of Business Administration (M.B.A.)/Master of Engineering.** The Joint M.B.A./Master of Engineering degree prepares students to become managers in organizations requiring both a high level of technical expertise and managerial skills.

Completion of the joint M.B.A./Master of Engineering degree requires a minimum of two academic years and a summer in residence at Rice and the completion of 76 credit hours: 24 in an engineering discipline and 52 in business administration. During the summer before the first academic year, students take six hours of basic accounting courses. For the remainder of the two academic years, they divide their time between the two schools, taking roughly six hours of engineering and 12 hours of business administration courses. The exact course schedule is determined in consultation with the engineering department in which the student is enrolled and the associate dean for student affairs at the Jones Graduate School.

**Master of Accounting (M.Acco.).** The Master of Accounting program prepares students for careers in accounting and information systems. It is designed for students, such as those with general business or liberal arts degrees, who did not major in accounting as undergraduates. Work experience is not required to apply to the M.Acco. degree program.

Applicants who have taken the following prerequisites can complete the M.Acco. program in one year of graduate study: 6 hours of economics, 3 hours of industrial and organizational psychology, 3 hours of applied statistics, 3 hours of quantitative analysis, 3 hours of financial accounting, and 3 hours of management accounting. In addition, courses in corporate finance and intermediate microeconomics are recommended, but not required. Students who have not satisfied these prerequisites may choose to take the M.B.A. degree program with an accounting concentration.

The Master of Accounting degree program requires a minimum of 33 semester hours, including the following courses: Accounting 511, 512, 514, 523, 524, 531, and 541; and Administration 503, 504, 509, and 560.

All courses must be approved by the Jones Graduate School. Required courses may be waived in exceptional cases where the student already has the equivalent preparation. Waivers, exemptions, or transfers of credit are solely the decision of the school. The residence requirement is not necessarily reduced, but additional elective courses are made available. Requirements are stated annually for each entering class.

Completion of the M.Acco. degree program qualifies the student to take the Uniform CPA Examination. To sit for the examination, the State of Texas requires a baccalaureate or graduate degree conferred by an institution of higher education recognized by the Texas State Board of Public Accountancy; successful completion of at least 30 semester hours of accounting courses with at least 20 of those semester hours in accounting core subjects as defined by board rule; and successful completion of at least 20 semester hours of related business courses as defined by board rule. Students who complete the M.Acco. degree program, pass the CPA examination, and accumulate one year of accounting work experience will satisfy the requirements to be licensed as a CPA in Texas.

## Academic and Professional Standards

A student must meet both academic and professional standards to continue academic work and to graduate. In accepting admission to the M.Acco. or M.B.A. 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 (GPA) of 3.0 (B) is required for graduation. All courses taken for the M.B.A. or Master of Accounting degree (including approved courses taken outside the Jones Graduate School) will be counted in the cumulative GPA calculation. A student with a cumulative GPA of 3.0 (B) or higher is eligible to receive financial aid from Jones Graduate School sources.

**Academic standards for degree candidates.** Any student who has completed 64 approved hours for the M.B.A. or two-year M.Acco. degree, 76 for the joint M.B.A./ Master of Engineering degree, or 33 for the one-year M.Acco. degree but who has a cumulative average lower than 3.0 will not be permitted to graduate and will be dismissed (see "Dismissal for low GPA," below). Such a student may, at the school's sole discretion, be permitted to take additional approved course work during the subsequent 12 months in an effort to raise the cumulative average to 3.0 (B).

**Grades below C.** Only grades of C and higher can be counted for credit towards graduation. If a student receives a grade lower than C in a course required for graduation, the course must be repeated. If a student receives a grade lower than C in an elective course, the specific course need not be repeated, but the credits must be made up.

**Failing a course.** A student who fails any course will be placed on academic probation regardless of cumulative GPA. A student who fails a course may retake the failed course only once and only if his or her cumulative GPA is 3.0 or higher. A student who fails a course twice will be dismissed. (No advanced course for which the failed course is a prerequisite may be taken until the prerequisite course is satisfactorily completed.)

**Dismissal for low GPA.** Students with a cumulative GPA lower than 3.0 at the end of any semester will be dismissed. Notification of a cumulative GPA lower than 3.0 means that the student has been dismissed and may not register for more courses. Dismissal may be appealed under certain conditions, discussed in the following section.

**Appeal of dismissal.** Full-time students in the first semester and flex-time students in the first two semesters of their studies who have been dismissed may appeal to the dean for a one-year suspension or for a continuation on academic probation, if and only if they fulfill both the following conditions:

(1) The student earned a cumulative GPA of at least 2.9 in the first semester of study (all students) and at least 2.95 in the second semester of study (flex-time students);
(2) The student has earned no more than three grades of B- or lower in his or her studies.

Full-time students must have a cumulative GPA of at least 3.0 at the end of their second semester; flex-time students must have a cumulative GPA of at least 3.0 at the end of their third semester.

**Academic probation conditions.** A student placed on academic probation cannot graduate, may not drop courses, and must complete all courses with a grade of C or better.

## Professional Standards

M.Acco. and M.B.A. students are enrolled in professional degree programs preparing them for responsible management position in business, government, and nonprofit organizations. An important aspect of their academic preparation is necessarily their fitness for such responsibilities. They will therefore be held to high

standards of professional conduct, as would be expected of managers, and substantially exceeding those standards expected of them simply as students.

**Dismissal for failure to meet professional standards.** A student may be dismissed or suspended for failure to meet professional standards, as defined in the University Code of Conduct.

**Probation for failure to meet professional standards.** The dean is authorized to place a student on disciplinary probation for unacceptable conduct. Such probation will include oral and written notice that future misconduct will include filing of specific charges. Such probationary notice is not required as a precondition for filing specific charges.

### Suspension Conditions

Suspension for failure to meet either academic or professional standards always requires that the student apply for readmission to the school.

### Eligibility for 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 the receipt of more than three grades below B- will result in the removal of all forms of school financial assistance (scholarship, loan, employment).

### Resolution of Disagreements

In the event of a significant disagreement (not involving grades) between a student and an instructor, the following grievance process will be used. First, the student is expected to try to resolve the disagreement with the instructor. Second, either party may then bring the matter to the associate dean for student affairs, who will attempt mediation. Third, either party may then appeal to the dean through the Curriculum and Standards Committee. The grievance process is conducted subject to a formal written policy approved by the school faculty. This process should be reserved for serious complaints of individual mistreatment; frivolous complaints will be dismissed. By university policy, a final grade for a course submitted to the registrar may be changed only if a clerical error has been made in calculating that grade; grading is a matter of faculty judgment. A copy of the formal written grievance policy is available from the associate dean for student affairs.

## Accounting

The list of courses and credit hours below is subject to change.

*Accounting Courses*

**305 INTRODUCTION TO ACCOUNTING** (3-0-3)
Survey of basic accounting theory and practice with emphasis on the primary problems of asset valuation and income determination. In addition to preregistration, students must sign a reservation list in 250 Herring Hall. First-year students (freshmen) are not eligible for enrollment.

**406(S) MANAGEMENT ACCOUNTING** (3-0-3)
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. In addition to preregistration, students must sign a reservation list in 250 Herring Hall. Priority given to juniors and seniors. Prerequisites: Acco 305 and Econ 211.

**411(F) ASSET ACCOUNTING** (3-0-3)
Deals with the major questions of asset valuation and income determination in the context of accounting theory and the evolving financial, economic, and political factors that have shaped the existing standards. The standard-setting process is discussed. In addition to preregistration, students must sign a reservation list in 250 Herring Hall. Priority given to juniors and seniors. Prerequisite: Acco 305.

**497(F) INDEPENDENT STUDY** (3-0-3)
Independent study on an approved project under faculty supervision. Enrollment by special permission.

**498(S) INDEPENDENT STUDY** (3-0-3)
See Acco 497.

**501(F) FINANCIAL ACCOUNTING** (3-0-3)
Introduction to accounting theory and practice with emphasis on the primary problems of asset valuation and income determination. Prerequisites: graduate standing and instructor's permission.

**502(S) MANAGEMENT ACCOUNTING** (2-0-2)
Introduction to accounting systems designed to facilitate internal decision-making evaluation and control by private and public organizations. Particular emphasis is given to behavioral impact of alternative internal reporting schemes. Prerequisite: Acco 501.

**504(S) ADVANCED MANAGEMENT ACCOUNTING** (3-0-3)
Case-oriented course illustrates the interaction of management accounting and strategic analysis. It gives students the tools required to design management accounting systems that support the strategic goals of modern service and manufacturing firms. Prerequisites: graduate standing and instructor's permission.

**509(F) FINANCIAL STATEMENT ANALYSIS** (3-0-3)
Examines the use of financial statement information in several areas, including corporate accounting method choice, compensation contract design, forecasting earnings, firm valuation, financial distress prediction, bond ratings, credit granting decisions, corporate restructuring (mergers, LBOs, capital structure, "off-balance" sheet financing). The course emphasizes the application of statistical methods, finance theory, financial accounting, and relevant empirical research to problems and cases. Prerequisites: graduate standing and Acco 501 or equivalent.

**511(F) ASSET ACCOUNTING** (3-0-3)
Deals with the major questions of asset valuation and income determination in the context of accounting theory and the evolving financial, economic, and political factors that have shaped the existing standards. The standard-setting process is discussed. Prerequisites: graduate standing and Acco 501 or equivalent.

**512(S) EQUITY ACCOUNTING** (3-0-3)
Deals with the particular problems in the estimation of liabilities and stockholders' equity. The focus is both on accounting theory and on the financial, economic, and political factors that have shaped the existing standards. Prerequisite: Acco 511 or equivalent.

**514(S) SPECIAL TOPICS IN ACCOUNTING** (3-0-3)
Deals with the theoretical and technical problems of consolidations, branch accounting, interim reporting, foreign operations, and international accounting standards. Also introduces accounting for government and nonprofit organizations. Prerequisite: Acco 511; corequisite: Acco 512.

**523(F) INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS** (1-0-1)
Provides an overview of management information systems. Emphasizes effectively managing the use of information technology in organizations. Prerequisites: graduate standing and instuctor's permission.

**524(S) MANAGEMENT ACCOUNTING AND FINANCE** (3-0-3)
Financial statements and accounting are studied in their relationships to financial analysis, investment, and capital structure decisions. Capital budgeting and financial theory from the perspective of management are emphasized. Prerequisites: graduate standing and Acco 501 or equivalent.

**525(F) COMPETITIVE USE OF INFORMATION TECHNOLOGY** (3-0-3)
Examines the use of information technology in competitive strategy. Prerequisites: graduate standing and instructor's permission.

**526(S) EXPERT AND DECISION SUPPORT SYSTEMS** (3-0-3)
Examines a variety of problems and approaches associated with designing expert systems and decision support systems and integrating them into an organization. Prerequisite: Acco 523 or instructor's permission.

**527(F) SYSTEMS ANALYSIS AND DESIGN** (3-0-3)
Concepts related to systems analysis, design, development, and implementation. Prerequisite: Acco 523 or instructor's permission.

**528(S) MANAGING THE MIS FUNCTION** (3-0-3)
Examines key issues related to managing the information system and information technology activities in an organization. Prerequisite: Acco 523 or instructor's permission.

**531(F) FEDERAL TAXATION OF BUSINESS ENTERPRISES** (4-0-4)
Theory of United States income taxation and its application to corporations, partnerships, and proprietorships; study of decision models involving tax structure and tax planning in business situations. Prerequisites: graduate standing and Acco 501 or equivalent.

**532(S) FEDERAL TAXATION OF INDIVIDUALS** (3-0-3)
United States individual income taxation, including consideration of tax planning and tax-favored retirement plans. Prerequisite: Acco 531.

**534(S) SPECIAL TOPICS IN TAXATION** (Variable)
An examination of the theory and structure of federal estate and gift taxation, from both compliance and tax planning standpoints, and interrelated income tax planning, including income taxation of estates and trusts. Prerequisite: Acco 531.

**536(S) INTERNATIONAL TAXATION** (3-0-3)
Survey of U.S. tax laws impacting on international business operations, review of tax laws of selected foreign countries, and discussion of key tax-related management issues. Prerequisites: graduate standing and Acco 501 or equivalent.

**541(F) AUDITING AND FINANCIAL REPORTING** (3-0-3)
Auditing standards and procedures, statistical sampling applications, audit programs and reports, and professional ethics associated with the public accounting profession. Prerequisite: graduate standing; corequisite: Acco 511 or equivalent.

**542(S) AUDITORS' REPORTS AND RESPONSIBILITIES** (2-0-2)
Auditors' reports and responsibilities related to such services as compilations, reviews, letters to underwriters, forecasts and projections, reports on internal control, and special reports. Prerequisite: Acco 541 or equivalent.

**551(F) FINANCIAL ACCOUNTING PRACTICE** (3-0-3)
Comprehension of FASB pronouncements on valuation, income, and cash flow concepts. Prerequisite: graduate standing; corequisite: Acco 511 or equivalent.

**597(F) INDEPENDENT STUDY** (Variable)
Independent study or directed reading on an approved project under faculty supervision. Enrollment by special permission.

**598(S) INDEPENDENT STUDY** (Variable)
See Acco 597.

## Administrative Science

The list of courses and credit hours below is subject to change.

*Administration Courses*

**501(F) DEAN'S SEMINAR I** (0)
First-year students must register for this course. Seminars are held each semester in which invited speakers discuss a variety of management topics. In addition, the Placement Office conducts programs in career management. Attendance required. Prerequisites: graduate standing and instructor's permission.

**502(S) DEAN'S SEMINAR II** (0)
See Admn 501.

**503(F) DEAN'S SEMINAR III** (0)
Second-year M.B.A. and M.Acco. students must register for this course. Seminars are held each semester in which invited speakers discuss a variety of management topics. In addition, the Placement Office conducts programs in career management. Attendance required. Prerequisites: graduate standing and instructor's permission.

**504(S) DEAN'S SEMINAR IV** (1-0-1)
See Admn 503. Note: Credit for the 501-504 series is awarded only after completion of 504.

**505(F) FACULTY RESEARCH SEMINAR** (0)
Faculty and invited guests meet periodically to present current research findings.

**506(S) FACULTY RESEARCH SEMINAR** (0)
See Admn 505.

**507(F) MANAGERIAL COMMUNICATION** (3-0-3)
Includes an introduction to corporate communication strategy and international communication for first-year students; provides extensive practice in delivering oral presentations and composing effective written communication. Prerequisites: graduate standing and instructor's permission.

**509(F) COMMUNICATION FOR ACCOUNTANTS** (2-0-2)
Includes an introduction to corporate communication strategy for students in the one-year M.Acco. program; provides extensive practice in delivering oral presentations and composing effective written communication. Prerequisites: graduate standing and instructor's permission.

**511(F) ORGANIZATIONAL BEHAVIOR** (3-0-3)
Examines theoretical and empirical content of psychology applied in the organizational setting, the development of organization theory, current approaches to the study of complex organizations, and the operation of major types of complex organizations in both private and public sectors. Prerequisites: graduate standing and instructor's permission.

**518(S) MANAGERIAL DECISION MAKING** (3-0-3)
Review of current theories of decision making in and by organizations. Emphasis on behavioral decision theory, human problem solving, and organizational processes. Prerequisite: graduate standing.

**521(F) THE NEW ENTERPRISE** (3-0-3)
Laws of success, developing and evaluating business ideas, the economics of new businesses, leadership and motivation, legal and tax aspects of new ventures, venture capital, and the preparation of a business plan. Prerequisite: Admn 541.

**522(S) ENTERPRISE EXCHANGE** (3-0-3)
How to negotiate, the "needs" approach to buying and selling a business, enterprise valuation, deal and contract structuring, mergers and acquisitions, and leveraged buyouts. Limited enrollment; instructor's permission. Prerequisite: Admn 521.

**524(S) REAL ESTATE DEVELOPMENT** (3-0-3)
Identifies and analyzes real estate development opportunities. Prerequisite: Admn 541.

**525(F) CREATIVE ENTREPRENEURSHIP** (3-0-3)
Focuses on conceiving ideas for new businesses and evaluating those ideas. Prerequisite: Admn 541.

**526(S) VENTURE CAPITAL** (3-0-3)
An overview of the venture capital industry, organization and operation of venture capital funds, investment methodology, monitoring and portfolio liquidation, leveraged investing, and specialized investments. Prerequisite: Acco 524 or instructor's permission.

**531(F) QUANTITATIVE METHODS I** (3-0-3)
Use of statistical methods and computer systems to analyze decision problems, including product design as an illustration of marketing management. Prerequisites: graduate standing and instructor's permission.

**532(S) QUANTITATIVE METHODS II** (2-0-2)
Use of operations research methods and computer systems to analyze decision problems, with particular emphasis on production and operations management. Prerequisite: Admn 531.

**541(F) MANAGERIAL ECONOMICS** (2-0-2)
Long-run and short-run price and production decisions in private and public economic entities in the face of differing demand conditions and market environments. Prerequisites: graduate standing and instructor's permission.

**542(S) MACRO AND INTERNATIONAL ECONOMICS** (2-0-2)
Modern political economy, productivity and aggregate economics, the basic Keynesian model, neoclassical macroeconomics, and international economics. Prerequisite: Admn 541.

**544(S) CAPITAL MARKETS** (3-0-3)
Financial environment of the corporation, use of money and capital market instruments, roles of financial intermediaries and institutions. Prerequisite: Admn 545 or instructor's permission.

**545(F) INVESTMENTS (3-0-3)**
Investment decisions for individuals and institutions in the context of modern portfolio theory and asset pricing relationships. Major topics include portfolio theory, term structure of interest rates, asset pricing, stock valuation, fixed income securities, options and futures contracts, and market efficiency. Required for finance concentration. Prerequisite: Acco 524.

**546(S) CORPORATE FINANCIAL STRATEGY** (3-0-3)
Advanced financial topics of interest to the corporation: value creation, diversification, risk-benefit analysis, tax policy, and present value. Emphasizes practical problems of the corporation. Prerequisite: Admn 547 or instructor's permission.

**547(F) CORPORATE FINANCIAL MANAGEMENT** (3-0-3)
Capital structure and dividend theories including signaling, agency costs, and tax effects are emphasized. Takeovers, mergers and acquisitions, debt contracting, and financing alternatives are studied in the context of corporate finance theory. Required for finance concentration. Prerequisite: Acco 524.

**550(S) FUTURES AND OPTIONS** (3-0-3)
Examines the principles governing the use of futures and options contracts in portfolio management, with particular emphasis on hedging opportunities offered by these contracts and on their valuation in competitive markets. Several specific futures markets are examined in detail. The more complex option contracts are tested generally, with greater emphasis on principles than on particular markets. Prerequisite: Admn 545 or instructor's permission.

**552(S) INVESTMENT BANKING** (3-0-3)
Analysis of the characteristics of the investment banking industry, focusing on topics of corporate financial transactions: public offerings, private placements of debt and equity, and mergers and acquisitions. Prerequisite: Admn 545 or instructor's permission.

**554(S) COMMERCIAL BANKING AND THE ENTREPRENEUR** (3-0-3)
Examines the highly competitive and dramatically changing national and international financial services markets. Utilizing visiting speakers, case studies, and a computer simulation, "Bank President's Game," emphasis is placed on understanding the principles and concepts of bank management and operations within a complex economic environment. Special emphasis is placed on ways in which the entrepreneur selects, works with, and uses his/her bank. Prerequisite: Acco 524.

**555(F) BANKING AND FINANCIAL INTERMEDIATION** (3-0-3)
Presents the modern theory of financial intermediation, in which banks and other financial intermediaries serve not only as brokers of funds but, more important, as transformers of financial claims. In particular, the material stresses the role of the bank in overcoming problems of asymmetric information in the credit markets. Prerequisite: Acco 524.

**556(S) APPLIED SECURITY ANALYSIS** (3-0-3)
Introduces some techniques used in estimating return and risk in evaluating security prices. Not offered 1993-94.

**558(S) INTERNATIONAL FINANCE** (3-0-3)
Examines the financial management of the multinational corporation including the international monetary system and exchange rates, foreign exchange risk management, multinational working capital management, foreign investment analysis, capital budgeting, the cost of capital, and financing strategy. Prerequisite: Acco 524 or instructor's permission.

**560(S) LAW FOR ACCOUNTANTS** (3-0-3)
Civil law, common law, equity, state and federal court systems, contracts, sales, bailments and carriers, bankruptcy, secured transactions, Uniform Commercial Code, and the Uniform Partnership Act. Not equivalent of Admn 562. Prerequisites: Acco 501 or equivalent and graduate standing.

**561(F) LEGAL AND GOVERNMENTAL PROCESSES I** (3-0-3)
Impact of government on decision making in business, featuring comparisons of governmental intervention across major industrial systems; analysis of environmental trends and public policy options. Prerequisites: graduate standing and instructor's permission.

**562(S) LEGAL AND GOVERNMENTAL PROCESSES II** (3-0-3)
Law as the medium in which American society and business function; legal history, jurisprudential bases, theory and practice of principal kinds of law: common law, statute law, constitutional law, and law of government control. Prerequisites: Admn 561 and instructor's permission.

**563(F) PUBLIC POLICY/PUBLIC ADMINISTRATION** (3-0-3)
The administration and implementation of public policies across federal, state, and substate governments. Prerequisite: instructor's permission. Also offered as Poli 537.

**565(F) PUBLIC FINANCIAL MANAGEMENT** (3-0-3)
Political, economic, and accounting dimensions of financial management in public and nonprofit organizations. Emphasis on budgeting systems, appropriations processes, cost-benefit analysis, taxation, pricing, fund accounting, debt management, and financial administration. Prerequisite: instructor's permission. Also offered as Poli 564.

**567(F) BUSINESS AND PUBLIC POLICY** (3-0-3)
Examines the range of business-government relationships with a focus on the public-policy decision-making process and the effects of public policy on the business environment. Prerequisite: graduate standing and instructor's permission.

**568(S) PUBLIC MANAGEMENT AND LEADERSHIP** (3-0-3)
Uses public sector oganizations as models for examining contemporary appraoches to management and leadership. Prerequisite: graduate standing and permission of insructor.

**571(F) LAW AND FOREIGN POLICY** (3-0-3)
Examines the making of U.S. foreign policy in a changing world, with emphasis on the role of constitutional constraints and opportunities in trade, aid, and diplomacy. In addition to examining the basic issues of the separation of powers and the underlying theories of constitutional interpretation, the course closely studies a number of trade and commerce questions, as well as the more traditional topics of defense policy (weapon sales, arms control) that impact trade and aid. Prerequisite: instructor's permission.

**572(S) POLITICAL RISK ANALYSIS** (3-0-3)
Analyses of political and social factors affecting business operations abroad, including domestic instability, foreign conflict, corruption, nationalization, and indigenization. A simulation exercise is required. Also offered as Poli 571.

**573(F) GLOBAL STRATEGIC MANAGEMENT** (3-0-3)
Changes in international competition, techniques for analysis of economic forces, changes in governance, and the concepts of competitive strategy and globalization of technology and the marketplace. Prerequisite: graduate standing.

**574(S) TRANSNATIONAL BUSINESS LAW** (3-0-3)
Topics in U.S. and foreign law as they relate to the law-business interface of importing-exporting-trade problems, foreign operations, foreign investments, extraterritorial impact of U.S. law, corporate organization, foreign exchange, joint ventures, withdrawal from foreign ventures, and third-country manufacturing. Prerequisite: Admn 560 or 562.

**576(S) JAPAN** (3-0-3)
Examines international aspects of finance, including foreign investment and foreign exchange operations. Prerequisite: instructor's permission.

**578(S) INTERNATIONAL MANAGEMENT** (3-0-3)
Presents an overview of the economic and political environment of international business and explores the challenges unique to the management of the multinational corporation. Prerequisite: graduate standing and permission of instructor.

**580(S) MARKETING MANAGEMENT** (3-0-3)
Introduces key marketing concepts that underlie the function of marketing in the business enterprise and provides a foundation for advanced course work in marketing. Employs lectures and extensive analysis of marketing management cases. Prerequisites: graduate standing and instructor's permission.

**581(F) SALES FORECASTING** (3-0-3)
Addresses a need in all areas of business, especially marketing, for more accurate forecasts. Covers a range of forecasting methods and develops guidelines for selecting the most appropriate method for a particular management problem. Includes reading and interpreting research in forecasting, collecting and analyzing data for an original forecasting project, and presenting the results. Prerequisites: Admn 532 and 580.

**582(S) BUSINESS MARKETING** (3-0-3)
Deals specifically with the marketing of goods and services to businesses and other organizations. Focuses on the analysis of issues, problems, and opportunities that are characteristic of business marketing situations. Emphasis is placed on the formulation and implementation of business-to-business marketing strategies. Prerequisite: Admn 580.

**583(F) CONSUMER AND ORGANIZATIONAL BUYING BEHAVIOR** (3-0-3)
Exposes students to the major concepts in the analysis of consumer behavior, with special emphasis on managerial implications. Treats both individual and organizational buying behavior, as well as the analysis of consumption and post-purchase aspects. Prerequisite: Admn 580. Second-year M.B.A. and M.Acco. students only.

**584(S) PRODUCT MANAGEMENT** (3-0-3)
Applies various dimensions of marketing strategy and management to the role of product manager, who is responsible for all aspects of managing the marketing activities of a given product. Prerequisite: Admn 580.

**585(F) FUNDAMENTALS OF MARKETING RESEARCH** (3-0-3)
Addresses the fundamental process of conducting marketing research by providing a broad-based understanding of the range of marketing research options. Emphasizes learning the strengths and weaknesses of different approaches to gathering marketing information and understanding how the individual steps of the marketing research process are interrelated. Students design marketing research studies to address some of the most commonly asked managerial questions, including estimation of marketing potential, segmentation of customer groups, issues of new product introduction, and reactions to marketing mix changes. Prerequisite: Admn 580.

**586(S) MARKETING RESEARCH** (3-0-3)
Deals with selected marketing research techniques and methods applied in the solution of marketing problems. Involves applied research projects to explore the implementation of methods in real-life settings. Prerequisite: Admn 580.

**587(F) PRICING STRATEGY** (3-0-3)
Provides a managerial orientation to decision making in pricing. Emphasizes an integration of the economics of profit maximization, the psychological aspects of customer response to price, and the anticipation of competition. This course uses lectures, discussions, and case analyses to provide students with an in-depth study of the various aspects of pricing in a marketing plan. A solid understanding of basic quantitative methods is required for this course. Prerequisites: Admn 532 and 580.

**588(S) INTERNATIONAL MARKETING** (3-0-3)
Examines the marketing process in an international context. Topics include standardization, counter trade, and the strategic implications of global markets. Lectures, interactive discussions, and extensive analysis of international marketing cases are employed. Prerequisite: Admn 580.

**589(F) DECISION MODELS IN MARKETING** (3-0-3)
Surveys quantitative decision models in marketing, focusing on the use of analytical approaches and computer-based models to formulate and solve managerial problems in marketing. Topics include consumer choice, new product decisions, advertising response and budgeting decisions, pricing decisions, and sales force design decisions. A solid understanding of basic quantitative methods is required for this course. Prerequisites: Admn 532 and 580.

**590(S) MARKETING STRATEGY** (3-0-3)
Examines the process of formulating and implementing a marketing strategy to attain organizational goals. Topics include market definition and segmentation, top-down versus bottom-up approaches to strategy formulation, positioning, implementation, evaluation, and control. Lectures, interactive discussions and computer simulations are employed. Prerequisite: Admn 580.

**591(F) MANAGEMENT STRATEGY I** (3-0-3)
Examination of managerial and organizational problems in the private and public sectors that illustrate fundamental principles of domestic and international management practice. This course integrates key managerial skills taught in other core courses. Extensive use of case materials and student presentations. Prerequisite: Acco 524.

**592(S) MANAGEMENT STRATEGY II** (3-0-3)
Continuation of Admn 591.

**593(F) TOPICS IN MANAGEMENT I** (3-0-3)
Selected topics in management. Section 1: Production and Operations Management. Prerequisite: permission of instructor.

**594(S) TOPICS IN MANAGEMENT II** (3-0-3)
Selected topics in management. Section 1: Management of Technology. Section 2: Statistical Quality Control. Prerequisite: permission of instructor.

**596(S) STRATEGIC PLANNING AND CREATIVITY** (3-0-3)
Develops strategic planning skills to help business managers make better short- and long-run applied decisions. A central theme is the role of creativity in the planning process as the essential features of effective planning systems are examined. Emphasis is on examples of excellent planning performed by a variety of actual companies and industries. Prerequisite: Admn 591.

**597(F) INDEPENDENT STUDY** (Variable)
Independent study or directed reading on an approved project under faculty supervision. Enrollment by special permission.

**598(S) INDEPENDENT STUDY** (Variable)
See Admn 597.

# Ancient Mediterranean Civilizations

## The School of Humanities

**Professors Drew, Kelber, R. McIntosh, S. McIntosh, and Van Helden**
**Associate Professors Maas, Morrison, Sanders, Wallace, Widrig, and Yunis**
**Assistant Professors Fishman, Mackie,**
**Mersereau (Director and Adviser), and Nirenberg**
**Visiting Assistant Professor Elton**
**Lecturers Benjamin and Ramos**

*Degree Offered*: *B.A.*

Ancient Mediterranean Civilizations is an interdisciplinary major that explores the cultural traditions of ancient Greece and Rome, Judaism, early Christianity, and their antecedents. We study these traditions not only for their intrinsic interest and value but because of their contribution to modern society in the West. Thus as well as providing instruction in ancient cultural history in its widest sense, the major offers perspectives in cultural criticism, for it examines the beginnings of a civilization in which we, the examiners, still participate. To achieve a balanced interdisciplinary approach the major is planned around a series of courses from several disciplines that all address a common question: What are the vehicles and processes of cultural transmission and transformation in the ancient Mediterranean world? This question entails the following subordinate questions: What are the texts, artifacts, institutions, and ideas through which culture was transmitted and transformed? What are the centers and frontiers of the ancient Mediterranean world? How do these shift over time? How can processes of integration and disintegration of the ancient Mediterranean world be understood? The core course and the capstone seminar address these questions at length. All the departmental courses address some aspect of these questions in a significant way. The major as well provides 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, managed by Stanford University. Students in the major are encouraged to study in these programs as well as in College Year in Athens.

**Requirements:**

1. A student majoring in Ancient Mediterranean Civilizations must complete a minimum of 30 semester hours. The requirements are the same regardless of whether the student is a single or double major.

2. The student must take the core course (AMC 201): 3 semester hours. This course should be taken at or near the beginning of the student's studies in our program.

3. The student must take at least six courses from the list of departmental courses that constitute the major: 18 semester hours. A current list of these courses is published in the course catalogue and the annual AMC brochure. There is a distribution requirement for the departmental courses: at least three of these six courses must be from different departments.

4. In addition to the six courses from the list that constitutes the major, the student must take two "cognate" courses: 6 semester hours. Cognate courses are courses from outside the major but that either relate to Mediterranean cultures and their legacies or

to the processes of cultural transmission and transformation outside the Mediterranean. The cognate courses should be chosen in consultation with the adviser. A list of preapproved cognate courses is available from the adviser. The student may request that other courses count as cognate courses; the adviser has discretion.

5. The student must take the capstone seminar (AMC 401) at or near the end of his or her study in the program: 3 semester hours.

*Courses:*

### Core Course

**201(S) INTRODUCTION TO ANCIENT MEDITERRANEAN CIVILIZATIONS** (3-0-3)
This course addresses the common question that provides the focus for the study of the ancient Mediterranean world: What are the vehicles and processes of cultural transmission and transformation in the ancient Mediterranean world? Readings and discussion cover the ancient Near East, Greece, Rome, and the Hellenistic world. Guest lectures from other faculty in the AMC program. Required for AMC majors but open to all. No prerequisites. Not offered 1993-94.

*Yunis, H.*

### Capstone Seminar

**401(S) INTERDISCIPLINARY SEMINAR IN ANCIENT MEDITERRANEAN CIVILIZATIONS** (3-0-3)
Required for juniors and seniors majoring in AMC. Not offered 1993-94.

*Morrison, D.*

### Departmental Courses

*Anthropology*

**216(F) INTRODUCTION TO ARCHAEOLOGY** (3-0-3)

*McIntosh, S.*

*Classical Studies*

**222(S) PERSPECTIVES ON GREEK TRAGEDY** (3-0-3)

*Mackie, H.*

**335(S) CLASSICAL MYTHOLOGY** (3-0-3)

*Ramos, C.*

**351(F) CLASSICAL EPIC** (3-0-3)

*Wallace, K.*

*History*

**202(F) FROM THE VISIGOTHS TO THE VIKINGS** (3-0-3)

*Nirenberg, D.*

**273/373(F) POSTBIBLICAL JEWISH HISTORY I: PRE-CHRISTIAN ERA TO SPANISH EXPULSION** (3-0-3)

*Fishman, T.*

**281/381(F) HISTORY OF THE ISLAMIC NEAR EAST, 600-1258** (3-0-3)

*Sanders, P.*

**306(F) THE GREEK WORLD FROM THE PERSIAN WARS TO THE ROMAN CONQUEST (546-146 B.C.)** (3-0-3)

*Elton, H.*

**307(S) THE ROMAN EMPIRE FROM AUGUSTUS TO JULIAN (31 B.C.-A.D. 363)** (3-0-3) Not offered 1993-94.

*Elton, H.*

**309(F) THE COLLAPSE OF THE ROMAN EMPIRE (A.D. 284-602)** (3-0-3)

*Elton, H.*

**320(F) SCIENCE IN ANTIQUITY AND THE MIDDLE AGES** (3-0-3) Not offered 1993-94.

*Van Helden, A.*

**337(F) HISTORY OF ANCIENT AND MEDIEVAL LAW** (3-0-3) Not offered 1993-94.

*Drew, K.*

**359(S) ROMAN BRITAIN AND MEDIEVAL ENGLAND** (3-0-3)

*Drew, K.*

**436(S) WARFARE IN THE ROMAN EMPIRE (31 B.C.-A.D. 476)** (3-0-3) Not offered 1993-94.

*Elton, H.*

**439(S) CHRISTIANITY AND THE WEST: FROM THE BARBARIANS TO BEOWULF** (3-0-3) Not offered 1993-94.

*Nirenberg, D.*

*History of Art*

**304(F) THE ART AND ARCHAEOLOGY OF THE PREHISTORIC AEGEAN** (3-0-3)

*Mersereau, R.*

**308(S) ROMAN ART AND ARCHAEOLOGY** (3-0-3) Not offered 1993-94.

*Mersereau, R.*

**309(S) LATE ANTIQUE AND EARLY CHRISTIAN ART** (3-0-3)

*Widrig, W.*

**312(S) GREEK AND ROMAN ARCHITECHTURE** (3-0-3)

*Mersereau, R*

**491(F) THE CITY OF ATHENS** (3-0-3) Not offered 1993-94.

*Mersereau, R.*

*Philosophy*

**201(F) HISTORY OF PHILOSOPHY I** (3-0-3)

*Morrison, D.*

*Religious Studies*

**240(S) RELIGIONS ALONG THE NILE AND EUPHRATES** (3-0-3)

*Benjamin, D.*

**241(F) THE WORLD OF THE BIBLE** (3-0-3)

*Benjamin, D.*

**307(F) CHRISTIAN ORIGINS** (3-0-3)

*Kelber, W.*

**308(S) SYNOPTIC GOSPELS (3-0-3)**

*Kelber, W.*

**355(F) BIBLICAL ANCESTORS AND HEROES** (3-0-3)

*Benjamin, D.*

**356(S) THE PROPHETS** (3-0-3)

*Benjamin, D.*

# Anthropology

## School of Social Sciences

**Professor Marcus, *Chair***
**Professors Hamilton, R.J. McIntosh, S.K. McIntosh, and Tyler**
**Associate Professor Taylor**
**Adjunct Associate Professor Gibson**
**Assistant Professors Faubion, Georges, and Milun**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program:** Anthropology is a discipline that encompasses many subjects of study, all related to understanding human beings and their cultures. A student may organize a major in one or more of anthropology's principal fields or may combine a major in anthropology with one in another discipline. Students majoring in anthropology are required to take a total of 30 semester hours in anthropology (ten semester courses). Majors must devise a plan of study in consultation with a faculty adviser. Although there are no required courses, students will be encouraged to gain exposure to all of the principal fields within anthropology (archaeology; biological, cultural, and linguistic anthropology). On declaring a major in anthropology, a student should meet with the departmental undergraduate adviser in order to tailor a major plan in line with the student's interests. This plan can be modified at any time with the approval of the adviser.

With departmental approval, a maximum of 6 semester hours (two courses) outside of anthropology but related to the student's plan of study may be substituted for hours/courses in anthropology. Majors who plan to pursue graduate training toward a career in anthropology will need a reading knowledge of one or two European languages and are urged to enroll in undergraduate language courses. These majors are also urged to apply for admission to the honors program.

**Honors Program.** The primary purpose of the Honors Program is to provide selected undergraduate majors with an opportunity to receive advanced training, particularly in the planning and execution of independent research, within their chosen areas of specialization in anthropology. A secondary purpose of the program is to establish an administrative framework for the formal recognition of outstanding students. Majors considering a career in anthropology are strongly encouraged to apply, as are all others who desire the experience of an intensive, individual research project as part of their undergraduate education.

Acceptance into the program is at the discretion of the anthropology faculty. A statement of eligibility requirements and program requirements is available in the departmental office.

**Graduate Program.** The graduate program offers advanced training in social/cultural anthropology, biological anthropology, and archaeology, leading to a Ph.D. in anthropology. The M.A. is optionally offered upon approval of candidacy for the Ph.D. The M.A. as a terminal degree requires satisfactory completion of 30 semester hours of course work approved by an adviser, satisfactory completion of one of the special papers (see uniform requirements for the Ph.D.), and a thesis. Although there are uniform requirements for the Ph.D. degree, each field of specialization offers different opportunities for training and different topical research orientations reflecting the

interests of the faculty. Consequently, the department seeks applicants with a defined interest in one of the broad fields of specialization within anthropology. An undergraduate background in anthropology is desirable but not required for admission. In consultation with a major adviser and two other faculty members, each entering student is expected to design a flexible study plan that emphasizes broad training in a field of specialization and the eventual definition of a problem for dissertation research. All first-year students can usually be offered some form of support, ranging from full graduate fellowships, which provide tuition plus a stipend, to tuition scholarships only. When possible, these awards are renewed for the three years of study.

**Specialization in Social/Cultural Anthropology.** The faculty is eclectic in its interests, and the program offers exposure to styles of argument and reasoning across the range of contemporary theoretical issues in social/cultural anthropology. We emphasize the reading of primary sources of theory, which have inspired the discussion and definition of central problems within anthropology. In addition, as essential preparation for doctoral research, explicit attention in instruction is paid both to fieldwork and to skills in the conception and writing of ethnography. Students interested in medical anthropology may take advantage of the extensive resources of the Houston Medical Center through ties established with the University of Texas School of Public Health and Graduate School of Biomedical Sciences. In addition to work at Rice, degree credit may be given for formal courses offered at the Schools of Public Health and Biomedical Sciences.

**Specialization in Archaeology.** Training emphasizes research skills in the library, field, and laboratory, to be tested by means of the three required research papers, at least one of which must be an original data paper. In addition to research on the dissertation topic, all students are encouraged to develop at least one analytical skill (such as remote sensing, archaeological statistics, osteology, geomorphology, and pedology) making use of the excellent laboratory and computer facilities at Rice.

**Uniform Requirements for the Degree of Doctor of Philosophy.** Each entering student will devise a detailed first-year plan of study and provisional plans for succeeding years in consultation with his or her advisers. Seminars and tutorials can be arranged on any topic relevant to a student's training, and, where appropriate, these can be conducted in supervisory consultation with scholars in other disciplines at Rice as well as with adjunct faculty. During the first two years of study, each student will prepare three substantial papers, each emphasizing an analytical, research, and writing skill appropriate to the field of specialization. The subjects of the papers and their scheduling are major considerations in the ongoing consultations between students and their advisers. During the course of study, each student must demonstrate reading competency in one foreign language. Before advancing to Ph.D. candidacy, a student must prepare a satisfactory proposal for dissertation research. Following approval of the research proposal, a dissertation committee is appointed. Dissertations are ordinarily based in substantial part upon field research.

*Anthropology Courses*

**200 LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An introduction to the scientific study of language. The methods of linguistic prehistory. The language families of the world and the interrelationship of language and thought. Also offered as Ling 200.

*Staff*

**201(F) INTRODUCTION TO SOCIAL/CULTURAL ANTHROPOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An introduction to the history, methods, and concepts of the discipline devoted to the systematic description and understanding of cultural diversity in human societies.
*Georges, E.*

**202 INTRODUCTION TO BIOLOGICAL ANTHROPOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The evolution, genetics, and adaptive significance of human biological differences. Includes an examination of the fossil record of human evolution as well as patterns of and explanations for variability in modern human populations. Not offered 1993-94.
*Staff*

**205(F) INTRODUCTION TO ARCHAEOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Principles and methods of archaeology; an introduction to the elementary concepts of the discipline through a series of case studies.
*McIntosh, R.*

**211 EARLY CIVILIZATIONS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.4
A comparative study of the civilizations of Mesopotamia, Egypt, the Indus, China, and the Maya, emphasizing the couses and conditions of their origins. Not offered 1993-94.
*Staff*

**216(F) INTRODUCTION TO WORLD PREHISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Survey of the world's past cultures. Emphasis on major archaeological discoveries from Olduvai Gorge to Pompeii.
*McIntosh, S.*

**224 THE CULTURE OF ANCIENT GREECE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Readings from the tragedians, the poets, and the philosophers, emphasizing topics such as family life, sexuality, mental health, discourse, and communications. Summary of the prehistory and ethnology of the Greeks. Not offered 1993-94.
*Staff*

**300(S) LINGUISTIC ANALYSIS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
English and other languages as objects of scientific analysis. Phonological structure, morphology and syntax, semantic structures, and techniques of linguistic analysis. Also offered as Ling 300.
*Copeland, J.*

**301(F) PHONOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Theory and practice of articulatory phonetics and of methods of determining the structural patterns that underlie speech sounds. Also offered as Ling 301.
*Staff*

**305(S) HISTORICAL LINGUISTICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The nature of language change in its social and geographical contexts from the perspective of language acquisition. Also offered as Ling 305.
*Staff*

**306(F) HISTORY OF ANTHROPOLOGICAL IDEAS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An introduction to the history of anthropology, its theories, and methods. The emphasis is upon social and cultural anthropology.

*Faubion, J.*

**308(F) HISTORY AS A CULTURAL MYTH** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Ideas of history and attitudes toward the past as culturally conditioned phenomena. Emphasizes history as statement of cultural values as well as conceptualizations of cause, change, time, and reality.

*Taylor, J.*

**311(F) THE WORLD OF THE BIBLE** (3-0-3)
Explores the world of the Bible as a key to understand better the Bible itself. Examines important social institutions like prophecy or hospitality to appreciate how ancient audiences responded to texts like Isaiah's Virgin Birth or Sodom and Gomorrah. Also offered as Reli 241.

*Benjamin, Jr., D.*

**312(F) AFRICAN PREHISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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.

*McIntosh, R.*

**313(F) LANGUAGE AND CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Investigates the relation between language and thought, language and worldview, language and logic. Also offered as Ling 313.

*Tyler, S.*

**314 ORALITY, LITERACY, AND CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The study of sociocultural traditions based on their dominant mode of communication: oral, literate, or electronic. Offered occasionally.

*Staff*

**315 EMPIRICAL AND PHILOSOPHICAL ANTHROPOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Reviews the answers sought to the questions "What is man?" "What are the limits of human knowledge?" and "How should we lead our lives?" with focus on the works of anthropologists and of philosophers. Offered occasionally.

*Staff*

**319(F) SYMBOLISM AND POWER** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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.

*Taylor, J.*

**326 THE ANTHROPOLOGY OF LAW** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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 1993-94.

*Staff*

**327(S) GENDER AND SYMBOLISM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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.
*Taylor, J.*

**330(F) TOPICS IN THE ANTHROPOLOGY OF EUROPE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
A selective survey of recent research on gender, religion, and modernization. This course devotes particular attention to substantive scholarship that invites critical reflection on a wide array of methodological, analytical, and ethical issues of increasing concern not simply to Europeanists but to anthropology as a whole.
*Faubion, J.*

**335(S) ANTHROPOLOGY AS CULTURAL CRITIQUE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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 general tradition of critical social thought in the West, especially the U.S.
*Marcus, G.*

**336 THE ART OF ETHNOGRAPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
A seminar that explores the experience of doing fieldwork and the problems of transforming theory, field experience, and data into a written account. Emphasis is on reading fieldwork accounts and gaining ethnographic writing skills. Strongly recommended for majors but also for other interested students in the social sciences and humanities. Not offered 1993-94.
*Staff*

**338(F) READING POPULAR CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The course examines a number of cases from popular genres—romance novels, television sitcoms, tourist sites, movies, rock music—and submits them to a variety of theoretical approaches from disciplines such as anthropology, sociology, literary studies, and philosophy.
*Milun, K.*

**341 ETHNOGRAPHIC FILM AND THE TWENTIETH CENTURY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
This course focuses on visual media of documentation and description in anthropology, especially on the historical and contemporary relationships between ethnographic film and writing. In addition, the course will place the development of ethnographic film in the context of documentary and narrative film as well as other media such as television and video. During the course students will be able to view several exemplars of ethnographic film and other media. Ethnography is the heart of cultural anthropology—both fundamental and representative of it. Film and media are this form's future, which makes it touch on experiences common to most students, thus defining its accessibility. Not offered 1993-94.
*Marcus, G.*

**342 POLITICAL CINEMA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
This course concerns the study of films whose rhetoric and commentary are explicitly political—as opposed to the dominant film trend, which is to hide political tendentiousness. We will look at various traditions of political filmmaking including early Soviet film, German and American films of the 1930s and 1940s, West European films that challenged the Communist state, leftist cinema from Italy, France, and England, current work by minority and feminist filmmakers in the U.S., and the emergent cinema of countries such as Brazil and Senegal. Not offered 1993-94.
*Milun, K.*

**348 AMERICA AS A CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Explorations in community studies, symbolic anthropology, literary criticism, religion, and politics. Not offered 1993-94.

*Staff*

**350 INDIANS OF THE AMERICAS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Examines the cultures of native American peoples throughout the New World. Both pre- and postcontact cultural patterns will be discussed with an emphasis on native and European reactions and responses. Offered occasionally.

*Staff*

**353(S) CULTURES OF INDIA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Summary of the prehistory, ethnography, and ethnology of the Indian subcontinent. Special emphasis on Hinduism, Buddhism, and Indian philosophy.

*Tyler, S.*

**356 ETHNOGRAPHY OF TRIBAL PEOPLE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Some "people," for example, the Nuer, the Samoans, the Australian aborigines, the Hopi, and the Navajo, have been studied by anthropologists for decades and in a few cases almost a century. This course will review the studies for a particular people, discussing change and permanence in their anthropological description and other related issues. Offered occasionally.

*Staff*

**358 THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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 peoples in North and South America, the Soviet Union, Europe, Asia, and Australia. Not offered 1993-94.

*Staff*

**360 MODERNITY AND SOCIAL SPACE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Modernity can be usefully described as the transmutation of time and space. In this course we will focus on specific changes in the production of social space. How, for example, is global space produced—legally, in international law, economically by multinational corporations, and culturally through satellite communications systems? While changes in the public spaces of urban/suburban America tell us something about the values of those who produce such space, they also tell us about the cultural and political consciousness/unconsciousness of those who use it. Theories from a variety of disciplines will be mobilized to help us understand these changes in social space. Not offered 1993-94.

*Milun, K.*

**361(S) LATIN AMERICAN TOPICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Focuses on the widely shared socioeconomic, political, and cultural themes as seen over history and in current events.

*Taylor, J.*

**362(S) ARCHAEOLOGICAL FIELD TECHNIQUES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Methods used in fieldwork, laboratory analysis, and interpretation of archaeological data from a local site excavated by the class. Prerequisite: Anth 205.

*McIntosh, R.*

**365 CULTURAL ECOLOGY AND THE ANCIENT LANDSCAPE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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. Not offered 1993-94.

*Staff*

**367(S) HUMAN EVOLUTION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Overview of the fossil evidence for human evolution, focusing on when and why our uniquely human characteristics appeared.

*McIntosh, S.*

**368 PRIMATOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An introduction to primate diversity, ecology, and sociality, based on what is now known from field studies of wild primate populations. Offered occasionally.

*Staff*

**381(F) MEDICAL ANTHROPOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Cultural, ecological, and biological perspectives on human health and disease throughout the world.

*Georges, E.*

**383 HUMAN ADAPTATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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. Not offered 1993-94.

*Staff*

**386 HUMAN NUTRITION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The anthropology of eating: nutrient requirements; assessment of nutritional status; food selection; symbolic, psychological, and cultural aspects of food and food consumption. Not offered 1993-94.

*Staff*

**388(S) THE LIFE CYCLE: A BIOCULTURAL VIEW** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The human life cycle from conception to death. Focus is on the interaction between biological processes and culture.

*Georges, E.*

**402(F) SYNTAX AND SEMANTICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Study of semantic categories and their formal expression in morphological, syntactic, and lexical units and patterns. Also offered as Ling 402.

*Davis, P.*

**404 INDEPENDENT STUDY** (3-0-3)
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.

*Staff*

**406 COGNITIVE STUDIES IN ANTHROPOLOGY AND LINGUISTICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Relations between thought, language, and culture. Special emphasis given to natural systems of classification and the logical principles underlying them. Also offered as Ling 406. Not offered 1993-94.

*Tyler, S.*

**407(F) FIELD TECHNIQUES AND ANALYSIS** (3-0-3)
Techniques and practice in the observation, analysis, and recording of a human language. Also offered as Ling 407.

*Davis, P.*

**408(S) FIELD TECHNIQUES AND ANALYSIS** (3-0-3)
Continuation of Anth 407. Also offered as Ling 408.

*Davis, P.*

**410 THE ETHNOGRAPHY OF DEVELOPMENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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.

*Staff*

**411 NEUROLINGUISTICS: LANGUAGE AND THE BRAIN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Organization of the brain: localization of speech, language, and memory functions; hemispheric dominance; and pathologies of speech and language associated with brain damage. Also offered as Ling 411. Not offered 1993-94.

*Staff*

**412(S) RHETORIC** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Overview of classical theories. Intensive discussion of contemporary theories and applications in a wide variety of disciplines. Also offered as Ling 410.

*Tyler, S.*

**414(F) HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY** (3-0-3)
Application of linguistic theory and method in the analysis of cultural materials. Discourse analysis; the structure and interpretation of texts and conversation. Also offered as Ling 414.

*Tyler, S.*

**415(F) THEORIES IN MODERNITY/POSTMODERNITY: I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An advanced course for graduate students and undergraduate majors with interests in the interdisciplinary field of cultural studies. Readings in the work of Saussure, Gadamer, Derrida, Bahktin, Foucault, and others. Several papers are required that emphasize the application of ideas to cultural analysis of contemporary life.

*Milun, K.*

**416(S) THEORIES IN MODERNITY/POSTMODERNITY: II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Part one focuses on the relation between critical theory and poststructuralism. Readings from Marx, Althusser, Adorno, and Habermas cover basic concepts like ideology, reification, etc. Part two looks at new analytical categories of social analysis such as the body, global culture, space, etc.

*Milun, K.*

**419(S) LEGAL DISCOURSE IN MODERNITY** (3-0-3)
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.

*Milun, K.*

**420 ARCHAEOLOGY OF PREHISTORIC ART** (3-0-3)
Critical evaluation of interpretations of ancient rock art, with concentration on the Rice Lower Pecos project. Students will learn the Apple program developed for this project and will take field trips to the rock shelter sites. Prerequisite: Anth 205. Offered occasionally.

*Staff*

**439(F) DOCUMENTARY AND ETHNOGRAPHIC FILM** (3-0-3)
Provides a broad overview of the history of documentary and ethnographic cinema. Maintaining a worldwide perspective, both canonical and alternative films and film movements will be discussed. Particular attention will be paid to the shifting and overlapping boundaries of fiction and nonfiction genres. Also offered as Hart 439/539.

*Naficy, H.*

**446(S) ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY** (3-0-3)
Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology.

*Georges, E.*

**458(S) HUMAN OSTEOLOGY** (3-0-3)
Introduction to the analysis of human skeletal material from archaeological sites.

*McIntosh, S.*

**460(S) ADVANCED ARCHAEOLOGICAL THEORY** (3-0-3)
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. Prerequisite: Anth 205.

*McIntosh, R.*

**463(F) WEST AFRICAN PREHISTORY** (3-0-3)
* DISTRIBTUION COURSE: CATEGORY II.4
Seminar providing in-depth consideration of the later prehistoric archaeology (late Stone Age and Iron Age) of the West African subcontinent.

*McIntosh, S.*

**471(S) CULTURE, MEDIA, SOCIETY**
Focuses on cultural productions as vehicles by which a society speaks to itself and to others across national, cultural, and other boundaries. Uses contemporary theories of culture and media to examine the way meaning and cultural capital are created, minority and alternative views are represented, and individual and group identities are constructed. Also offered as Hart 471/571.

*Naficy, H.*

**490(F) DIRECTED HONORS RESEARCH** (3-0-3)
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.

*Staff*

**491(S) DIRECTED HONORS RESEARCH** (3-0-3)
See Anth 490.

*Staff*

**506(F) HISTORY OF ANTHROPOLOGICAL IDEAS** (3-0-3)
See Anth 306.

*Faubion, J.*

**508(F) HISTORY AS A CULTURAL MYTH** (3-0-3)
See Anth 308.

*Taylor, J.*

**511 EARLY CIVILIZATIONS** (3-0-3)
See Anth 211.

*Staff*

**512(F) AFRICAN PREHISTORY** (3-0-3)
See Anth 312.

*McIntosh, R.*

**513(F) LANGUAGE AND CULTURE** (3-0-3)
See Anth 313.

*Tyler, S.*

**514 ORALITY, LITERACY, AND CULTURE** (3-0-3)
See Anth 314.

*Staff*

**515 EMPIRICAL AND PHILOSOPHICAL ANTHROPOLOGY** (3-0-3)
See Anth 315.

*Staff*

**516 WORLD PREHISTORY** (3-0-3)
See Anth 216.

*McIntosh, S.*

**519(F) SYMBOLISM AND POWER** (3-0-3)
See Anth 319.

*Taylor, J.*

**527(S) GENDER AND SYMBOLISM** (3-0-3)
See Anth 327.

*Taylor, J.*

**530(F) TOPICS IN THE ANTHROPOLOGY OF EUROPE** (3-0-3)
See Anth 330.

*Faubion, J.*

**535(S) ANTHROPOLOGY AS CULTURAL CRITIQUE** (3-0-3)
See Anth 335.

*Marcus, G.*

**536 THE ART OF ETHNOGRAPHY** (3-0-3)
See Anth 336.

*Staff*

**538(F) READING POPULAR CULTURE** (3-0-3)
See Anth 338.

*Milun, K.*

**539(F) DOCUMENTARY AND ETHNOGRAPHIC FILM** (3-0-3)
See Anth 439.

*Naficy, H.*

**541 ETHNOGRAPHIC FILM AND THE TWENTIETH CENTURY** (3-0-3)
See Anth 341.
*Marcus, G.*

**542 POLITICAL CINEMA** (3-0-3)
See Anth 342.
*Milun, K.*

**548 AMERICA AS A CULTURE** (3-0-3)
See Anth 348.
*Staff*

**550 INDIANS OF THE AMERICAS** (3-0-3)
See Anth 350.
*Staff*

**553(S) CULTURES OF INDIA** (3-0-3)
See Anth 353.
*Tyler, S.*

**556 ETHNOGRAPHY OF TRIBAL PEOPLE** (3-0-3)
See Anth 356.
*Staff*

**558 THE FOURTH WORLD: ISSUES OF INDIGENOUS PEOPLES** (3-0-3)
See Anth 358.
*Staff*

**560 MODERNITY AND SOCIAL SPACE** (3-0-3)
See Anth 360.
*Milun, K.*

**561(S) LATIN AMERICAN TOPICS** (3-0-3)
See Anth 361.
*Taylor, J.*

**562(S) ARCHAEOLOGICAL FIELD TECHNIQUES** (3-0-3)
See Anth 362.
*McIntosh, R.*

**565 CULTURAL ECOLOGY AND THE ANCIENT LANDSCAPE** (3-0-3)
See Anth 365.
*Staff*

**567(S) HUMAN EVOLUTION** (3-0-3)
See Anth 367.
*McIntosh, S.*

**568 PRIMATOLOGY** (3-0-3)
See Anth 368.
*Staff*

**571(S) CULTURE, MEDIA, SOCIETY** (3-0-3)
See Anth 471.
*Naficy, H.*

**581(F) MEDICAL ANTHROPOLOGY** (3-0-3)
See Anth 381.

*Georges, E.*

**583 HUMAN ADAPTATION** (3-0-3)
See Anth 383.

*Staff*

**586 HUMAN NUTRITION** (3-0-3)
See Anth 386.

*Georges, E.*

**588(S) THE LIFE CYCLE: A BIOCULTURAL VIEW** (3-0-3)
See Anth 388.

*Georges, E.*

**600 INDEPENDENT STUDY** (3-0-3)

*Staff*

**601(F) GRADUATE PROSEMINAR IN ANTHROPOLOGY** (3-0-3)
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.

*Marcus, G.*

**606 COGNITIVE STUDIES IN ANTHROPOLOGY AND LINGUISTICS** (3-0-3)
See Anth 406.

*Tyler, S.*

**607(F) FIELD TECHNIQUES AND ANALYSIS** (3-0-3)
See Anth 407.

*Davis, P.*

**608(S) FIELD TECHNIQUES AND ANALYSIS** (3-0-3)
See Anth 408.

*Davis, P.*

**610 THE ETHNOGRAPHY OF DEVELOPMENT** (3-0-3)
See Anth 410.

*Staff*

**611 NEUROLINGUISTICS: LANGUAGE AND THE BRAIN** (3-0-3)
See Anth 411.

Staff

**612(S) RHETORIC** (3-0-3)
See Anth 412.

*Tyler, S.*

**614(F) HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY** (3-0-3)
See Anth 414.

*Tyler, S.*

**615(F) THEORIES IN MODERNITY/POSTMODERNITY: I** (3-0-3)
See Anth 415.

*Milun, K.*

**616(S) THEORIES IN MODERNITY/POSTMODERNITY: II** (3-0-3)
See Anth 416.

*Milun, K.*

**619(S) LEGAL DISCOURSE IN MODERNITY** (3-0-3)
See Anth 419.

*Milun, K.*

**620 ARCHAEOLOGY OF PREHISTORIC ART** (3-0-3)
See Anth 420.

*Staff*

**646(S) ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY** (3-0-3)
See Anth 446.

*Georges, E.*

**658(S) HUMAN OSTEOLOGY** (3-0-3)
See Anth 458.

*McIntosh, S.*

**660(S) ADVANCED ARCHAEOLOGICAL THEORY** (3-0-3)
See Anth 460.

*McIntosh, R.*

**663(F) WEST AFRICAN PREHISTORY** (3-0-3)
See Anth 463.

*McIntosh, S.*

**800 RESEARCH AND THESIS** (Credit variable)

*Staff*

# The School of Architecture

**Professor Lerup, *Dean***
**Professor Casbarian, *Director*, Undergratduate Programs**
**Associate Professor Pope, *Director*, Graduate Programs**
**Professor Cannady, *Director*, Center for Professional Studies**
**Associate Professors Parsons, Sherman, and Wittenberg**
**Assistant Professors Bell, Chang, Ingersoll, McKee, and Wamble**
**Lecturers Bachman, Bavinger, Blackburn, Colaco, DeLaura, Ford, Fox, Fleishacker, Furr, Lord, Reiner, and White**
**Visiting Critics Anderson, Appel, Baker, Robles, and Samuels**
**Visiting Cullinan Chair Kwinter**
**Visiting Caudill Lecturer el-Dahdah**

*Degrees Offered*: B.A., B.Arch., M.Arch., M.Arch. in Urban Design, D.Arch.

The School of Architecture seeks to contribute through teaching and research to a more humane environment. Its primary educational missions are teaching and research, development of a broad liberal education for undergraduates in the allied sciences and arts of architecture, and professional education at the graduate and postgraduate level in architecture and urban design.

These programs are offered in the setting of a small school to provide intimate student-faculty interaction, freedom for learning, and unrestricted institutional cooperation within and outside the university.

**Degrees Offered.** Five degrees are offered: Bachelor of Arts, Bachelor of Architecture, Master of Architecture, Master of Architecture in Urban Design, and Doctor of Architecture. The Bachelor of Arts, a liberal arts degree, is awarded after successful completion of the first four years of study. Rice students who have completed or will complete the four-year B.A. with a major in architecture may apply for admission to the Bachelor of Architecture program, which requires two additional years of work, one of which is an in-service preceptorship in a professional office.

The masters' degrees are awarded after successful completion of a minimum of three semesters of study beyond the bachelor's degree. Approval of Rice students for admission to either bachelor's or master's programs is contingent upon evaluation of the student's undergraduate academic record at the conclusion of the fourth year of study. The Master of Architecture is an accredited first professional degree, whereas the Master of Architecture in Urban Design requires prior or concurrent completion of accredited bachelor's or master's degrees.

**Undergraduate Program.** For both the B.A. and the B.Arch. degrees, the first two years center upon a carefully integrated study of the principles of architecture. In the third and fourth years, students are encouraged to develop their own interests through more specialized study of particular aspects of the field in studio, seminar, and lecture courses.

Below is a suggested course of study for either the B.A. or the B.Arch. degree. The order in which courses are taken is optional, subject to the following exceptions: (1) health and physical education must be taken in the first year, and (2) failure to take prerequisite courses in the earlier years may result in later scheduling problems. It is the responsibility of students to make sure that their study plans fulfill requirements of both the architecture major as well as of university distribution.

## Typical Curriculum

**First semester** (fall):
Architecture 101—
Principles of Architecture I
(studio);
History of Art 205—
Introduction to the History of Art;
Natural Science 101—
Introduction to the Physical
Sciences;
Humanities 101—
Introduction to Humanities;
Physical Education 101.

**Second semester** (spring):
Architecture 102—
Principles of Architecture I
(studio);
History of Art 206—
Introduction to the History of Art;
Architecture 132— Changing
Perspectives of Architecture;
Natural Science 101—
Introduction to the Physical
Sciences;
Humanities 101—
Introduction to Humanities;
Physical Education 10

**Third semester** (fall):
Architecture 201—
Principles of Architecture II
(studio);
History of Art 345— Renaissance
and Baroque Architecture;
Architecture 213— Structural
and Constructional Systems I;
an elective in studio art;
an elective
in architectural theory.

**Fourth semester** (spring):
Architecture 202—
Principles of Architecture II
(studio);
Arch 346—
Modern Architecture;
Architecture 214— Structural
and Constructional Systems II;
Social Sciences 102 —
Intellectual Foundations of the So-
cial Sciences;
one other course

**Fifth semester** (fall):
Architecture 301— Principles
of Architecture III (studio);
Architecture315— Intermediate
Architectural Technology;
an elective in the social sciences;
an elective in studio art or visual
communications; one other course.

**Sixth semester** (spring):
Architecture 302— Selected
Architectural Problems I (studio);
Architecture 316—Intermediate
Architectural Technology;
an elective in social science;
two other courses.

**Seventh semester** (fall):
Architecture 401— Principles
of Architecture IV (studio);
an elective in environmental
sciences;
two other courses.

**Eighth semester** (spring):
Architecture 402— Selected
Architectural Problems II (studio);
an elective in environmental
sciences;
two other courses.

The four-semester Bachelor of Architecture sequence complements the preprofessional undergraduate architecture major offered at Rice. It begins with a two-semester preceptorship (Architecture 500a,—Preceptorship I and II) assigned to graduating seniors who have been admitted to the B.Arch. program in the offices of leading practitioners in the United States and abroad. The preceptorship is followed by two semesters of studio and course work at the graduate level.

## Preceptors

Arquitectonica
Coral Gables, Florida

Ray Bailey Architects, Inc.
Houston, Texas

Cambridge Seven Associates
Cambridge, Massachusetts

Eisenman Architects
New York, New York

Ellerbe/Beckett Architects
Minneapolis, Minnesota

Gensler and Associates
San Francisco, California

Michael Graves, Architects
Princeton, New Jersey

Hellmuth, Obata, & Kassabaum, Inc.
Santa Monica, California

Wilhelm Holzbauer, Architekt
Vienna, Austria

Kohn, Pedersen & Fox, Architects
New York, New York

Lake Flato Architects
San Antonio, Texas

Machado & Silvetti Assoc., Inc.
Boston, Massachusetts

Morphosis
Los Angeles, California

Pei Cobb Freed & Partners
New York, New York

Cesar Pelli & Associates
New Haven, Connecticut

RTKL Associates, Inc.
Dallas, Texas

RWS Architects, Inc.
Houston, Texas

Renzo Piano Building Workshop
Paris, France

Skidmore, Owings & Merrill
Chicago, Illinois

Robert A.M. Stern Architects
New York, New York

Studio Antonio Citterio e Terry Dwan
Milan, Italy

Taller de Arquitectura
Barcelona, Spain

Venturi, Scott-Brown & Associates
Philadelphia, Pennsylvania

## Typical Curriculum

**First semester** (fall):
Architecture 500—Preceptorship I
**Third semester** (fall):
Architecture 601—
Architectural Problems (studio) or
Architecture 603—Urban Design
Workshop;
one elective course
one urban design course
one history and theory course

**Second semester** (spring):
Architecture 500b—Preceptorship II
**Fourth semester** (spring):
Architecture 602—
Architectural Problems (studio) or
Architecture 604—
Urban Design Problems (studio) or
Architecture 702—Design
Thesis (studio)
one elective course
one technology course

Architecture 701—Design Thesis Preparation is a prerequisite for Architecture 702. At least one urban design studio must be completed before graduation either as part of the preprofessional undergraduate major or as part of the Bachelor of Architecture program. Students must also take at least one elective course in urban design and two in building design.

The following information outlines the requirements for undergraduate degrees in the School of Architecture:

1. For a **Bachelor of Arts degree with a major in Architecture,** the requirements are 96 semester hours credit chosen from architecture and nondepartmental listings in a manner satisfying School of Architecture distribution requirements *plus* 36 semester hours credit of electives for a *total* of 132 semester hours credit that complete university distribution requirements.
2. For a **Bachelor of Arts degree with a major in Architectural Studies,** the requirements are 54 hours credit chosen from architecture and nondepartmental listings in a manner satisfying School of Architecture distribution requirements *plus* 78 semester hours credit of electives for a *total* of 132 semester hours credit that complete university distribution requirements.
3. For a **Bachelor of Architecture degree,** the requirements are: completion of a B.A. degree with a major in architecture (see 1 above); completion of a two-semester Preceptorship (30 semester hours credit); and completion of two studios and six lecture-seminar courses (38 semester hours credit).

B.A. students have two options in their choice of a preprofessional major during the third and fourth years:

1. The **architecture major** requires two years of advanced studio courses and additional professional requirements that permit reasonable elective freedom. This curriculum serves the needs of students who anticipate professional studies at an advanced level and who wish to have the alternatives of doing so through either the Bachelor of Architecture at Rice or various first professional master's degrees at Rice or other institutions.
2. The **architectural studies** option is open to those students already admitted to the majors program and who have completed the first two years foundation. It requires advanced work combining architectural studies with other fields during the third and fourth year and is focused on an approved,

preprofessional theme for interdisciplinary studies chosen by the individual and approved by an adviser. Application to this program must be made during the second year of studies. Reduced architectural course requirements encourage the pursuit of a double major with another department.

Upon satisfactory completion of the B.A. degree with either above major, students may apply during the senior year for admission to the appropriate advanced professional degree programs.

Complimentary programs at Rice span the gap between school and practice: the preceptorship program, the visiting lecturer series, and the visiting critic series. The preceptorship program is designed to balance classroom studio learning with professional practice. Qualified students who have been admitted to the Bachelor of Architecture degree program work for an entire year with outstanding architects throughout the world who are designated by the school as preceptors. The timing of preceptorship service varies according to the level of design and technical proficiency reached during the B.A. program. For those admitted to the Bachelor of Architecture, the preceptorship occurs immediately on the receipt of the B.A.

*Notes*

1. History of Art 205, 206 are required in the first two years and will be scheduled where history of art electives are noted. History of Art 345, 346 are required for a major in architecture.
2. Electives must satisfy School of Architecture distribution requirements in addition to general university requirements. Electives that satisfy both architecture major distribution requirements and university requirements may not be taken Pass/Fail.
3. Studio courses (Architecture 201, 202; 301, 302; and 401, 402), which carry six semester hours each semester in the sophomore, junior, and senior years, count toward graduation as the equivalent of one course per semester in the sophomore year and as two courses per semester in the junior and senior years.

**Graduate Programs.** The School of Architecture offers the degrees of Master of Architecture and Master of Architecture in Urban Design. Within the two degree programs, varied areas of interest are open to students.

An advanced building design curriculum is the basis for the Master of Architecture degree program. This program is designed to provide the student an individual course of study with a wide choice of special project, research, and internship opportunities both within and outside the School of Architecture.

Graduate studies are open to candidates who hold the degree of Bachelor of Architecture, Bachelor of Arts with a major in architecture, or Bachelor of Arts in other disciplines. Candidates with Bachelor of Architecture degrees take an average of three semesters to complete the Masters degree requirements. Those with Bachelor of Arts in Architecture are required to complete four semesters.

The graduate program has three major areas of emphasis: Architectural Design with particular interest in history, theory and practice. Urban Design where the concern is the emerging form of the American city. The last is an essentially research area in computer visualization which uses the resources of the Rice Advanced Visualization Lab (RAVL). RAVL is a university-wide resource housed in the School of Architecture involved in both research and teaching in the most advanced aspect of computer visualization.

# Typical Curriculum

**M.Arch. Option 1**

The requirements for students entering the graduate program without a previous degree in Architecture include a *core* curriculum consisting of 4 ten hour studios, 12 three hour courses, and an *advanced* curriculum consisting of 2 ten hour studios, 8-three hour courses, a one-hour thesis prep, and a ten-hour thesis (131 hours). Requirements are:

*Core* Level Requirements

**First semester (fall):**
Arch 501 - Design Studio
Arch 513 - Building Tech I
History/Theory Distribution*
Techniques Distribution*

**Second semester (spring):**
Arch 502 - Design Studio
Arch 514 - Building Tech II
History/Theory Distribution*
Techniques Distribution*

**Third semester (fall):**
Arch 503 - Design Studio
Arch 515 - Building Tech III
History/Theory Distribution*
Arch 623 - Professionalism and Management

**Fourth semester (spring)**
Arch 504 - Design Studio
Arch 516 - Building Climatology
History/Theory Distribution*
Techniques Distribution*

*Advanced* Level Requirements

**Fifth semester (fall):**
Arch 601 - Design Studio
History/Theory Elective
Criticism Elective
Elective

**Sixth semester (spring)**
Arch 602 - Design Studio
Criticism Elective
Elective
Elective
Thesis Prep

**Thesis semester**
Arch 702 - Thesis Studio
Elective
Elective

*Required Core Distributions:

These courses must be taken or the requirement waived for comparable course work. Waived courses must be substituted by elective courses in same distribution.

**History/Theory Course Distribution** (4 required)
Hart 205 - Intro Art and Arch History
Hart 206 - Intro Art and Arch History
Hart 645 - Renaissance and Baroque Architecture (Widrig)
Arch 646 - Modern Survey (McKee)
Arch 643 - Cities and History (Ingersoll)

**Techniques Course Distribution** (3 required)
Arch 653 - Photography (White)
Arch 620 - Woodworking
Arts 225 - Drawing I
Arch 635 - Intro to CAD (DeLaura)

**M.Arch. Option 2 (1993-94 only)**

The requirements for students entering the graduate program with a B.A. in Architecture include a curriculum consisting of 3 ten hour studios, 12 three hour courses, a one-hour thesis prep, and a ten-hour thesis (77 hrs. total). Requirements are as follows:

**First semester (fall):**
Arch 601 - Design Studio
History/Theory Distribution*
Techniques Distribution*
Technology Distribution*

**Second semester (spring):**
Arch 602 - Design Studio
History/Theory Distribution*
Techniques Distribution*
Technology Distribution*

**Third semester (fall):**
Arch 601 - Design Studio
History/Theory Elective
Criticism Elective
Elective or Distribution
Thesis Prep

**Thesis semester (spring):**
Arch 702 - Thesis Studio
Elective
Elective

*Required Distributions:

These courses must be taken or the requirement waived for comparable course work.

**History/Theory Course Distribution**
Hart 645 - Renaissance and Baroque Architecture (Widrig)
Arch 646 - Modern Survey (McKee)
Arch 643 - Cities and History (Ingersoll)

**Techniques Course Distribution**
Arch 653 - Photography (White)
Arch 620 - Woodworking
Arch 635 - Intro to CAD (DeLaura)

**Technology Course Distribution**
Arch 513 - Building Technology I
Arch 514 - Building Technology II
Arch 515 - Building Technology III
Arch 516 - Climatology

**M.Arch. Option 3**

The requirements for students entering the graduate program with a Bachelors in Architecture (professional degree) include 2 ten-hour studios, 8 three-hour courses, a one-hour thesis prep, and a ten-hour thesis (55 hours). Requirements are as follows:

**First semester (fall):**
Arch 601 - Design Studio
History/Theory Elective
Criticism Elective
Elective

**Second semester (spring):**
Arch 601 - Design Studio
History/Theory Elective
Criticism Elective
Elective
Thesis Prep

**Thesis semester (fall):**
Arch 702 - Thesis Studio
Elective
Elective

**Doctor of Architecture.** Admission to the Doctor of Architecture program requires a master's degree in architecture. A student entering with a master's degree normally takes one and one-half years of course work before the qualifying examination. Candidates should be prepared for advanced analytic and creative work in their specialized field. Such preparation may include foreign languages, statistics, or a computer language. This requirement is established individually when the student is admitted.

After successful completion of all required course work students may apply for the qualifying examination. At this time, students must submit an outline of their research program for the doctoral dissertation. This dissertation must represent an original contribution to knowledge in the field of architecture. The completion of the dissertation and the passing of the final oral examination required for the doctorate in architecture take a minimum of one year.

*Architecture Courses*

**101(F) PRINCIPLES OF ARCHITECTURE I** (2-6-4)
Visual studies of restricted dimensions, explorations using simple tools and materials to develop an awareness of the environment. Requisite for architecture majors.
*Robles, E., Samuels, D.*

**102(S) PRINCIPLES OF ARCHITECTURE I** (2-6-4)
Introduction to concepts of beginning architectural design. Manipulation of visual structure to render formal and operational information. Design process as problem solving with emphasis on conscious method. Requisite for architecture majors. Prerequisite: Arch 101.
*Casbarian, J., Samuels, D.*

**132(F) CHANGING PERSPECTIVES OF ARCHITECTURE** (2-0-2)
Introductory tutorial. Reading, field trips, and observation of current events and public affairs to understand the values, institutions, and nature of environmental changes relating to future role and practice of architecture.
*Staff*

**132(S) CHANGING PERSPECTIVES OF ARCHITECTURE** (2-0-2)
Introductory tutorial. Reading, field trips, and observation of current events and public affairs to understand the values, institutions, and nature of environmental changes relating to future role and practice of architecture.
*Staff*

**134(S) INTRODUCTION TO ARCHITECTURAL THEORY** (2-0-2)
An introduction to the major texts and theories of architecture, conducted as an adjunct to the Freshman Design Studio. It is open to nonmajors by permission of the instructor.
*Sherman, W.*

**201(F) PRINCIPLES OF ARCHITECTURE II** (3-9-6)
Further elaboration of architectural concepts applied to building design in the urban context as well as introductory urban planning issues. Requisite for architecture majors. Prerequisites: Arch 101 and 102.
*Appel, N., McKee, E.*

**202(S) PRINCIPLES OF ARCHITECTURE II** (3-9-6)
Intermediate level design problems with emphasis on building technology, programming and formal design. Requisite for architecture majors. Prerequisites: Arch 101, 102 and 201.
*Wittenberg, G.*

**213(F) STRUCTURAL AND CONSTRUCTION SYSTEMS I** (3-0-3)
Introduction to characteristics of structural and construction systems in architectural technology. Lab experiments are combined with lectures on systems, methods and their historical development.

*Colaco, J., Ford, W.*

**214(S) STRUCTURAL AND CONSTRUCTION SYSTEMS II** (3-0-3)
Application of materials and construction (wood, masonry, concrete, and steel). Case studies and field trips.

*Colaco, J., Ford, W.*

**301(F) PRINCIPLES OF ARCHITECTURE III** (2-12-6)
Complex building design program emphasizing the development of the architectural concept into detail design development. Requisite for architecture majors. Prerequisites: Arch 101, 102, 201, and 202.

*Chang, Y., Baket, J.*

**302(S) SELECTED ARCHITECTURAL PROBLEMS I** (2-12-6)
Variety of intermediate-level problems with specific topical focus for developing comprehensive experience in design methods and processes. Requisite for preprofessional major in architecture. Prerequisite: Arch 201, 202, 301.

*Bell, M., Parsons, S., Robles, E., el-Dahdah, F.*

**308(S) ARCHITECTURE FOR NONARCHITECTS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Designed to increase awareness of architectural issues through site visits and comparative building studies, guest architects, design problems, lectures, reading, and discussion. Impact of architecture on its users and its relation to institutions that produce it. Enrollment by permission of instructor.

*Casbarian, J.*

**311(F) HOUSTON ARCHITECTURE** (3-0-3)
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.

*Fox, S.*

**315(F) STRUCTURAL AND CONSTRUCTION SYSTEMS III** (3-0-3)
Application of principles of analysis to construction of steel and concrete framed structures. Continuation of Arch 213,214. Prerequisite: Arch 213, 214.

*Colaco, J., Ford, W.*

**316(S) BUILDING CLIMATOLOGY** (3-0-3)
An introduction to the thermal performance of buildings. Course is divided into two parts: Building Climatology and Air Conditioning Systems.

*Wittenberg, G.*

**325(F) THEORY AND MODERNISM** (3-0-3)
Four parts: first, the "early moderns," including Durand, Laugier, Ledoux, Boullee, Blondel, etc. Second, a brief introduction to the concept of modernity in the history of Western thought. Third, an examination of the formulation and use of "modernism" as a consistent and rigorous term. Fourth, the readings from the canonical texts and buildings of "modern architecture."

*McKee, E.*

**326(S) INTRODUCTION TO URBAN ISSUES** (3-0-3)
Major issues and problems confronting metropolitan centers; emphasis on twelve physical and built environments. Visiting lecturers on transportation, housing, education, minority problems, new communities, physical development and redevelopment. Course is open to all students.

*Reiner, M.*

**343(S) CITIES AND HISTORY** (3-0-3)
Historical survey of the city from Sumer to the Baroque capitals.

*Ingersoll, R.*

**344(S) CONSTRUCTION AND DESIGN** (3-0-3)
A seminar in which normative relationships between the construction and aesthetic of an object is explored and challenged. The premise of the course is that the way things are made can be one credible point of departure for the architectural design process.

*Parsons, S.*

**345(F) NATURAL ENVIRONMENT FACTORS** (3-0-3)
An overview of issues on natural resource consumption and environmental impact pertinent to urban design activities. Also offered as Envi 445.

*Blackburn, J.*

**346(S) HISTORY OF MODERN ARCHITECTURE** (3-0-3)
A survey of the history and theories of modern architecture.

*McKee, E*

**353(F) PHOTOGRAPHY FOR ARCHITECTS** (3-0-3)
Exploration of a variety of photographic techniques for architectural research, design, and presentation. Enrollment limited.

*White, F.*

**401(F) PRINCIPLES OF ARCHITECTURE IV** (2-12-6)
Upper-level architectural design problems with an emphasis on urban design principles and methodology and the effects of social and political forces on planning and building organization. Requisite for preprofessional major in architecture. Prerequisites: Arch 101, 102, 201, 202, 301, and 302.

*Sherman, W., Wamble, M.*

**402(S) SELECTED ARCHITECTURAL PROBLEMS II** (2-12-6)
See Arch 302. Requisite for professional major in achitechture. Prerequisites: Arch 101, 102, 201, 202, 301, 302, and 401

*Bell, M., Parsons, S., Robles, E., el-Dahdah, F.*

**412(S) ADVANCED DESIGN OF STRUCTURAL SYSTEMS** (3-0-3)
Advanced course in structural design. Topics include factors controlling structural design of buildings, floor systems, building systems, façade treatments, long span structures, pneumatic and cable structures, and new structural systems and materials. Case studies will also be conducted. Prerequisite: Arch 213,214,315, or equivalent.

*Colaco, J., Ford, W.*

**414(S) HOUSTON RESEARCH PROJECT** (3-0-3)
Through examination of the work of a single architect, cultural issues are identified and explored.

*Fox, S.*

**415 ARCHITECTURAL THEORY AND CRITICISM** (3-0-3)
Seminar dealing with landmark texts in architectural theory and criticism.

*Sherman, W.*

**418(F) LE CORBUSIER/MODERN ARCHITECTURE** (3-0-3)
Examine fundamental issues of modernism in architecture emerging from both European and American sources. Systematic analysis of the works and writings of major twentieth-century architects.

*Ingersoll, R.*

**420 HISTORY OF BUILDING TECHNOLOGY** (3-0-3)
Survey of the history building technology from ancient times to the present. Lectures cover theory, methods, and practical applications.

*Wittenberg, G.*

**422(F) INTRODUCTION TO COMPUTER GRAPHICS**
The first course in a series of computing courses in architecture. As such, its primary focus will be on developing core skills that will serve students in utilizing the ever-increasing computer facilities in the School of Architecture.

*Staff*

**423 PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE** (3-0-3)
Introductory survey of professional practice in architecture.

*Furr, J., Fleishacker, A.*

**424(S) COMPUTER-AIDED DESIGN** (3-0-3)
Advanced computer graphic techniques using CAD in architecture as a design and presentation medium. Prerequisite: Arch 422 or 622 or permission of instructor.

*Bavinger, B.*

**434(S) INTRODUCTION TO COMPUTER-AIDED DESIGN** (3-0-3)

*Staff*

**435(F) INTRODUCTION TO COMPUTER AIDED DESIGN IN ARCHITECTURE** (3-0-3)
Continuation of 434 with emphasis on use of advanced software, 3-D, etc.

*DeLaura, L.*

**436(S) COMPUTER-AIDED DESIGN** (3-0-3)
Advanced computer graphic techniques using CAD in architecture as a design and presentation medium.

*DeLaura, L.*

**437(F) COMPUTER PROJECTS IN ARCHITECTURE AND URBAN DESIGN** (3-0-3)
Individual projects in the application of computer technology to architectural programming, planning, and urban design, graphic display, and problem analysis.

*Bavinger, B.*

**438(S) COMPUTER PROJECTS IN ARCHITECTURE AND URBAN DESIGN** (3-0-3)
Theory and practice of computer-aided design for application to architecture, urban design and planning, including instruction in special programming techniques, graphic display and data base management. Prerequisite: Arch 437, 637 or permission of instructor.

*Bavinger, B.*

**440(S) ADVANCED COMPUTER MODELING AND RENDERING** (3-0-3)
Advanced course in computer modeling, rendering and graphics manipulation. This course is designed to explore computer modeling and rendering techniques and their role in the design process.

*van Horn, P.*

**455(F) HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY** (3-0-3)
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 presentations to the class as well as submit a written paper on the topic at the end of the semester.

*Lord, T.*

**461 SPECIAL PROJECTS** (Credit variable)
Independent research or design arranged in consultation with a faculty member. Subject to approval of faculty adviser and director. Very limited enrollment.

*Casbarian, J.*

**500 PRECEPTORSHIP PROGRAM** (0-0-15)
Requisite for admission to graduate studies in architecture for all recipients of Rice B.A. degrees in preprofessional or area majors. Student completes nine to twelve months of full-time internship under guidance of an appointed preceptor.

*Casbarian, J.*

**501(F) GRADUATE COURSE STUDIO I** (5-15-10)
Requisite for admission to graduate profesional 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. Prerequisite: determined by the Graduate Affairs Committee with the School of Architecture.

*Bell, M.*

**502(S) GRADUATE COURSE STUDIO II** (5-15-10)
See Arch 501.

*Pope, A.*

**503(F) GRADUATE COURSE STUDIO III** (5-15-10)
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.

*Parsons, S.*

**504(S) GRADUATE COURSE STUDIO IV** (5-15-10)
See Arch 503.

*Serman, W.*

**514(S) BUILDING TECHNOLOGY AND STRUCTURES II** (3-0-3)
A course in structures for students in the Qualifying Graduate Program. Topics include: structure in architecture; forces and equilibrium; structural materials; the behavior, analysis, and design of structural elements and their connections.

*Colaco, J., Ford, W.*

**515(F) BUILDING TECHNOLOGY AND STRUCTURES III** (3-0-3)
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. Prerequisite: Arch 514.

*Colaco, J., Ford, W.*

**516(S) BUILDING CLIMATOLOGY** (3-0-3)
See Arch 316.

*Wittenberg, G.*

**541(F) ISSUES IN CONTEMPORARY ARCHITECTURE** (3-0-3)
A survey of the development reappraisal and transformation of architectural ideals in the period since 1945.

*Pope, A.*

**542(S) ISSUES IN CONTEMPORARY ARCHITECTURE** (3-0-3)
See Arch 541.

*Pope, A.*

**600(F) QUALIFYING GRADUATE PRACTICAL INTERNSHIP** (3-0-3)
Practical work experience for students who have completed at least four semesters in the Qualifying Graduate Program prior to their entrance into the regular Master of Architecture studio sequence. Permission of instructor required. Very limited enrollment.

*Staff*

**600(S) QUALIFYING GRADUATE PROGRAM INTERNSHIP** (Credit variable)
Practical work experience for students who have completed at least four semesters in the Qualifying Graduate Program prior to their entrance into the regular Master of Architecture studio sequence. Permission of instructor required. Very limited enrollment.

*Staff*

**601(F) ARCHITECTURAL PROBLEMS: STUDIO** (5-15-10)
Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities.

*Anderson, A., Cannady, W., Casbarian, J., Wittenberg, G.*

**602(S) ARCHITECTURAL PROBLEMS: STUDIO** (5-15-10)
Emphasis on abstract thought and design capabilities relevant to systematic processes of designing specific buildings and facilities.

*Anderson, A., Chang, Y., Wamble, M.*

**609(S) ARCHITECTURE FOR NONARCHITECTS** (3-0-3)
Classroom teaching under the supervision of the instructor. For elective credit only.

*Casbarian, J.*

**611(F) HOUSTON ARCHITECTURE** (3-0-3)
See Arch 311.

*Fox, S.*

**612(S) ADVANCED DESIGN-STRUCTURAL SYSTEMS** (3-0-3)
See Arch 412.

*Colaco, J., Ford, W.*

**614(S) HOUSTON RESEARCH PROJECT** (3-0-3)
See Arch 414.

*Fox, S.*

**615 ARCHITECTURAL THEORY AND CRITICISM** (3-0-3)
Seminar dealing with landmark texts in architectural theory and criticism. See Arch 415 Prerequisite: permission of instructor.

*Sherman, W.*

**618(F) LE CORBUSIER/MODERN ARCHITECTURE** (3-0-3)
Same as Arch. 418.

*Ingersoll, R.*

**618(S) WRITING IN THE MARGINS OF ARCHITECTURE** (3-0-3)
In this seminar we will look at contemporary theory—specifically in the disciplines of literature, psychology, and feminist criticism—implicating the practice of architecture through recent projects used as case studies. Should architecture aspire to these conditions of poststructuralist thought—which for the time are only written in the margins of architectural discourse—or is architecture a discipline that confounds contemporary theory.

*Wamble, M.*

**620 HISTORY OF BUILDING TECHNOLOGY** (3-0-3)
Same as Arch 420.

*Wittenberg, G.*

**622(F) INTRODUCTION TO COMPUTER GRAPHICS** (3-0-3)
See Arch 422.

*Bavinger, B.*

**623 PROFESSIONALISM AND MANAGEMENT IN ARCHITECTURAL PRACTICE** (3-0-3)
See Arch 423.

*Fleishacker, A., Furr, J.*

**624(S) COMPUTER-AIDED DESIGN** (3-0-3)
See Arch 424.

*Bavinger, B.*

**625(F) THEORY AND MODERNISM** (3-0-3)
See Arch 325.

*McKee, E.*

**626(S) INTRODUCTION TO URBAN ISSUES** (3-0-3)
See Arch 336.

*Reiner, M.*

**628(S) HISTORY IN ARCHITECTURE** (3-0-3)
A seminar on the discourse of history in and around architecture and its impact on architectural ideas.

*McKee, E.*

**635(F) INTRODUCTION TO COMPUTER PROJECTS IN ARCHITECTURE**(3-0-3)
(Same as Arch 435.)

*DeLaura, L.*

**636(S) COMPUTER AIDED DESIGN** (3-0-3)
See Arch 436.

*DeLaura, L.*

**637(F) COMPUTER PROJECTS IN ARCHITECTURE AND URBAN DESIGN** (3-0-3)
See Arch 437.

*Bavinger, B.*

**638(S) COMPUTER PROJECTS IN ARCHITECTURE AND URBAN DESIGN** (3-0-3)
See Arch 438.

*Bavinger, B.*

**640(S) ADVANCED COMPUTER MODELING AND RENDERING** (3-0-3)
See Arch 440.

*van Horn, P.*

**643(S) THE HISTORY OF THE CITY** (3-0-3)
See Arch 343.

*Ingersoll, R.*

**644(S) CONSTRUCTION AND DESIGN** (3-0-3)
See Arch 344.

*Parsons, S.*

**645(F) NATURAL ENVIRONMENT FACTORS** (3-0-3)
See Arch 345.

*Blackburn, J.*

**646(S) HISTORY OF MODERN ARCHITECTURE** (3-0-3)
Same as Arch 346.

*McKee, E.*

**647(F) LATE TWENTIETH-CENTURY ARCHITECTURE AND URBANISM** (3-0-3)
The design process and the lived-in form of architecture and urbanism are the primary focus of this lecture course. The scope of inquiry will comprehend the development of current building types, new technological practices, emerging urban patterns, the changing role of the architect, and stylistic trends.

*Ingersoll, R.*

**650(S) ADVANCED APPLICATIONS IN COMPUTER-AIDED DESIGN** (Credit variable)
This course is intended for those students who wish to further explore CAD as a design and presentation tool for architectural applications. The emphasis will be on three-dimensional modeling and two-dimensional drafting as extensions of traditional media and methods of architectural presentation.

*DeLaura, L.*

**653(F) PHOTOGRAPHY FOR ARCHITECTS** (3-0-3)
See Arch 353.

*White, F.*

**654(S) THE ARCHITECT AND SOCIETY** (3-0-3)
This seminar examines the work of the architect as the structuring of the relationship between the individual and society. Readings are drawn from diverse disciplines to reframe an understanding of the architect's ethical and political responsibilities.

*Sherman, W.*

**655(F) HOUSING AND URBAN PROGRAMS: ISSUES IN POLICY** (3-0-3)
See Arch 455.

*Lord, T.*

**665(F) GRADUATE SEMINAR—ARCHITECTURAL DESIGN** (3-0-3)
Seminars structured around topics dealing with design theory, with special emphasis on participation by visiting critics and professors.

*Visiting Critics*

**666(S) GRADUATE SEMINAR—ARCHITECTURAL DESIGN** (3-0-3)
Same as Arch 665.

*Visiting Critics*

**667(F) CRITICISM AND ARCHITECTURE** (3-0-3)
This seminar investigates the history of critical writings on architecture from the eighteenth century to the present, and analyzes the various categories used to criticize architecture projects, such as aesthetics, politics, and technology.

*Ingersoll, R.*

**668(S) ANTI-ECOLOGY—ARCHITECTURE AGAINST NATURE; OR A HISTORY OF ECOLOGISM IN ARCHITECTURE** (3-0-3)
"Anti-ecology" is the pessimistic antithesis to the optimistic pursuit of ecological design. It is predicated on the observation that human settlement and architecture are inherently against nature. The course analyzes the theory and practice of architecture from the fifteenth century until postmodernism in terms of its relationship to nature and resources.

*Ingersoll, R.*

**670(S) THE BAUHAUS AND THE TEXTS OF MODERNISM** (3-0-3)
This seminar analyzes the writings of the three successive directors of the Bauhaus, Walter Gropius, Hannes Meyer, and Mies van der Rohe, as well as those of some of the important members of the Bauhaus, such as Itten, van Doesberg, Klee, and Schlemmer.

*Ingers4oll, R.*

**700 PRACTICUM** (3-0-3)
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.

*Staff*

**701 THESIS PREPARATION** (1-0-1)

*Staff*

**702 THESIS STUDIO** (0-10-10)

*Lerup, L., Pope, A.*

**711(section 1) SPECIAL PROJECTS** (Credit variable)
Independent research or design arranged in consultation with a faculty member subject to approval of the student's faculty adviser and director.

*Pope, A.*

**711(section 2) THESIS PREPARATION** (1-0-1)

**714 INDEPENDENT DESIGN PROJECTS** (Credit variable)

*Pope, A.*

**800 GRADUATE RESEARCH** (Credit variable)

*Pope, A.*

# Art and Art History

## The School of Humanities

**Professor Basilios Poulos,** *Chair*
**Professors Camfield, Havens, and Winningham**
**Associate Professors Broker, Huberman, Manca,**
**G. Smith, Widrig, and Wilson** *(on leave 1993-94)*
**Assistant Professors Dillon, Mersereau, Naficy, Neagley, and Sparagana**
**Lecturer Dobbins**
**Visiting Lecturers McEvilley and Thomas**
**Playwright-in-Residence Bren Dubay**
**Artist-in-Residence Darra Keeton**

*Degrees Offered:* B.A., B.F.A., M.A.

The Department of Art and Art History offers courses in three distinct disciplines: the history of art; studio art (painting, drawing, sculpture, etc.); photography and media studies.

**Undergraduate Program.** A minimum of thirty eight semester hours is required for the full major, including at least eleven semester hours in the history of art and nine semester hours selected from studio, film, or photography. Double majors must take a minimum of thiry two semester hours, including at least three courses in both the creative arts and the history of art. All majors must complete the two semesters of the introductory survey, History of Art 205 and 206. For all majors at least 50 percent of the required number of courses must be at the 300- or 400-level, of which more than 50 percent must be taken at Rice.

In addition to the departmental requirements for the major, students must also satisfy all the university requirements for the B.A. degree. See Degree Requirements and Majors, pages 65-85.

A reading knowledge of French, German, or Italian is strongly recommended for all majors, especially those who intend to take 300- or 400-level courses in the history of art.

Students interested in further guidance in planning the Bachelor of Arts degree with a major in art and art history should consult departmental faculty advisers.

**Bachelor of Fine Arts Program.** The Bachelor of Fine Arts program consists of a fifth year of intensive study in the creative arts to be taken after a student has obtained a B.A. degree in art at Rice or its equivalent at another university. Candidates possessing a B.A. degree with a major in a field other than art may in exceptional cases be admitted to the program. Special fifth-year courses are available to the B.F.A. candidate only, in addition to advanced courses normally offered by the department. Satisfactory completion of a total of thirty semester hours in approved courses or the equivalent in approved major electives at the 300-, 400-, or 500-level is required for the B.F.A. degree.

Admission to the program is determined by the Committee on Examinations and Standing on recommendation of the Bachelor of Fine Arts Committee in the department. For further information about application forms, deadlines, admission standards, and the like, write to the chairman of the Department of Art and Art History.

**Graduate Program.** Qualified students are eligible to apply for the graduate program leading to a degree of Master of Arts in art history with an option in classical archaeology. Areas of concentration in art history are those in the Western tradition of European and American Art. Graduate work is also possible in Asian Studies.

Graduate fellowships and scholarships are awarded on the basis of scholarly achievement and available funds. Fellowships consist of a stipend and a waiver of tuition; scholarships provide only a waiver of tuition. Graduate students as part of their training may be expected to render some service as research assistants, tutorial instructors, or curatorial assistants in the Sewall Art Gallery.

Entering students must pass a reading examination in either French or German. In classical archaeology, students must pass a reading examination in one of the following languages: French, German, or Italian and Greek or Latin. Other languages may be required depending on the course of studies chosen by the student. Upon entrance, students may be required to take an examination to be used as a guide in determining their programs.

**Requirements for the Degree of Master of Arts:**

1. Complete with high standing a minimum of 30 hours of graduate course work to include a 3-hour course in art historical concepts, history, and methods of research; a 9-hour thesis in the second year; and 18 hours of lecture, seminar, and reading courses. For students in classical archaeology, 6 hours must be in archaeological field experience applied to specific research in addition to the above requirements.
2. Pass satisfactorily a comprehensive examination in the second year.

### Sewall Art Gallery

Stella Dobbins, Director

Sewall Art Gallery, located on the ground floor of Sewall Hall, functions as an extension of the teaching activities in the Department of Art and Art History but is also oriented to the larger university and Houston community. The gallery selectively collects artworks that are used for instruction, research, loan, and exhibitions. Four to six exhibitions are mounted during the academic year, focusing on historical and contemporary presentations of painting, sculpture, and graphic, video, and performance arts. The gallery is staffed by a director and professional coordinator. Students enrolled in the Rice Museum intern course gain experience in museum registration methods, exhibition techniques, research, and other aspects of museum work. Second semester juniors, seniors, or graduate students interested in museum experience may also apply for the Museum Internship, offered in cooperation with local museums (see History of Art 496).

## History of Art and Architecture

*History of Art Courses*

**205(F) INTRODUCTION—HISTORY OF ART** (4-0-4)
* DISTRIBUTION COURSE: CATEGORY I.2
A survey of painting, sculpture, and architecture from the Paleolithic period to the fourteenth century. An additional hour of tutorial per week will be assigned during the first week.
*Mersereau, R., Widrig, W.*

**206(S) INTRODUCTION—HISTORY OF ART** (4-0-4)
* DISTRIBUTION COURSE: CATEGORY I.2
A survey of painting, sculpture, and architecture from the Renaissance to the twentieth century. An additional hour of tutorial per week will be assigned during the first week. Hart 205 strongly recommended.

*Camfield, W., Manca, J.*

**209 INTRODUCTION TO ASIAN ART** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
A survey of the art of Asia from the Neolithic period to the present. Not offered 1993-94.

*Wilson, R.*

**218(S) HISTORY OF FILM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Classic films from both silent and sound eras. Griffith, Eisenstein, Chaplin, Stroheim, Sternberg, Renoir, Renais, Godard, Bergman, and others. Attention to technique, theory, principles of criticism, relationship to art history in general. Not offered 1993-94.

*McEvilley, T.*

**291(F) SPECIAL TOPICS** (Variable)
Courses at the introductory level or special research and reading. May be used in awarding transfer credit. Prerequisite: permission of instructor.

*Staff*

**292(S) SPECIAL TOPICS** (3-0-3)

*Staff*

**293(F) SPECIAL TOPICS** (3-0-3)

*Staff*

**294(S) SPECIAL TOPICS** (3-0-3)

*Staff*

**295(F) SPECIAL TOPICS** (3-0-3)

*Staff*

**296(S) SPECIAL TOPICS IN FILM HISTORY** (3-0-3)
A changing set of topics. Will focus attention on themes such as auteur theory, directorial signature, film and semiotics, film and social control, film and revolution, film and Christianity, surealist film, film and the other arts, etc.

*McEvilley, T.*

**304(F) ART AND ARCHAELOGY OF THE PREHISTORIC AEGEAN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
A survey of the material culture of Aegean civilizations from the Neolithic era to the end of the Bronze Age (c. 6000-1000 B.C.). Emphasis is placed on the Late Bronze Age Minoans and Mycenaeans, understanding these cultures within the larger Mediterranean world and their legacy to later Greece. No prerequisites. Hart 205 recommended.

**305(F) GREEK ART AND ARCHEOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Study of the material culture and society of early Greece, from its origins in the Greek Dark Ages through the crucial and formative Geometric, Orientalizing, and Archaic periods, c. 1000-480 B.C. No prerequsites. Hart 205 recommended. Not offered 1993-94.

*Mersereau, R.*

**306(S) GREEK ART AND ARCHAEOLOGY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Study of the material culture and society of Classical and Hellenistic Greece, beginning with the 5th century B.C. and following developments and changes throughout the fourth century to the Age of Alexander the Great and his successors. No prerequisites. Hart 305 recommended. Not offered 1993-94.

*Mersereau, R.*

**307(F) ETRUSCAN AND EARLY ROMAN ART AND ARCHAEOLOGY**
* DISTRIBUTION COURSE: CATEGORY I.2
Art, architecture, and civilization in Italy from prehistoric times through the Etruscans and the early Roman Republic. Not offered 1993-94.

*Staff*

**308(S) ROMAN ART AND ARCHAEOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Architechture, sculpture, and painting of the ancient Romans from the founding of Rome and the Republic through the Imperial era to the age of Constantine will be studied with an emphasis on cultural context and interaction. The geographical range will comprise the entire European and Mediterranean worlds that were encompassed in the Roman Empire. No prerequisites. Hart 205 recommended. Not offered 1993-94.

*Mersereau, R.*

**309(S) LATE ANTIQUE AND EARLY CHRISTIAN ART** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
The adaptation of Late Antique art and architecture to Christian content in the centuries following Constantine.

*Widrig, W.*

**312(S) GREEK AND ROMAN ARCHITECTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
A study of the fundamental principles of design, construction, and function of Greek and Roman domestic and monumental architecture as documented in the archaeological record and ancient literary sources. Consideration is given to the respective cultural contexts regarding architectural form and function.No prerequisites. Hart 205 recommended.

*Mersereau, R.*

**319(F) GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1140-1300. "THE AGE OF THE CATHEDRALS"** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
This course will examine the full array of sacred art and architecture produced in the Early and High Gothic Periods in northern Europe. Cathedral architecture, sculpture, stained glass, manuscripts, and metalwork will be studied in relationship to expansion of royal and episcopal power.

*Neagley, L.*

**321(S) ART AND THE MIND** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Selected topics in art history, criticism, esthetics, philosophy, and the psychology of art. Previous art history courses desirable but not required.

*McEvilley, T.*

**330(F) INTRODUCTION TO FILM** (3-0-3)
Students are introduced to the art and aesthetics of film as an artifact produced within certain social contexts. Topics include style, narration, mise-en-scène, editing, sound, ideology, classical Hollywood cinema, independent, alternative, nonfiction, and Third World cinemas.

*Naficy, H.*

**338(S) INTRODUCTION TO TELEVISION AND VIDEO** (3-0-3)
Provides a broad overview of the history of American television and video. It will familiarize students with milestone genres, programs, and videos, contextualizing them within socioeconomic and political events and discourses of the time. Mainstream TV and newer forms such as cable TV, video art, and ethnic TV will be examined.

*Naficy, H.*

**340(S) GENDER, MODERNISM, AND REPRESENTATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Examination of the network of connections linking issues of gender, modernism, and representation in the late nineteenth- and early twentieth-century European painting. Concentration on the Impressionists and Postimpressionists in France and the Pre-Raphaelites and the Bloomsbury group in England. Readings on specific artists and painting, social history, and theoretical inquiries into larger categories of gender, sexuality, modernism, and the issue of representation.

*Dillon, D.*

**345(F) RENAISSANCE AND BAROQUE ARCHITECHTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Renaissance architecture considered as a conscious break with medieval practice; its stylistic and theoretical development, primarily in Italy, during the fifteenth, sixteenth, and seventeenth centuries.

*Widrig, W.*

**356(S) TWENTIETH-CENTURY AMERICAN ART** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Survey of painting, sculpture, photography, and architecture in the United States from 1900 to mid-century. Not offered 1993-94.

*Camfield, W.*

**358(S) SPECIAL TOPICS: REPRESENTING HISTORY IN AMERICAN ART FROM COLONIAL TIMES TO 1900** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Consideration of the way history has been thematized in American art, focusing on the eighteenth and nineteenth centuries. The course will examine painting, architecture, sculpture, photography, and decorative arts within a broader social framework, contextualizing these objects with other forms of cultural expression such as historical pageantry, novels, and nonfictional historical writing.

*Dillon, D.*

**361(F) ART OF CHINA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Chinese painting, sculpture, and decorative arts with special consideration of recent archaeological finds. Prerequisite: Hart 209 or permission of instructor. Not offered 1993-94.

*Wilson, R.*

**365(S) ARTS OF JAPAN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
From pre-Buddhist Japanese art to the impact of Chinese and Korean culture and the emergence of indigenous Japanese expression in the arts and architecture. Prerequisite: Hart 209 or permission of the instructor. Not offered 1993-94.

*Wilson, R.*

**370(S) LATE GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1300-1500. "PRIVATE, PUBLIC, AND RELIGIOUS LIFE IN THE COURT, THE CITY, AND THE CHURCH"** (3-0-3)
This course will examine the art and architecture produced in the Late Gothic period within three distinct settings—the court, the city, and the church. We will explore 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.

*Neagley, L.*

**375(F) ART OF THE NORTHERN RENAISSANCE** (3-0-3)
Art in northern Europe from Jan van Eyck to Peter Bruegel. Not offered 1993-94.

*Manca, J.*

**392(S) ARCHITECTURE, TECHNOLOGY, METHOD, AND ORGANIZATION** (3-0-3)
* DISTRIBUTION COURSE CATEGORY I.2
A consideration of how technology, construction methods, and organization impact upon architectural form and contribute to various historical styles. Presentation will be topical rather than chronological. Focus on domestic as well as monomental works. Consideration of social and cultural context.

*Widrig, W.*

**411(S) EARLY RENAISSANCE ART IN ITALY** (3-0-3)
* DISTRIBUTION COURSE CATEGORY I.2
Art and architecture from Giotto to Botticelli, with an emphasis on painting and sculpture in the fifteenth century. Not offered 1993-94.

*Manca, J.*

**412(F) THE HIGH RENAISSANCE AND MANNERISM IN ITALY** (3-0-3)
* DISTRIBUTION COURSE CATEGORY I.2
A study of the High Renaissance, with an emphasis on its leading masters: Leonardo, Raphael, Bramante, Michelangelo, and Titian. The course will include a study of Mannerism, the stylish art produced after the first quarter of the sixteenth century.

*Manca, J.*

**415(F) ITALIAN RENAISSANCE ART** (3-0-3)
Painting, sculpture, and architecture from Giotto to Titian. The major stylistic changes from the Proto-Renaissance to Mannerism, with discussion of the social and intellectual context in which art of this period developed. Not offered 1993-94.

*Manca, J.*

**417(S) MASTERS OF THE BAROQUE ERA** (3-0-3)
A study of the works of the greatest painters and sculptors in Europe during the Baroque period, including Rembrandt, Rubens, Caravaggio, Poussin, Claude, and Velazquez. Not offered 1993-94.

*Manca, J.*

**419(F) THE EIGHTEENTH CENTURY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
The art and architecture of the Age of Enlightenment, including Rococo, Neoclassicism, and early Romanticism. Not offered 1993-94.

*Staff*

**439(F) DOCUMENTARY AND ETHNOGRAPHIC FILM** (3-0-3)
Provides a broad overview of history of documentary and ethnographic cinema. Maintaining a worldwide perspective, both canonical and alternative films and film movements will be discussed. Particular attention will be paid to the shifting and overlapping boundaries of fiction and nonfiction genres.

*Naficy, H.*

**461(S) NINETEENTH-CENTURY ART** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Major developments in painting and sculpture from late eighteenth-century Neoclassicism and Romanticism through Realism, Impressionism, and Postimpressionism. Brief consideration of architecture, photography, and decorative arts. Not offered 1993-94.

*Staff*

**463(F) TRENDS IN CONTEMPORARY ART** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Consideration of trends in the painting and sculpture of America and Europe from Abstract Expressionism to the present. Emphasis on American art and criticism. Prerequisite: Hart 475 or permission of instructor.

*Camfield, W.*

**471(S) CULTURE, MEDIA, SOCIETY** (3-0-3)
Focuses on cultural productions as vehicles by which a society speaks to itself and to others across national, cultural, and other boundaries. Uses contemporary theories of culture and media to examine the way meaning and cultural capital are created, minority and alternative views are represented, and individual and group identities are constructed.

*Naficy, L.*

**475(F) EUROPEAN TWENTIETH-CENTURY ART** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Consideration of major developments in painting and sculpture from the 1880s to the 1940s: Impressionism and Post-Impressionism through Expressionism, Cubism, Abstraction, Dada, and Surrealism. Brief consideration of architecture and photography. Not offered 1993-94.

*Camfield, W.*

**480/580 THEORETICAL PERSPECTIVES ON THE VISUAL ARTS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Exploration of theoretical approaches to the visual arts, incorporating texts from Plato to postmodernism. Readings and discussions clustered around a series of overlapping themes central in the history of art history. Topics to include the concept of mimesis, questions of authorship and the use of biography, issues of originality and rarity, theories of taste and aesthetic experience, the relationship between art and social life, and representations of the body and sexuality.

*Dillon, D.*

**482(S) BUDDHISM: ART AND FAITH** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Buddhist art (writing, painting, sculpture, architecture, crafts) from the third century B.C. to the 16th century A.D. Some background in Asian culture helpful but not required. Not offered 1993-94.

*Wilson, R.*

**483(F) ARCHAEOLOGICAL FIELDWORK AND RESEARCH** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Field work and research applied to specific archaeological problems.

*Staff*

**484(S) ARCHAEOLOGICAL FIELDWORK AND RESEARCH** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
See Hart 483.

*Staff*

**489(S) LEONARDO AND MICHELANGELO** (3-0-3)
The art and thought of the two greatest geniuses of the Italian Renaissance. Not offered 1993-94.

*Manca, J.*

**491(F) SPECIAL TOPICS: THE CITY OF ATHENS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
An archaeological and historical survey of the major monuments of ancient Athens from the Neolithic Age to the Roman Period. Emphasis will be placed on the monuments of Classical Athens in the fifth century B.C., especially architectural forms and political, social, and religious functions. No prerequisites. Hart 305 and 306 recommended. Not offered 1993-94.

*Mersereau, R.*

**492(F) SPECIAL TOPICS: FOUR MODERN MASTERS** (3-0-3)
Consideration of the art, life, context, and criticism of Picasso, Marcel, Duchamp, Max Ernst, and René Magritte. Prerequisite: Hart 475 or permission of instructor.

*Camfield, W.*

**494 THE GOTHIC PORTAL** (3-0-3)
This seminar will focus on the form and meaning of the sculptural programs attached to French Gothic cathedrals such as Chartres, Reims, and Amiens. Issues of iconography, style, and production as well as more recent concerns of narrative, reception, and audience will be discussed within the context of medieval church doctrine and political and social life.

*Neagley, L.*

**495(F) MUSEUM INTERN PROGRAM** (Credit variable)
Prerequisite: permission of instructor.

*Dobbins, S.*

**496(S) MUSEUM INTERN PROGRAM** (3-0-3)
See Hart 495. Prerequisite: permision of instructor.

*Dobbins, S.*

**497(F) SENIOR THESIS** (3-0-3)
Thesis written under the direction of a member of the faculty. Limited to senior art majors. Prerequisite: permission of faculty.

*Staff*

**498(S) SENIOR THESIS** (3-0-3)
See Hart 497.

*Staff*

**499(F) INDEPENDENT STUDY** (3-0-3)

*Dobbins, S.*

**500 THEORETICAL PERSPECTIVES ON THE VISUAL ARTS** (3-0-3)
Graduate level. See Hart 480.

*Dillon, D.*

**539(F) DOCUMENTARY AND ETHNOGRAPHIC FILM** (3-0-3)
See Hart 439.

*Naficy, H.*

**545(F) GRADUATE SEMINAR—RENAISSANCE AND BAROQUE ARCHITECTURE**
Consideration of theoretical issues involved in the development of the Renaissance-Baroque styles. Individual project assignments. Prerequisite: Hart 345 or equivalent.

*Widrig, W.*

**571 CULTURE, MEDIA, SOCIETY** (3-0-3)
See Hart 471.

*Naficy, L.*

**575(F) TOPICS IN MODERN ART** (3-0-3)

*Camfield, W.*

**583(F) ARCHAEOLOGICAL FIELDWORK AND RESEARCH** (3-0-3)
Graduate level. See Hart 483,484.

*Staff*

**584(S) ARCHAEOLOGICAL FIELDWORK AND RESEARCH** (3-0-3)
See Hart 483.

*Staff*

**585(F) INDEPENDENT READING** (3-0-3)

*Staff*

**586(S) INDEPENDENT READING** (3-0-3)

*Staff*

**591(F) MASTER OF ARTS THESIS** (Credit variable)
Graduate-level courses or special research and reading. Prerequisite: permission of instructor.

*Staff*

**592 MASTER OF ARTS THESIS** (Credit variable)

*Staff*

**594(F) SPECIAL TOPICS** (3-0-3)

*Staff*

**594(S) SPECIAL TOPICS:** (3-0-3)

*Staff*

**595(F) SPECIAL TOPICS** (3-0-3)

*Staff*

**596 SPECIAL TOPICS** (3-0-3)
Prerequisite: Permission of instructor.

*Staff*

**597(F) MUSEUM INTERN PROGRAM** (Credit variable)
See Hart 495. Prerequisite: permission of instructor.

*Dobbins, S.*

**598(S) MUSEUM INTERNSHIP** (Credit variable)
See Hart 496. 71 Prerequisite: permission of instructor.

*Dobbins, S.*

**800 THESIS AND RESEARCH** (Credit variable)

*Camfield, W.*

## Studio Art, Film and Photography

*Arts Courses*

**205(F) PHOTOGRAPHY I** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Exploration of the basic materials and processes of the photographic medium; viewing, analysis, and discussion of the medium's history and current trends.

*Winningham, G.*

**206(S) PHOTOGRAPHY II** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Second semester photography. Continuation of Arts 205.

*Winningham, G.*

**216(S) 35MM PHOTOGRAPHY** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2

**225 DRAWING I** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Introduction to the problems of drawing using various media (pencil, charcoal, pen and ink, pastel).

*Staff*

**291 SPECIAL PROBLEMS IN DESIGN** (Variable)
Problems at the introductory level in creative art with individual instruction and criticism. May be used in awarding transfer credit.

*Staff*

**292 SPECIAL PROBLEMS IN DRAWING** (Variable)
* DISTRIBUTION COURSE: CATEGORY I.2

*Staff*

**293 SPECIAL PROBLEMS IN DRAWING** (Variable)

*Staff*

**294 SPECIAL PROBLEMS IN STUDIO ART** (Variable)

*Staff*

**295 SPECIAL PROBLEMS—PHOTOGRAPHY** (Variable.)

*Winningham, G.*

**296(S) SPECIAL PROBLEMS—FILM & VIDEOTAPE MAKING** (Variable.)

*Huberman, B.*

**301(F) PAINTING I** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Problems in painting, both traditional and experimental, in various opaque media. Prerequisite: Arts 225 or permission of instructor.

*Sparagana, J.*

**302(S) PAINTING I** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
See Arts 301.

*TBA*

**305(F) PHOTOGRAPHY III** (3-3-3)
Advanced problems in photography. Emphasis on independent pursuit of projects submitted by the students.

*Winningham, G.*

**306(S) PHOTOGRAPHY IV** (3-3-3)
Continuance of Arts 305.

*Winningham, G.*

**311(F) PRINTMAKING I** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Etching in black and white, color, and monoprint techniques.

*Broker, K.*

**312(S) PRINTMAKING II** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Etching, including advanced color methods; engraving; and history of etching.

*Broker, K.*

**313(F) LITHOGRAPHY I** (0-6-3)
Stone lithography in black and white.

*Broker, K.*

**320(S) PRINTMAKING: MONOTYPE** (0-6-3)
Introduction to Monotype. Exploration of black and white and color monotype printing. Prerequisite: Drawing I and permission of instructor.

*Sparagana, J.*

**325(F) LIFE DRAWING** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Drawing from the model in various media. Prerequisite: permission of instructor.

*Keeton, D.*

**326(S) LIFE DRAWING** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
See Arts 325.

*Keeton, D.*

**327 FILM AND VIDEOTAPE MAKING I** (0-5-3)
* DISTRIBUTION COURSE: CATEGORY I.2
A study of the expressive possibilities of the media. Synchronous sound, using super-eight millimeter film, plus video tape.

*Huberman, B.*

**328 FILM AND VIDEOTAPE MAKING I** (0-5-3)
One major film project by the class employing 16 mm film and synchronous sound equipment.

*Huberman, B.*

**329(F) FILM FORM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Viewing, analysis, and discussion of modern and classic films. Not offered 1993-94.

*Huberman, B.*

**337(S) COLOR DRAWING** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Introduction to color using still lifes and employing various media (pastel and watercolor). Prerequisite: permission of the instructor.

*Poulos, B.*

**345(F) COLOR PHOTOGRAPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Fundamental techniques of color photography, including special problems in color camera work, color negative and transparency processing, and color printing. Prerequisite: Arts 205, 206.

*Winningham, G.*

**346(S) COLOR PHOTOGRAPHY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Continuance of Arts 345.

*Winningham, G.*

**365(F) SCULPTURE I** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Sculpture in wood, metal welding, and other sculptural media.

*Smith, G.*

**366(S) SCULPTURE I** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
See Arts 365.

*Smith, G.*

**391 SPECIAL PROBLEMS IN DRAWING** (Variable.)
Problems in creative art with individual instruction and criticism. May be used in awarding transfer credit. Prerequisite: permission of instructor.

*Staff*

**392 SPECIAL PROBLEMS—LIFE DRAWING** (Variable.)

*Staff*

**393 SPECIAL PROBLEMS IN PAINTING** (Variable.)

*Staff*

**394 SPECIAL PROBLEMS—PRINTMAKING** (Variable.)

*Broker, K.*

**395 SPECIAL PROBLEMS—PHOTOGRAPHY** (Variable.)

*Winningham*

**396(F) SPECIAL PROBLEMS—FILM AND VIDEOTAPE** (Variable.)
See Arts 391.

*Huberman, B.*

**397 SPECIAL PROBLEMS IN SCULPTURE** (Variable.)

*Smith, G.*

**420 ADVANCED DRAWING** (0-6-3)

*Broker, K.*

**423 PAINTING ON PAPER** (0-6-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Oil paint, oil stick, collage, and various contemporary mixed media may be employed. Enrollment limited to 15. Prerequisite: Drawing I or Arts 101.

*Staff*

**427(F) FILM AND VIDEOTAPE MAKING II** (1-5-3)
One major film project by each student, using either video or 16 mm film.

*Huberman, B.*

**428(S) FILM AND VIDEOTAPE MAKING II** (1-5-3)
See Arts 427.

*Huberman, B.*

**432(S) FILM GENRE: THE WESTERN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
The essential American film experience spanning all the years of U.S. cinema. Focusing on the Western, the course concerns itself with the mythic function of this film genre.

*Huberman, B.*

**445 SPECIAL PROBLEMS IN DRAWING** (Variable.)
Advanced problems in creative art with individual instruction and criticism. May be used in awarding transfer credit. Prerequisite: permission of instructor.

*Staff*

**446 SPECIAL PROBLEMS IN DRAWING** (Variable.)
*Staff*

**447 SPECIAL PROBLEMS IN LIFE DRAWING** (Variable.)
*Staff*

**448 SPECIAL PROBLEMS IN LIFE DRAWING** (Variable.)
*Staff*

**449 SPECIAL PROBLEMS IN PRINTMAKING** (Variable.)
*Broker, K.*

**450 SPECIAL PROBLEMS IN PRINTMAKING** (Variable.)
*Staff*

**451 SPECIAL PROBLEMS IN PAINTING** (Variable.)
*Poulos, B.*

**452 SPECIAL PROBLEMS IN PAINTING** (Variable.)
*Poulous, B.*

**453 SPECIAL PROBLEMS—PHOTOGRAPHY** (Variable.)
*Winningham, G.*

**454 SPECIAL PROBLEMS—PHOTOGRAPHY** (Variable.)
*Winningham, G.*

**455(F) SPECIAL PROBLEMS—FILM AND VIDEOTAPE** (Variable.)
*Huberman, B.*

**456(F) SPECIAL PROBLEMS—FILM AND VIDEOTAPE** (Variable.)
See Arts 445.
*Huberman, B.*

**457(F) SPECIAL PROBLEMS IN SCULPTURE** (Variable.)
*Smith, G.*

**458 SPECIAL PROBLEMS IN SCULPTURE** (Variable.)
*Smith, G.*

**465 SCULPTURE II** (0-6-3)
Advanced problems in various sculptural media. Prerequisite: Arts 365, 366.
*Smith, G.*

**466,S/F SCULPTURE II** (0-6-3)
*Smith, G*

**475(F) ADVANCED PAINTING** (0-6-3)
Advanced problems in painting. Emphasis on independent development and participation in class critiques. Prerequisite: permission of instructor.
*Poulos, B.*

**476(S) ADVANCED PAINTING** (0-6-3)
See Arts 475.
*Poulos, B.*

**501(F) STUDIO I: PAINTING** (0-6-3)
Individual work in the studio arts, film, or photography under the direction of one or more staff members. Restricted to B.F.A. degree candidates.

*Staff*

**502(S) STUDIO I: PAINTING** (0-6-3)
See Arts 501.

*Staff*

**503(F) STUDIO I: SCULPTURE** (0-6-3)
See Arts 501.

*Smith, G.*

**504(S) STUDIO I: SCULPTURE** (0-6-3)
See Arts 501.

*Smith, G.*

**505(F) STUDIO I: DRAWING** (0-6-3)
See Arts 501.

*Staff*

**506(S) STUDIO I: DRAWING** (0-6-3)
See Arts 501.

*Staff*

**507(F) STUDIO I: LIFE DRAWING** (0-6-3)
See Arts 501.

*Staff*

**508(S) STUDIO I: LIFE DRAWING** (0-6-3)
See Arts 501.

*Staff*

**509(F) STUDIO I: DESIGN** (0-6-3)
See Arts 501.

*Staff*

**511(F) STUDIO I: PRINTMAKING** (0-6-3)
See Arts 501.

*Staff*

**512(S) STUDIO I: PRINTMAKING** (0-6-3)
See Arts 501.

*Staff*

**513(F) STUDIO I: PHOTOGRAPHY** (0-6-3)
See Arts 501.

*Winningham, G.*

**514(S) STUDIO I: PHOTOGRAPHY** (0-6-3)
See Arts 501.

*Staff*

**515(F) STUDIO I: FILMMAKING** (0-6-3)
See Arts 501.

*Huberman, B.*

**516(S) STUDIO I: FILMMAKING** (0-6-3)
See Arts 501.

*Staff*

**520(F) STUDIO II: PAINTING** (0-12-6)
The same as Arts 501-516 with increased credit hours.

*Staff*

**521(S) STUDIO II: PAINTING** (0-12-6)
See Arts 520.

*Staff*

**522(F) STUDIO II: SCULPTURE** (0-12-6)
See Arts 520.

*Smith, G.*

**523(S) STUDIO II: SCULPTURE** (0-12-6)
See Arts 520..

*Smith, G.*

**524(F) STUDIO II: DRAWING** (0-12-6)
See Arts 520.

*Staff*

**525(S) STUDIO II: DRAWING** (0-12-6)
See Arts 520.

*Staff*

**530(F) STUDIO II: PRINTMAKING** (0-12-6)
See Arts 520.

*Staff*

**531(S) STUDIO II: PRINTMAKING** (0-12-6)
See Arts 520.

*Staff*

**532(F) STUDIO II: PHOTOGRAPHY** (0-12-6)
See Arts 520.

*Winningham, G.*

**533(S) STUDIO II: PHOTOGRAPHY** (0-12-6)
See Arts 520.

*Winningham, G.*

**534(F) STUDIO II: FILMMAKING** (0-12-6)
See Arts 533.

*Huberman, B.*

**535(S) STUDIO II: FILMMAKING** (0-12-6)
See Arts 520.

*Huberman, B.*

**546(F) STUDIO III: PHOTOGRAPHY** (0-18-9)
See Arts 540.

*Winningham, G.*

**547(S) STUDIO III: PHOTOGRAPHY** (0-18-9)
See Arts 540.

*Winningham, G.*

**548(F) STUDIO III: FILMMAKING** (0-18-9)
See Arts 540.

*Huberman, B.*

**549(S) STUDIO III: FILMMAKING** (0-18-9)
See Arts 540.

*Huberman, B.*

*Theater Courses*

**227 SPECIAL PROBLEMS** (3-0-3)
Topics in theater production, history, or literature tailored to the individual student. Prerequisite: permission of instructor.

*Havens, N.*

**228 SPECIAL PROBLEMS** (3-0-3)

*Havens, N.*

**229 SPECIAL PROBLEMS** (3-0-3)
See Thea 227.

*Havens, N.*

**301(F) ACTING I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Development of the actor's technique through exercises in body work, concentration, creative imagination, sensory perception, and improvisation. Prerequisite: permission of instructor.

*Havens, N.*

**302(S) ACTING II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Script analysis, characterization, work on acting roles. Prerequisite: permission of instructor.

*Havens, N.*

**430 SPECIAL PROBLEMS: PLAYWRITING** (3-0-3)
Prerequisite: permission of instructor.

*Havens, N., Dubay, B.*

**431 SPECIAL PROBLEMS: ADVANCED PLAYWRITING** (3-0-3)
Prerequisite: Permission of instructor

*Havens, N., Dubay, B.*

**432 SPECIAL PROBLEMS** (3-0-3)
See Thea 430.

*Havens, N.*

# Asian Studies

**Professors Smith, Tyler, and von der Mehden**
**Associate Professors Klein and Wilson**
**Assistant Professor Qian**
**Adjunct Professor Mitchell**
**Instructors Chen, Sato, and Yang**

*Degree Offered:* B.A.

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.

**Requirements:** The undergraduate Asian Studies major will consist of thirty hours or more of course work. All majors must take the core course, Humanities 211 (cross-listed as Religion 211 and History 206), and nine additional courses drawn from at least three of the departments offering courses in Asian Studies. At least six of these courses must be chosen from the 300 level or above, and no more than four semesters of Asian languages may be counted towards the major.

One or more independent reading courses taught by Asian Studies faculty in these departments may be counted towards the major, although any changes in the requirements for the major must be approved by the Asian Studies Committee.

Majors are required to take at least one year of an Asian language. They may explore opportunities beyond the courses in Chinese, Japanese, Sanskrit, Korean, and Tibetan offered on this campus.

*Courses:*

## Anthropology

**353 CULTURES OF INDIA** (3-0-3)

*Tyler, S.*

## Art and Art History

**209 INTRODUCTION TO ASIAN ART** (3-0-3)
Not offered 1993-94.

*Wilson, R.*

**361 ARTS OF CHINA** (3-0-3)
Not offered 1993-94.

*Wilson, R.*

**365 ARTS OF JAPAN** (3-0-3)
Not offered 1993-94.

*Wilson, R.*

**482 BUDDHISM: ART AND FAITH** (3-0-3)
Not offered 1993-94.

*Wilson, R.*

## History

**250/450 CHINESE CULTURE** (3-0-3)

*Smith, R.*

**341 EARLY CHINESE HISTORY** (3-0-3)

*Smith, R.*

**342 MODERN CHINESE HISTORY** (3-0-3)

*Smith, R.*

**343 CONTEMPORARY CHINA** (3-0-3)
Not offered 1993-94.

*Smith, R.*

**353 THE COMPARATIVE MODERNIZATION OF CHINA AND JAPAN** (3-0-3)
Not offered 1993-94.

*Smith, R.*

## Humanities

**211 INTRODUCTION TO ASIAN CIVILIZATIONS** (3-0-3)
(Cross-listed as Hist 206 and Reli 211)

*Klein, A., Qian, N., Smith, R.*

## Linguistics

*Linguistics Courses*

**330(F) INTRODUCTION TO TRADITIONAL CHINESE POETRY** (3-0-3)
A critical survey of traditional Chinese poetry and poetics, focusing on important literary texts and some theoretical essays. Topics will include "words and meanings," the formation and transformation of poetic genres, the rhetorical function of figurative language, allegory, poetic allusions and intertextuality, poems by women (and poems in women's voices), etc. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required (cross-listed as Huma 330).

*Qian, N.*

**332(S) CHINESE FILMS AND MODERN CHINESE LITERATURE** (3-0-3)
This course is designed to approach modern Chinese literature through visual images (Chinese films, subtitled in English). All films shown for this course will be adaptations from modern Chinese fiction; therefore, our analysis of the films will be connected to the original texts. The discussions will be conducted on the basis of literary history and narrative structure, with explicit attention given to narratology and movie theory. Films will be shown outside of class; in-class time will be devoted to lectures and discussions of the films. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required. (cross-listed as Huma 332)

*Qian, N.*

**334 INTRODUCTION TO TRADITIONAL CHINESE NARRATIVE** (3-0-3)
This course will introduce the basic features of traditional Chinese narrative, including historical records, biographies, novels, and short stories. Our attention will focus primarily upon narrative structure and characterization. We will analyze the texts using Western as well as Chinese literary theories. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required (cross-listed as Huma 334).

*Qian, N.*

**440 THE CHINESE NOVEL** (3-0-3)

*Chen, L.*

**443 TOPICS IN CHINESE LINGUISTICS** (3-0-3)

*Chen, L.*

*Chinese Courses*

**201 ELEMENTARY CHINESE** (3-1-4)

*Chen, L.*

**202 ELEMENTARY CHINESE** (3-1-4)

*Chen, L.*

**301 INTERMEDIATE CHINESE** (3-1-4)

*Chen, L.*

**302 INTERMEDIATE CHINESE** (3-1-4)

*Chen, L.*

*Japanese Courses*

**101 ELEMENTARY JAPANESE** (3-1-4)

*Sato, H.*

**102 ELEMENTARY JAPANESE** (3-1-4)

*Sato, H.*

**201 INTERMEDIATE JAPANESE** (3-0-3)

*Sato, H.*

**202 INTERMEDIATE JAPANESE** (3-0-3)

*Sato, H.*

**301 ADVANCED JAPANESE READING** (3-0-3)

*Sato, H.*

**302 ADVANCED JAPANESE READING** (3-0-3)

*Sato, H.*

*Korean Courses*

**101 ELEMENTARY KOREAN** (3-0-3)
*Yang, I.*

**102 ELEMENTARY KOREAN** (3-0-3)
*Yang, I.*

**201 INTERMEDIATE KOREAN** (3-0-3)
*Yang, I.*

**202 INTERMEDIATE KOREAN** (3-0-3)
*Yang, I.*

*Sanskrit Courses*

**301 INTRODUCTION TO SANSKRIT** (3-0-3)
*Mitchell, E.*

**302 INTRODUCTION TO SANSKRIT** (3-0-3)
*Mitchell, E.*

*Political Science*

**351 POLITICS OF SOUTHEAST ASIA** (3-0-3)
*von der Mehden, F.*

**353 POLITICS OF CHINA AND JAPAN** (3-0-3)
Not offered 1993-94.
*von der Mehden, F.*

**520 APPROACHES TO COMPARATIVE GOVERNMENT** (3-0-3)
*von der Mehden, F.*

*Religious Studies*

**322/572 INTRODUCTION TO BUDDHISM** (3-0-3)
*Klein, A.*

**325 BUDDHISM AND THE FEMALE** (3-0-3)
Not offered 1993-1994.
*Klein, A.*

**470/570 BUDDHIST WISDOM TEXTS** (3-0-3)
*Klein, A.*

**471/571 BUDDHIST MEDITATION THEORY** (3-0-3)
*Klein, A.*

# Biochemistry and Cell Biology

## The Wiess School of Natural Sciences

**Professor Matthews,** *Chair*
**Professors Beckingham, Bennett, Campbell, Glantz, Olson, Palmer, Phillips, Rudolph, Schroepfer, and Stewart**
**Assistant Professors Braam, Gibson, Gomer, Gustin, Nikonowicz, and Stern**
**Lecturer/ Laboratory Coordinator Cooper**
**Adjunct Professor Quiocho**
**Adjunct Assistant Professor King**

# Ecology and Evolutionary Biology

## The Wiess School of Natural Sciences

**Professor Harcombe,** *Chair*
**Professors Fisher, Philpott, Sass, Strassmann, Subtelny, and Ward**
**Assistant Professor Queller**
**Adjunct Professors Cameron, Turner**
**Huxley Fellow Evans**
**Lecturers/Laboratory Coordinators Caprette, Johnson**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** 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. B.A. students may elect a major in biology or biochemistry and select courses from this range of topics.

The Biosciences curriculum was reorganized in 1989. Students who entered Rice before the fall semester of 1989 have the option of satisfying the requirements in place at the time that they entered or of following the curriculum below. They should consult the General Announcements from previous years for statements of requirements and rules covering the transition from the old to the new curriculum. Students who entered in the fall semester of 1989 or subsequently must follow the new curriculum as stated below.

# Biosciences Undergraduate Program

All biosciences majors must complete the following courses:

Math 101, 102, 211; Chem 101, 102, 105, 211, 212, 213, 214; Phys 125, 126; biosciences 201, 202, 301, 302; Bios lab courses 211, 212, 213, 311, and any two of the following: Bios 312, 313, 314, 315, 316, 317, or 318, or Stat 305. Math 111 ***and*** 112 may be substituted for Math 101; Chem 111, 112 may be substituted for Chem 101, 102; Phys 101, 102 ***and*** 132 may be substituted for Phys 125, 126.

**Biochemistry** majors must also take: Bios 352 (*or Chem 311, 312*); Bios 481; two additional biosciences courses listed as Group A (see course listings for designation as Group A or B); an additional course, for 3 or more credits, at the 200 level or higher in mathematics, physics, computer science, statistics, or computational and applied mathematics; and an additional advanced course, for 3 or more credits, in either chemistry or biosciences Group A. One semester of Bios 401 or 402 may be counted as one of the courses from Group A, provided that the faculty supervisor is from the Department of Biochemistry & Cell Biology. The recommended courses for those taking a limited number of Group A courses are Bios 341 and 344.

**Biology** majors must also take: two biosciences courses from Group A; one biosciences course from Group B; and three additional biosciences courses from Groups A and/or B. Stat 305 may be substituted for one of the three latter courses. It is recommended, particularly for those planning research careers in cell or molecular biology, that Bios 352 be chosen as one of these courses. For those planning research careers in ecology or evolutionary biology, Stat 305 is recommended. One semester of Bios 401 or 402 may be counted as one of the courses from Group A ( if the faculty supervisor is from the Department of Biochemistry and Cell Biology ) or from Group B (if the faculty supervisor is from the Department of Ecology and Evolutionary Biology). The recommended courses for those taking a limited number of Group A courses are Bios 341, 344, and 352.

It is recommended that the 100-level mathematics and chemistry courses be taken in the freshman year; that the 100-level physics courses and Bios 201, 202 be taken in either the freshman or the sophomore year; and that Chem 211, 212, 213, 214 and Bios 211, 212, 213 be taken in the sophomore year. Those with a weak background in chemistry should complete Chem 101, 102 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, 102, 132 may be taken instead by those wishing to preserve the option of majoring in a subject for which Phys 101, 102, and 132 are required. If Stat 305 is used to satisfy one of the lab course requirements, it may not also be used to satisfy one of the lecture course requirements.

An undergraduate major in biosciences must have 48 semester hours in courses numbered 300 or higher to obtain a Bachelor of Arts degree.

Students must also complete no fewer than 60 semester hours outside the departmental requirements, for a total program of at least 129 semester hours (128 if the Phys 101, 102, 132 option is chosen; 132 if the Math 111, 112 option is chosen). These must include the required foundation courses and other courses needed to satisfy the distribution requirements.

Undergraduate majors are encouraged but not required to pursue independent supervised research in Bios 401 and 402. Concurrent registration in Bios 411/412 and a thesis are required.

**Coherent Minor.** Students seeking a coherent minor in biological sciences are advised to take either Bios 122, 201, and 202 or Bios 201, 202 and either Bios 329 or 336.

## Accelerated Rice B.A./Ph.D. 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 Ph.D. 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 Ph.D. degree approximately three years after obtaining their B.A. 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 a half years (or their equivalent) of undergraduate studies at Rice before a student can be considered for enrollment in the accelerated Ph.D. program. To continue in the program, the following requirements must be fulfilled: (1) The student *must* take the GRE before receiving the B.A. degree and receive scores greater than 80% in the Analytical and Quantitative Tests. (2) Students must also maintain a B average in all courses in their senior year, and the usual graduate requirements will apply for continuation in the program.

# Graduate Program in Biochemistry and Cell Biology

*General*

Admission for graduate study in the Department of Biochemistry and Cell Biology requires: (1) a bachelor's degree in biochemistry, biology, chemistry, or the equivalent; and (2) demonstrated quality and motivation as indicated by the student's previous academic record, Graduate Record Examination scores, and recommendations. Although the department offers an M.A. degree, only on rare occasions will a student who does not intend to pursue the Ph.D. degree be admitted to the graduate program.

The advanced degree requirements given on the following pages are those established by the Department of Biochemistry and Cell Biology and are above and beyond the general requirements of Rice University for the M.A. and Ph.D. degrees. Students should be familiar with the general university regulations for graduate students that are listed in the Rice University General Announcements. Any changes in these policies and/or regulations will be brought to your attention by the Office of Graduate Studies and/or the Department of Biochemistry and Cell Biology.

**A. Doctor of Philosophy Degree Program in Biochemistry and Cell Biology.**

Most of the formal course studies will be completed in the first year of residence so as to allow the student to commence thesis research at the end of the second semester of residence. During the first year all graduate students will be advised by the Graduate Advisory Committee (current composition: Olson, Phillips and Gomer). This committee will determine the formal course program to be pursued by each student during the first year in residence. All students will be required to complete the following courses *(unless equivalent educational experience has been obtained previously):*

| | |
|---|---|
| Bios 301 | Introductory Biochemistry (lecture) |
| Bios 302 | Introductory Biochemistry (lecture) |
| Bios 311, 312, 313 | Laboratory for Experimental Biosciences (laboratory) |
| Bios 341 | Cell Biology (lecture) |
| Bios 344 | Molecular Biology and Genetics (lecture) |
| Bios 352 | Physical Chemistry for the Biosciences (lecture) |
| Bios 575 | Introduction to Research |
| Bios 581, 582 | Graduate Seminar in Biochemistry |
| Bios 583, 584 | Graduate Seminar in Biochemistry (first and second years) |

Students will be responsible for the content of these course programs in their Admission to Candidacy Examination (see below).

In addition to these courses, students will be required to take a minimum of two 400-level bioscience courses in fields that are fundamental to their graduate education. These requirements will be determined by the Graduate Advisory Committee. There will be an evaluation of previous course studies, and any deficiencies must be corrected, usually in the first year. Once the student selects a thesis adviser, the individual faculty adviser may require additional course work of a more specialized nature. All such additional courses must be completed prior to the Admission to Candidacy Examination.

Students will gain experience in teaching by serving as discussion leaders and graders in sections of undergraduate courses during their second year of residence. Saftey and ethics orientation will be provided during the first year of residence

**Evaluation of Progress in Graduate Study in Biochemistry and Cell Biology.**

Six procedures are used in the evaluation of a graduate student's progress:

1. At the end of each semester the faculty will review the student's performance in formal courses. In addition, at the completion of the first two semesters in residence, each student's course record, motivation, and general competence will be reviewed at a meeting of the entire faculty. Students are required to maintain at least a B (3.0) average and to demonstrate outstanding motivation, research ability, and productivity in research to be allowed to continue in the program. In addition, any grade of C+ or below will require that the graduate advisory committee review the situation, and the student may have to retake the course.

2. Continual review of research progress by the thesis research adviser.

3. A yearly research progress review by the three members of the student's Research Progress Review Committee (see below).

4. Annual presentation of research progress in Bios 581/582. All students register in Bios 581 and Bios 582 each year. All students present their research at least once each year until they have submitted a completed doctoral thesis. The scheduling of a given student's seminar will be made by the faculty member responsible for this seminar program.

5. An oral "Admission to Candidacy Examination," completed prior to the beginning of the student's sixth semester of residence.

6. Evaluation of Ph.D. thesis by thesis committee and final oral defense of thesis.

**B. Master of Arts Degree Program in Biochemistry and Cell Biology.**

The course requirements for a candidate for the Master of Arts degree will be determined by the Graduate Advisory Committee as outlined in Part A. As in the case of Ph.D. candidates, all students complete *(unless equivalent educational experience has been obtained previously)* the following courses:

| | |
|---|---|
| Bios 301 | Introductory Biochemistry (lecture) |
| Bios 302 | Introductory Biochemistry (lecture) |
| Bios 311, 312, 313 | Laboratory for Experimental Biosciences (laboratory) |
| Bios 341 | Cell Biology (lecture) |
| Bios 344 | Molecular Biology and Genetics (lecture) |
| Bios 352 | Physical Chemistry for the Biosciences (lecture) |
| Bios 575 | Introduction to Research |
| Bios 581, 582 | Graduate Seminar in Biochemistry |
| Bios 583, 584 | Graduate Seminar in Biochemistry (first and second years) |

In addition to these courses, students will be required to take a minimum of two 400-level bioscience courses in fields that are fundamental to their graduate education. These requirements will be determined by the Graduate Advisory Committee. There will be an evaluation of previous course studies, and any deficiencies must be corrected, usually in the first year. Once a student selects a thesis adviser, the individual faculty adviser may require additional course work of a more specialized nature.

Students must achieve an overall average of B in the formal biosciences courses to be a candidate for the M.A. degree. The student's overall performance will be evaluated by the faculty as a whole after the second semester in residence.

One progress review session will be held for M.A. students during their second full year of residence. This research review session will be identical in format to that for the Ph.D. students but, in the case of M.A. students, replaces the admission to candidacy examination since no other preliminary examination will be held prior to the final oral defense of the master's thesis. Master of Arts degree candidates are required to submit a formal written thesis. The final examination will consist of a public oral presentation of the research work to the thesis committee members and other interested parties followed by a question and answer session with the thesis committee.

## Graduate Program in Ecology and Evolutionary Biology

The graduate program is open to qualified applicants who hold a bachelor's degree or equivalent. Prospective graduate students must take the Graduate Record Examination, including the advanced examination in biology. The entering student generally is expected to have a strong background in biology; in addition, completion of courses in physics (one year), mathematics (including calculus), chemistry (including organic), and biochemistry is required. The above requirements do not preclude admission of qualified applicants who have majored in areas other than biology. Any deficiencies should be made up no later than the first year of residence in graduate study, including the first summer. It is strongly recommended that deficiencies be made up during the summer preceding the first semester of residence. An examination is administered during the first year. Students entering with the master's degree are normally exempt from this examination.

**Requirements for the Degree of Master of Arts.** The degree of Master of Arts may be obtained after the completion of 30 semester hours of graduate study, six hours of which must be earned by the completion and public defense of a thesis embodying the results of an original investigation.

**Requirements for the Degree of Doctor of Philosophy.** In addition to the general university requirements for advanced degrees (page 129), the following departmental requirements must also be met.

1. Three or more years of graduate study with at least two years in residence at Rice

2. An original investigation worthy of publication in a scientific journal and a doctoral thesis as described in the *General Announcements*
3. A grade average of "B" or better in courses taken in the department and satisfactory grades in courses taken outside the department
4. Satisfactory performance in teaching assignments for at least two semesters
5. Satisfactory performance on a candidacy examination administered by the advisory committee; this examination may be oral and/or written
6. Public defense of the thesis
7. Presentation of a departmental seminar on the candidate's research

**Fellowships.** A limited number of graduate fellowships are available on a competitive basis.

*Biological Sciences Curriculum*

**122(S) FUNDAMENTAL CONCEPTS IN BIOLOGY** (3-0-3)
An introduction for nonscience, nonengineering majors to specific concepts in modern biology from the molecular to organismal level. Topics may include recombinant DNA, genetic engineering, AIDS, and cardiovascular disease.

*Schroepfer, G., Stern, M.*

**201(F) INTRODUCTORY BIOLOGY** (3-0-3)
The first in an integrated sequence of four courses (Bios 201, 202, 301, 302). Chemistry and energetics, cell physiology, cell biology, organ system physiology, immunology, and plant physiology. Corequisite: Chem 101 or consent of instructor.

*Gustin, M., Philpott, C.*

**202(S) INTRODUCTORY BIOLOGY** (3-0-3)
The second in an integrated sequence of four courses (Bios 201, 202, 301, 302). Transmission genetics, molecular genetics, development, behavior, evolution, ecology, and diversity. Prerequisite: Bios 201 or consent of instructor.

*Sass, R., Subtelny, S.*

**211(F) INTRODUCTORY LAB MODULE IN BIOLOGICAL SCIENCES** (1-4-1)
Lab days will be assigned at the first Monday lecture. Course taught in the first half of the semester. Prerequisite: current or prior enrollment in Bios 201.

*Caprette, D.*

**212 INTRODUCTORY LAB MODULE IN CELL BIOLOGY AND DEVELOPMENTAL BIOLOGY** (1-4-1)
Taught in the second half of the semester. May be taken following Bios 211 in the fall or in the spring semester. Limited enrollment. Prerequisite: Bios 211.

*Caprette, D.*

**213 INTRODUCTORY LAB MODULE IN ECOLOGY AND EVOLUTIONARY BIOLOGY** (1-4-1)
Experimental, laboratory and field studies of natural history, evolution, and animal behavior. Computer simulations of population genetics. Course will begin Oct. 18 in the fall semester and Mar. 7 in the spring semester. May be taken following Bios 211 in the fall or in the spring semester. Enrollment limited to 60. Everyone must attend Monday lecture and one afternoon lab section. Prerequisite: Bios 211.

*Johnson, K.*

**301(F) INTRODUCTORY BIOCHEMISTRY** (3-0-3)
The third in an integrated sequence of four courses (Bios 201, 202, 301, 302). Structure and function of proteins, enzymes, and nucleic acids. Molecular Biology. Prerequisites: Chem 211, 212, Bios 201, 202 or consent of instructor.

*Gomer, R., Olson, J.*

**302(S) INTRODUCTORY BIOCHEMISTRY** (3-0-3)
The final in an integrated sequence of four courses (Bios 201, 202, 301, 302). Introduction to metabolism, membranes, electron transport, oxidative phosphorylation, general metabolism and regulation. Prerequisite: Bios 301 or consent of instructor.

*Palmer, G., Rudolph, F.*

**310 INDEPENDENT STUDY FOR UNDERGRADUATES** (0-TBA-credit variable: from 1 to 4 hours per semester)
An independent program of study for students with previous training in the biosciences. A research paper is a required part of this course. This course does not count toward credit for a biology or biochemistry major. Prerequisite: Bios 201, 202, 3 credits of Bios lab. Requires permission of supervising faculty member and the departmental chair.

*Harcombe, P., Matthews, K.*

**311 LAB MODULE IN PROTEIN PURIFICATION** (1-4-1)
Introduction to biochemical laboratory techniques with an emphasis on study of proteins. Course taught for one-half semester. Enrollment limited to 24 per section. Prerequisite: Bios 211 and 212, prior or current enrollment in Bios 301 or permission of instructor.

*Cooper, B.*

**312 LAB MODULE IN MOLECULAR BIOLOGY I** (1-4-1)
Introduction to microbiological and molecular biology techniques. Course taught for one-half semester. Enrollment limited to 28 per section. Prerequisites: Bios 212 and 311 and current or prior enrollment in Bios 301 or permission of instructor.

*Cooper, B., Bennett, G., Gomer, R.*

**313(S) LAB MODULE IN MOLECULAR BIOLOGY II** (1-4-1)
Introduction to DNA sequencing techniques. Course taught for one-half semester. Enrollment limited to 28 per section. Prerequisites: Bios 311 or permission of instructor.

*Cooper, B., Bennett, G., Gomer, R.*

**314(S) LAB MODULE IN CELL AND DEVELOPMENTAL BIOLOGY** (1-4-1)
Experiments in the regulation of early development, cell recognition, differentiation, intracellular organization and transport. Meets two days per week starting in February. Enrollment limited to 20. Prerequisites: Bios 212 and Bios 341.

*Caprette, D.*

**315(S) LAB MODULE IN PHYSIOLOGY** (1-4-1)
A laboratory-oriented short course in membrane, nerve, and muscle physiology. Meets two days per week for four weeks starting in January. Enrollment is limited to 28 per section. Prerequisites: Bios 211, 212 and 301.

*Caprette, D.*

**316(F) LAB MODULE IN ECOLOGY** (1-4-1)
Field and lab experiments in ecology. Prerequisite: Bios 213. Corequisite: Bios 325.

*Harcombe, P.*

**317(S) LAB MODULE IN BEHAVIOR** (1-4-1)
Field experiments in behavior. Work in teams to solve the mystery of breeding systems in wild mockingbirds and grackles. Prerequisites: Bios 213 and 321.

*Strassmann, J.*

**318(S) LAB MODULE IN MICROBIOLOGY** (1-4-1)
Self-paced studies include the isolation, culture, and identification of bacteria from mixed cultures, using a variety of culture and observation techniques. Includes a study of water quality in our own Braes Bayou. Enrollment limited to 80. Starts following mid-semester break. Prerequisite: Bios 212.

*Caprette, D.*

**321(F) ANIMAL BEHAVIOR** (3-0-3) Group B.
Evolutionary theory is used to evaluate behavioral adaptations of organisms to their environment. Prerequisites: Bios 202 or permission of instructor.

*Johnson, K., Strassmann, J.*

**322(S) ECOSYSTEM DYNAMICS** (3-0-3) Group B.
A systems analysis of the earth from a biological perspective stressing biogeochemical cycles and global change. Prerequisites: Bios 201-202 or consent of instructor.

*Sass, R.*

**324(S) WETLAND ECOSYSTEMS** (3-0-3) Group B.
A study of coastal wetland systems including flood plains, freshwater, brackish, and saline marshes and consideration of estuarine and river interaction with coastal marine waters. Prerequisites: Bios201, 202, 329 or permission of instructor.

*Fisher, F.*

**325(F) ECOSYSTEM BIOLOGY** (4-0-4) Group B.
Analysis of population dynamics, species interactions, plant and animal community organization, and ecosystem function. Prerequisites: Bios 201, 202 or junior standing in a science/engineering major or consent of instructor.

*Harcombe, P.*

**329(F) ANIMAL DIVERSITY** (3-0-3) Group B.
The evolution and systematics of the animal kingdom with consideration of the functional morphology, comparative physiology, and behavior. Prerequisites: Bios 201 and 202 or permission of instructor.

*Fisher, F.*

**334(S) EVOLUTION** (3-0-3) Group B.
Principles of biological evolution. Topics include natural selection, adaptation, molecular evolution, formation of new species, the fossil record, biogeography, and principles of classification. Prerequisites: Bios 201, 202 or permission of instructor.

*Queller, D.*

**336(S) PLANT DIVERSITY** (3-0-3) Group B.
Analysis of the physiology, morphology, and evolution of plants in terms of adaptation to environment. Not offered every year. Prerequisites: Bios 201 and 202.

*Evans, J.*

**341(F) CELL BIOLOGY** (3-0-3) Group A.
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. Prerequisites: Bios 201 and 202. Corequisite: Bios 301 or permission of instructors.

*Braam, J., Gustin, M.*

**343(F) DEVELOPMENT** (3-0-3) Group A.
Analysis of the processes and principles of development as seen in a broad spectrum of eukaryotic organisms. Prerequisites: Bios 201 and 202.

*Subtelny, S.*

**344(S) MOLECULAR BIOLOGY AND GENETICS** (3-0-3) Group A.
Analysis of transmission, function, and molecular structure of the genetic material. Prerequisites: Bios 201, 202, and 301 or consent of instructor.

*Stewart, C.*

**352(S) PHYSICAL CHEMISTRY FOR THE BIOSCIENCES** (3-0-3) Group A.
Selected aspects of physical chemistry as it relates to the biosciences, including thermodynamics, reaction rate theory, quantum mechanics and atomic and molecular structure. Prerequisites: Chem 211, 212, Phys 101, 102 , Bios 301, or permission of instructor.

*Olson, J., Nikonowicz, E.*

**401(F) UNDERGRADUATE HONORS RESEARCH** (0-15-5)
Open only to undergraduate majors with the permission of the research supervisor and chair. Prerequisites: Bios 201, 202, 301, 302 and concurrent enrollment in Bios 411. Registration for Bios 401/402 implies a commitment to participate in research for at least two semesters.

*Staff*

**402(S) UNDERGRADUATE HONORS RESEARCH** (0-15-5)
See Bios 401. Concurrent enrollment in Bios 412.

*Staff*

**411(F) UNDERGRADUATE RESEARCH SEMINAR** (1-0-1)
Discussion of current research in area under investigation. Corequisite: enrollment in Bios 401.

*Matthews, K., Harcombe, P.*

**412(S) UNDERGRADUATE RESEARCH SEMINAR** (1-0-1)
See Bios 411. Corequisite: enrollment in Bios 402.

*Matthews, K., Harcombe, P.*

**421(S) NEUROBIOLOGY** (3-0-3) Group A.
Cellular and molecular mechanisms of nervous system function. Emphasis on membrane and synaptic biophysics, sensory and motor systems, neuronal plasticity, and development. Prerequisites: Bios 201, 202, 301, 302.

*Glantz, R.*

**422(S) ENDOCRINE PHYSIOLOGY** (3-0-3) Group A.
Molecular and cellular mechanisms of hormone synthesis and of target cell responses; hormonal interactions in mammalian homeostasis. Prerequisites: Bios 201, 202, 301, 302.

*Campbell, W.*

**423(F) IMMUNOBIOLOGY** (3-0-3) Group A.
Cellular and molecular basis of immune function in mammals. Prerequisites: Bios 201, 202, 301, 302.

*Campbell, W.*

**424(S) MICROBIOLOGY AND BIOTECHNOLOGY** (3-0-3) Group A.
Structure and function of microorganisms with emphasis on their environmental, industrial and medical importance. Prerequisites: Bios 201, 202, 301 or consent of instructor. Corequisite: Bios 302 or consent of instructor.

*Bennett, G.*

**432(S) ADVANCED EVOLUTIONARY BIOLOGY** (3-0-3) Group B.
In-depth study of selected topics in evolutionary theory and their application to behavior and adaptation. Topics may include kin selection, sexual selection, molecular evolution, evolution of disease, systematics, and population genetics. Prerequisites: Bios 201, 202, and either 321 or 334.

*Staff*

**442(S) SPECIALIZED CELL FUNCTION** (3-0-3) Group A.
The structure/function specializations seen in selected types of cells and tissues in higher animals. Prerequisites: Bios 201, 202, 301, and 302. Bios 341 is recommended as a prerequisite.
*Philpott, C.*

**445(F) ADVANCED MOLECULAR BIOLOGY AND GENETICS** (3-0-3) Group A.
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. Prerequisites: Bios 201, 202, 301, and 344 or permission of instructor.
*Beckingham, K., Stern, M.,*

**481(F) MOLECULAR BIOPHYSICS** (3-0-3) Group A.
Examination, at an intermediate level, of interaction of light with matter, UV-visible absorption, naturally and magnetically induced optical activity, fluorescence, EXAFS, EPR, NMR of biomolecules, X-ray diffraction and crystallography, neutron scattering, electron microscopy, theoretical protein dynamics, protein folding, fast kinetics, and protein engineering. Prerequisites: Bios 301, 352, or consent of instructor.
*Palmer, G., Phillips, G.*

**482(S) ADVANCED MOLECULAR AND COMPUTATIONAL BIOPHYSICS** (2-3-3) Group A.
Emphasis on advanced spectroscopy or structure analysis including computational aspects of molecular biophysics. Spectroscopy and structure are emphasized in alternate years. Not offered in 1993-94.
***Spring 1995. Structure Analysis.*** Advanced treatment of the areas of X-ray diffraction and crystallography, neutron scattering, electron microscopy, theoretical protein dynamics, protein folding, fast kinetics, and protein engineering.
*Staff*
***Spring 1996. Spectroscopy.*** Advanced treatment of interaction of light with matter, absorption, naturally and magnetically induced optical activity, fluorescence, fast kinetics, EXAFS, EPR, NMR of biomolecules.
Prerequisites: Bios 301, 352, working knowledge of a programming language such as Fortran, C, Basic, Matlab, or Pascal, or consent of instructor.
*Staff*

**541 SPECIAL TOPICS IN ECOLOGY AND EVOLUTIONARY BIOLOGY** (3-0-3)
*Staff*

**575(F) INTRODUCTION TO RESEARCH IN BIOCHEMISTRY AND CELL BIOLOGY** (1-0-1)
Introduction of first-year graduate students to the research programs and laboratories of individual faculty members.
*Staff*

**581(F) GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY** (1-0-1)
A discussion of selected research topics. Required of all Biochemistry and Cell Biology graduate students.
*Matthews, K.*

**582(S) GRADUATE SEMINAR IN BIOCHEMISTRY AND CELL BIOLOGY** (1-0-1)
See Bios 581.
*Matthews, K.*

**583(F) GRADUATE SEMINAR FOR FIRST- AND SECOND-YEAR STUDENTS IN BIOCHEMISTRY and CELL BIOLOGY** (2-0-2)
Review of literature on current biosciences research.

*Staff*

**584(S) GRADUATE SEMINAR FOR FIRST- AND SECOND-YEAR STUDENTS IN BIOCHEMISTRY AND CELL BIOLOGY** (2-0-2)
See Bios 583.

*Staff*

**585 GRADUATE SEMINAR IN ECOLOGY & EVOLUTIONARY BIOLOGY** (1-0-1)
Faculty and student presentations on current research. Required of all EEB graduate students.

*Harcombe, P.*

**591 GRADUATE TEACHING** (1-0-1)
Supervised instruction in teaching ecology and evolutionary biology. Prerequisite: Graduate standing in ecology and evolutionary biology.

*Harcombe, P.*

**611(F) RESEARCH SEMINAR** (3-0-3)
Discussion of individual laboratory research or current topics in particular areas. Corequisite: Bios 800 or permission of instructor.

*Staff*

**612(S) RESEARCH SEMINAR** (3-0-3)
Continuation of Bios 611.

*Staff*

**621(F) THESIS SEMINAR** (1-0-1)

*Staff*

**622(S) THESIS SEMINAR** (1-0-1)

*Staff*

**800 GRADUATE RESEARCH** (Variable).

*Staff*

# Chemical Engineering

## The George R. Brown School of Engineering

**Professor C. A. Miller,** *Chair*
**Professors Armeniades, Davis, Dyson, Hellums, Hightower, Hirasaki, Kobayashi, McIntire, Robert, and Zygourakis**
**Adjunct Professor G. D. Fisher**
**Associate Professors San and Shanks**
**Adjunct Associate Professors Carnahan and House**
**Assistant Professors Badgwell, W. Chapman, and Mikos**
**Adjunct Assistant Professors Hokanson and Moorhead**

*Degrees Offered:* B.A., B.S., M.Ch.E., M.S., Ph.D.

**Undergraduate Program.** The undergraduate curriculum in chemical engineering is designed to provide a sound scientific and technical basis for further professional development. Concurrently, the student has the opportunity to concentrate on a particular technical specialty such as applied mathematics, biomedical engineering, biotechnology, environmental quality, kinetics and catalysis, chemical reaction engineering, engineering economics, petroleum production, solid state materials, or polymer science and engineering.

In the four-year curriculum, a student may qualify for either the Bachelor of Arts degree or the Bachelor of Science degree. The Bachelor of Arts program is highly flexible and allows a student to pursue other areas of interest with or without a double major. The Bachelor of Science program has a higher content of required scientific and professional courses. On completion of either bachelor's program, a student is eligible to apply for a fifth year of specialized study leading to the degree of Master of Chemical Engineering. The undergraduate curriculum is designed so that outstanding students interested in careers in research and teaching may enter graduate school after either bachelor's degree.

The Department of Chemical Engineering specifies 76 semester hours for the B.A. degree, prerequisites and laboratory courses included. In addition to these requirements, students must also satisfy the distribution requirements and complete no fewer than 59 semester hours outside the departmental requirements for a total of at least 135 semester hours.

The department specifies 102 semester hours for B.S. degree which is accredited by the Accreditation Board for Engineering and Technology. Students enrolled in the B.S. program must take:

Chemistry 111, 112 (or 101,102), 105, 211, 212, 213, 214, 311, 312, 313;
Chemical Engineering 301, 302, 343, 390, 401, 402, 403, 404, 411, 412, 443, 444, 470;
Mathematics 101, 102, 211, 212 or equivalent honors courses;
Computational and Applied Mathematics 335 (or Mathematics 381);
Physics 101, 102, and 132;
Computing requirements: four hours of Computational and Applied Mathematics 223;

Mechanical Engineering 211;
An approved basic science course;
Two courses selected from Electrical Engineering 241, Materials Science 301, Civil Engineering 300, and Environmental Science and Engineering 534.

In addition to these courses, students must satisfy the distribution requirements and complete sufficient courses outside the departmental requirements for a total of at least 135 semester hours. A specific B.A. with double majors in chemical engineering and biochemistry is available. A new specific B.S. in chemical engineering plus an environmental engineering option is also offered. Both these elective options will be mentioned explicitly on one's transcript.

**Graduate Program.** Graduate study in chemical engineering can lead to the Master of Chemical Engineering, the Master of Science, or the Doctor of Philosophy. University requirements for the professional degree M.Ch.E. are given on page 130. The Department requires that at least six of the courses taken must be at the advanced level in chemical engineering. In addition, two semesters of chemical engineering design, courses in process control and computer science, and an approved mathematics course must have been taken at some time in the student's curriculum.

University requirements for the research degrees M.S. and Ph.D. are outlined on pages 129-130.

Candidates for the Master of Science degree are required to complete a minimum of 18 approved semester hours with high standing. They must also submit an original research thesis and defend it in a public oral examination.

Candidates for the Doctor of Philosophy degree must demonstrate competence in the areas of applied mathematics, thermodynamics, transport processes, and chemical kinetics and reactor design by passing qualifying examinations, normally during the first year of study. They must also complete a minimum of 36 approved semester hours with high standing and submit a thesis that provides evidence of their ability to carry out original research in a specialized area of chemical engineering. With departmental approval, the course requirements may be reduced to 24 hours for students already having an M.S. degree. The thesis must be defended in a public oral examination.

## Prerequisites for Undergraduate Chemical Engineering Courses

| | |
|---|---|
| Ceng 301 | Math 101,102; Chem 111, 112 (or 101,102); 1 hour credit in Caam 223 (MATLAB) |
| Ceng 302 | Ceng 301; co-/prerequisites Math 211, 212 and Caam 223 |
| Ceng 390 | Ceng 301; Math 211,212; co-/prerequisites Chem 311 and Ceng 343 |
| Ceng 401 | Phys 101,102; Ceng 302 |
| Ceng 402 | Ceng 401 |
| Ceng 403 | Ceng 302,390,402,411; co-/prerequisite Mech 211 |
| Ceng 404 | Ceng 403,412; co-/prerequisite Ceng 470 |
| Ceng 411 | Chem 311,312; Ceng 302 |
| Ceng 412 | Ceng 411 |
| Ceng 470 | Ceng 390,401,411 |

**Note:** With the *written* consent of the instructor, a student may register for a course without having completed the required prerequisite(s), but such consent can be expected only in unusual circumstances and will not carry forward. For example, if the instructor for Ceng 411 waives Chem 311 for a person, then the person, upon completing Ceng 411, may not proceed to Ceng 412 without the consent of that instructor, since Chem 311 is an implied prerequisite for Ceng 412.

## Chemical Engineering

*Chemical Engineering Courses*

**301(F) CHEMICAL ENGINEERING FUNDAMENTALS** (3-0-3)
Use of basic mathematical concepts, 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.
*Shanks, J.*

**302(S) SEPARATION PROCESSES** (3-3-4)
Analysis and design of single and multistage contacting operations involving binary and multicomponent systems.
*Dyson, D.*

**343(F) CHEMICAL ENGINEERING LAB** I (1-3-2)
Experiments demonstrating the principles presented in Ceng 301, 302, 390.
*Mikos, A.*

**390(F) KINETICS AND REACTOR DESIGN** (3-0-3)
Principles and significance of chemical kinetics; procedures for evaluating kinetic parameters from reaction rate data; application of these methods to design and predict the performance of various types of ideal and nonideal chemical reactors in both homogeneous and heterogenous systems.
*Hightower, J.*

**401(F) TRANSPORT PHENOMENA** I (3-0-3)
Fundamental principles of heat, mass, and momentum transport applied to the continuum analysis of macroscopic physical systems based on the continuum equations, and application in chemical engineering practice.
*Dyson, D.*

**402(S) TRANSPORT PHENOMENA** II (3-0-3)
Continuation of Ceng 401.
*Hellums, J.*

**403(S) EQUIPMENT DESIGN** (3-3-4)
Design and economic analysis of chemical process equipment. Use of computer design packages in the analysis of chemical equipment.
*Davis, Jr., S.*

**404(S) PROCESS DESIGN** (3-3-4)
Optimal design of chemical processes using industrial economic principles. Special process design projects in small groups.
*Badgwell, T.*

**411(F) THERMODYNAMICS I** (3-0-3)
Development and application of the first and second laws of thermodynamics.

*Miller, C.*

**412(S) THERMODYNAMICS II** (3-0-3)
Advanced treatment of chemical and physical equilibrium in multicomponent systems. Detailed study of nonideal solutions.

*Chapman, W.*

**420(S) BIOSYSTEMS TRANSPORT AND REACTIONS PROCESSES** (3-0-3)
This course will cover the basic principles of transport and reaction phenomena that will be applied to analyze the momentum, heat, and mass transport and the reaction processes occurring in the human body. Particular emphasis will be given to the mathematical modeling of systems so as to describe their physiologic function, understand pathological conditions, and also design artificial organs. The major thrust will be the quantitative characterization of biomedical systems especially in relation to underlying molecular mechanisms and cellular behavior. Prerequisites: Math 211, 212.

*Mikos, A.*

**443(F) CHEMICAL ENGINEERING LAB II** (1-3-2)
Experiments demonstrating transport coefficient measurement, forced and free convection transfer operations, and thermodynamic principles as covered in Ceng 401, 402, 411.

*Dyson, D.*

**444(S) CHEMICAL ENGINEERING LAB III** (1-3-2)
An extension of Ceng 443.

*Dyson, D.*

**470(F) PROCESS DYNAMICS AND CONTROL** (3-3-4)
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, feedforward, and multivariable control systems. Introduction to computer control. Students will use simulators for designing feedback controllers and experiment with a laboratory computer control system.

*San, K., Zygourakis, K.*

**483(F) UNDERGRADUATE RESEARCH** (Variable)
Independent investigation of a specific topic or problem in modern chemical engineering research under the direction of a selected faculty member. Prerequisite: permission of the department.

*Hightower, J.*

**484(S) UNDERGRADUATE RESEARCH** (Variable)
Same as Ceng 483.

*Hightower, J.*

**501(F) FLUID MECHANICS AND TRANSPORT PROCESSES** (3-0-3)
Advanced study in fluid mechanics and transport processes including analytical and numerical approximation methods, boundary layer theory, and hydrodynamic stability.

*Hellums, J.*

**503(S) CHEMICAL ENGINEERING PROCESSES I: AIR POLLUTION CONTROL** (3-0-3)
Atmospheric pollutants (CO, HC, VOC, $NO_x$, $SO_x$ particulates). Sources of pollutants (mobile, stationary, natural). Removal of gaseous pollutants from effluent streams. Societal and economic aspects of atmospheric pollutants. Prerequisites: Math 211, 212, Chem 112 or permission of instructor.

*Hightower, J., Zygourakis, K.*

**504(S) CHEMICAL ENGINEERING PROCESSES II** (2-3-3)
Design of chemical processes, with emphasis on the use of available process design computer programs.

*Kobayashi, R.*

**540(S) STATISTICAL THERMODYNAMICS** (3-0-3)
A development of the equilibrium theory of statistical mechanics. Applications to the calculation of microscopic and thermodynamic properties of matter. Prerequisite: Chem 311, 312, 430; Math 211, 212; Phys 201, 202 or 211, 212. Also offered as Chem 421.

*Robert, M.*

**560(S) INTERFACIAL PHENOMENA** (3-0-3)
Interfacial tension, wetting and spreading, contact angle Hysteresis, interaction between colloid particles, stability of interfaces, flow and transport near interfaces.

*Miller, C.*

**571(F) FLOW AND TRANSPORT THROUGH POROUS MEDIA** (3-0-3)
Hydrostatic and hydrodynamic properties of soils and rocks. Transient analysis for formation property evaluation. Simulation of fundamental transport processes in a single and multiphase flow.

*Hirasaki, G.*

**580(F) MATHEMATICAL MODELING IN BIOCHEMICAL ENGINEERING** (2-0-2)
Enzyme kinetics. Modeling of biological systems; lumped parameter, single cell, and structured models. Metabolic engineering.

*San, K.*

**582(S) NMR SPECTROSCOPY IN ENGINEERING** (3-0-3)
Basic principles and applications of nuclear magnetic resonance spectroscopy to chemical engineering problems. Topics include *in vivo* NMR, imaging, NMR microscopy, 2-dimensional methods, solid state. Material from current literature.

*Shanks, J.*

**584(S) M.CH.E. RESEARCH PROJECT** (3-0-3)
Independent investigation of a specific topic or problem in modern chemical engineering research under the direction of a selected faculty member. Prerequisite: permission of the department.

*Staff*

**591(S) HETEROGENEOUS CATALYSIS** (2-0-2)
Principles of heterogeneous catalysis, catalyst preparation, measurement and significance of surface physical and chemical properties, adsorption, heterogeneous kinetics, diffusion in porous media, catalyst poisoning and regeneration, aspects of reactor engineering, and a review of selected commercial catalytic reactions. Prerequisite: Ceng 390 or equivalent.

*Hightower, J.*

**592(S) REACTION ENGINEERING** (2-0-2)
Conservation equations, analysis and design of continuous flow stirred-tank and tubular reactors, multiplicity and stability of steady states, non-ideal reactors. Prerequisite: Ceng 390 or equivalent.

*Zygourakis, K.*

**593(F) POLYMER SCIENCE AND ENGINEERING** (3-0-3)
Basic concepts in macromolecular chemistry and their application in the synthesis and chemical modification of polymers. Prerequisite: Chem 211, 212.

*Armeniades, C.*

**594(S) PROPERTIES OF POLYMERS** (3-0-3)
Molecular organization and physical properties of polymeric materials; elastomeric, semicrystalline, and glassy polymers; processing and technology of polymeric systems. Also offered as Msci 594.
*Armeniades, C.*

**601(S) FLUID MECHANICS AND TRANSPORT** (3-0-3)
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.
*McIntire, L.*

**602(S) PHYSICO-CHEMICAL HYDRODYNAMICS** (3-0-3)
Topics in hydrodynamics including areas such as waves on liquid surfaces, conventive diffusion in liquids, motion of drops and bubbles, and electrophoresis.
*McIntire, L.*

**611(F) ADVANCED TOPICS-THERMODYNAMICS** (3-0-3)
An advanced treatment of the thermodynamics of pure and multicomponent systems. Topics range from classical thermodynamics to a discussion of modern developments.
*Robert, M.*

**620(S) TISSUE ENGINEERING** (3-0-3)
The course will focus on cell-cell interactions and the role of the extracellular matrix in the structure and function of normal and pathological tissues for the development of (i) strategies to regenerate metabolic organs and repair structural tissues, and (ii) cell-based therapies to deliver proteins and other therapeutic drugs. Issues related to cell and tissue transplantation, such as substrate properties, angiogenesis, growth stimulation, cell differentiation, and immunoprotection, will be emphasized.
*Mikos, A.*

**661(F) GRADUATE SEMINAR** (1-0-1)
*McIntire, L.*

**662(S) GRADUATE SEMINAR** (1-0-1)
*San, K.*

**671(S) FLOW AND TRANSPORT THROUGH POROUS MEDIA II** (3-0-3)
Calculation of multicomponent, multiphase transport in one to three dimensions. Application to problems in enhanced oil recovery and soil and/or groundwater contamination.
*Hirasaki, G.*

**672(F) APPLIED MATHEMATICS I** (3-0-3)
Linear algebra and its applications. Vector spaces. Linear systems of equations; direct and iterative solution methods; eigenvalues and eigenvectors; systems of ordinary differential equations; positive defeinite matrices; applications to engineering problems.
*Zygourakis, K., Mikos, A.*

**673(S) APPLIED MATHEMATICS II** (3-0-3)
Mathematical analysis of convection, dispersion, and reaction systems. Modeling and simulations of transport and reaction engineering problems. Material from current literature. Not offered every year.
*Staff*

**675(S) ADVANCED PROCESS DYNAMICS AND CONTROL** (3-0-3)
Dynamic equations for discrete and continuous models of chemical systems; lumped parameter systems and state space representation and multivariable control techniques; nonlinear systems, linearization, and phase plane analysis; sampled data systems; digital simulation techniques.

*San, K.*

**681(S) BIOPROCESS ENGINEERING** (2-0-2)
Bioseparation processes, animal cell culture, bioreactor control.

*Staff*

**683(F) MASTER OF SCIENCE RESEARCH AND THESIS** (Variable)

*Miller, C.*

**684(S) MASTER OF SCIENCE RESEARCH AND THESIS** (Variable)

*Miller, C.*

**691(F) ADVANCED REACTION ENGINEERING** (2-0-2)
Mathematical analysis of heterogeneous catalytic and noncatalytic reactions, design of packed bed reactors, fluidized bed reactors. Prerequisite: Ceng 591, 592

*Zygourakis, K.*

**692(F) ADVANCED REACTION ENGINEERING II** (2-0-2)
Gas/liquid, liquid/liquid reactions, design of multiphase reactors, applications to bioreactors and immobilized enzyme reactors. Co-/prerequisite: Ceng 691

*Staff*

**720(F) ADVANCED TOPICS** (3-0-3)
Applications of molecular simulation and statistical mechanics. Molecular simulation techniques and statistical mechanics-based theory will be developed. Topics include simple fluids, molecular fluids, interfaces, ordered systems, and the current literature. A prior course in statistical mechanics is suggested but not required.

*Chapman, W.*

**730(F) ADVANCED TOPICS** (3-0-3)
Biomechanics and biomaterials; structure and function of extracellular supportive tissue in skeletal and cardiovascular systems; design, development, and evaluation of synthetic polymers for structural tissue replacement.

*Armeniades, C.*

**800(F/S) GRADUATE RESEARCH** (3-0-3)

*Miller, C.*

# Chemistry

## The Wiess School of Natural Sciences

**Professor R.F. Curl,** *Chair*
**Professors Billups, Brooks, Curl, Engel, Fukuyama, Glass, Kinsey Margrave, Parry, Sass, Schroepfer, Smalley, Weisman, and L. J. Wilson**
**Adjunct Professors Harland and Hayes**
**Associate Professors Ciufolini, Hutchinson, Scuseria, and Whitmire**
**Assistant Professor Hwu**
**Lecturers Busby and Colbert**
**Instructor Owens**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** Undergraduates electing chemistry as a major are expected to take the following courses in their first year: Math 101, 102 (or equivalent honors courses); Phy 101, 102 and 132; Chem 101 or 111, 102 or 112, and 105. In general, students take Chem 211, 212, 213, 214, Math 211, 212 (or equivalents), and Nsci 230 in the sophomore year. Phys 201 and 202, although not required, are recommended. The department further requires satisfactory completion of the following courses:

*Junior and Senior Years*
Chemistry 311, 312 and 313, 314
Chemistry 401 and 403
Chemistry 491, 492 or 493 (see footnote*)
Chemistry 460 or 495
(* at least three semester hours in not less than two-hour segments)

Two additional courses of at least three semster hours each in advanced chemistry, physics, mathematics, mathematical sciences, or biochemistry. Students may substitute further undergraduate research (Chem 491, 492, 493) for one or two semesters of classroom instruction.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 124 semester hours. See Degree Requirements and Majors, pages 65-85.

**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 as such can certify that graduates have met the appropriate standards. For certification, two additional advanced courses are required. Chem 460 and 495 are both required; one can be counted as an advanced course. A foreign language, preferably German, is recommended.

**Chemical Physics Major.** Students in the chemical physics program take a combination of advanced courses in chemistry and physics, focusing on the applications of physics to chemical systems. The following courses are required:
Chem 101, 102 (or 111, 112), 105, 211, 212, 213, 214, 311, 312

Phys 101, 102, 132, 201, 202, 231, 301, 302, 311, 312
Math 101, 102 (or 121, 122), 211, 212 (or 221, 222)

In addition, students must choose either Phys 331, 332 or Chem 313, 314, and two semesters of Math or Masc at the 300 level or above.

The chemical physics major is offered jointly with the physics department. For more information, contact the chemical physics advisers, Professor Hutchinson in chemistry or Professor Stevenson in physics.

**Accelerated Ph.D. Plan.** Because of the high level of training provided in the Rice B.A. program, it is possible for certain especially qualified undergraduate students to be admitted to an accelerated program that could lead to the Ph.D. degree in about two years after completion of the B.A. program. In order to complete the work in this time, the student initiates research during the summer following the junior year and continues research by taking Chem 491, 492 during the senior year. The student may start taking cumulative examinations during the senior year and should be able to complete all courses and examinations before the end of the second year after the B.A. The student may, in favorable cases, be able to complete the thesis in this time as well.

**Graduate Program.** Students who have completed work equivalent to that required for the bachelor's degree in chemistry may be admitted to graduate standing. Preference is normally given to applicants who earn high scores on the Graduate Record Examination, including the advanced test in chemistry (see page 136). A minimum of two years of graduate study is required for the degree of Doctor of Philosophy. A nominal amount of undergraduate teaching is normally considered an integral part of the graduate program.

Candidates for the degree of Master of Arts are required to complete six one-semester courses, present in a thesis the results of a program of research approved by the department, and pass a final oral examination.

Candidates for the degree of Doctor of Philosophy must complete for publication a thesis that represents a distinctly original and significant contribution to the field of chemistry. Candidates must further have acquired through course work and independent study a broad fundamental knowledge of chemistry in addition to those areas of the subject encompassed by their own research interests. Cumulative examinations for the Ph.D. degree are given periodically, and a final oral examination on the thesis is required for all candidates.

*Chemistry Courses*

**101(F) GENERAL CHEMISTRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
Introduction to chemical phenomena emphasizing problems and methods in chemistry. Normally taken with Chem 105. Either 101 or 111 may be taken as prerequisite for advanced study in chemistry, but only one of these two may be taken for credit. Prerequisite: high school chemistry.

*Hutchinson, J.S.*

**102(S) GENERAL CHEMISTRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
See Chem 101. Either 102 or 112 may be taken as prerequisite for advanced study in chemistry, but only one of these two may be taken for credit. Prerequisite: Chem 101 or 111.

*Whitmire, K.H.*

**105 INTRODUCTORY LAB IN QUANTITATIVE CHEMISTRY** (1-4-2)
Laboratory measurements of chemical composition, molecular weights, equilibrium constants, heats of reaction, optical spectra, and reaction kinetics using a variety of classical and instrumental methods. Normally taken with Chem 101 or 111, 102 or 112. The lab is prerequisite for advanced courses in chemistry. (One afternoon lab plus one lecture hour per week.)
*Curl, R.F., Weisman, R.B.*

**106(S) HONORS LABORATORY** (0-4-1)
Independent projects in synthesis and characterization of compounds. Prerequisite: Chem 101 or 111 and permission of instructor. Corequisite: Chem 105.
*Wilson, L.J.*

**111(F) PRINCIPLES OF CHEMISTRY**
* DISTRIBUTION COURSE: CATEGORY III.5
An introduction to chemical phenomena emphasizing principles and theories in chemistry. Normally taken with Chem 105. Either 101 or 111 may be taken as prerequisite for advanced study in chemistry, but only one of these two may be taken for credit. Prerequisite: high school chemistry, physics, calculus.
*Garvey, J.*

**112(S) PRINCIPLES OF CHEMISTRY**
* DISTRIBUTION COURSE: CATEGORY III.5
See Chem 111. Either 102 or 112 may be taken as prerequisite for advanced study in chemistry, but only one of these two may be taken for credit. Prerequisite: Chem 111 or permission of instructor.
*Margrave, J.L.*

**211(F) ORGANIC CHEMISTRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
Aliphatic and aromatic organic chemistry with emphasis on structure, bonding, and reaction mechanisms. Second semester: greater emphasis on the chemistry of various functional groups. Normally accompanied by Chem 213, 214. Chem 212 must be preceded by Chem 211. Prerequisite: Chem 101, 102 or 111, 112.
*Ciufolini, M.*

**212(S) ORGANIC CHEMISTRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
See Chem 211. Prerequisite: Chem 211.
*Engel, P.S.*

**213(F) ORGANIC CHEMISTRY LAB** (0-4-1)
Synthesis, purification, and characterization of organic compounds. Experiments related to topics covered in Chem 211, 212. Second semester includes identification of unknown organic compounds. (One hour lecture precedes each lab.) One lab per week. Coreq- Chem 211, 212 Prerequisite: Chem 105.
*Billups, W.E.*

**214(S) ORGANIC CHEMISTRY LAB** (0-4-1)
See Chem 213 Prerequisite: Chem 213.
*Parry, R.*

**311(F) PHYSICAL CHEMISTRY** (3-0-3)
An introduction to the fundamental principles of physical chemistry, including quantum chemistry, chemical bonding, molecular spectroscopy, statistical thermodynamics, and kinetic theory of gases. Prerequisite: Math 211, 212; Phys 101, 102; Chem 101, 102, or 111, 112; Phys 202 is recommended.
*Weisman, R.B.*

**312(S) PHYSICAL CHEMISTRY** (3-0-3)
A continuation of Chem 311, including the principles of thermodynamics, statistical thermodynamics, kinetic theory of gases, chemical kinetics and reaction dynamics, and the structures of liquids, solids, and macromolecules. Prerequisite: Chem 311; Phys 202 is recommended.
*Colbert, D.T.*

**313(S) EXPERIMENTS IN PHYSICAL CHEMISTRY** (1-4-2)
Experiments illustrating techniques employed in high resolution optical spectroscopy, electrochemistry, calorimetry, surface area measurements, and kinetics. Lab meets alternate weeks. Prerequisite: Chem 105, 311; Phys 132.
*Brooks, P.R.*

**314(S) ADVANCED INSTRUMENTAL LABORATORY** (0-8-2)
Principles and applications of modern instrumental methods to inorganic and physical chemistry. Prerequisite: Chem 311 and co-requisite Chem 313.
*Busby III, G.*

**401(F) ADVANCED ORGANIC CHEMISTRY** (3-0-3)
Pericyclic reactions (Woodward-Hoffman rules); reactive intermediates; rearrangements; sterochemistry. Chemistry of carbohydrates, aminoacids, peptides, and nucleic acids. Important reactions of organic chemistry and their mechanisms.
*Billups, W.E., Parry, R.*

**403(F) ADVANCED ORGANIC LABORATORY** (1-8-2)
Covers the techniques of modern organic chemistry. Prerequisite: Chem 212, 213, 214.
*Owens, W.H.*

**411(S) SPECTRAL METHODS IN ORGANIC CHEM** (3-0-3)
Elucidation of organic structures by physical techniques. Interpretation of infrared, ultraviolet, nuclear magnetic resonance, and mass spectra. Prerequisite: Chem 401.
*Fukuyama, T.*

**415(F) CHEMICAL KINETICS AND DYNAMICS** (3-0-3)
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. Prerequisite: Chem 311, 312.
*Glass, G.P.*

**430(F) QUANTUM CHEMISTRY** (3-0-3)
Quantum mechanical principles, atomic structure and chemical bonding. Prerequisite: Chem 312. Phys 202 is recommended.
*Scuseria, G.E.*

**445(F) PHYSICAL-ORGANIC CHEMISTRY** (3-0-3)
Organic reaction mechanisms, substituent and medium effects, linear free energy relations and acidity functions. Corequisite: Chem 401. Prerequisite: Chem 311, 312.
*Engel, P.S.*

**460(S) INORGANIC CHEMISTRY** (3-0-3)
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. Prerequisite: Chem 211, 212, 213, 214.
*Hwu, S.-J.*

**491(F) RESEARCH FOR UNDERGRADUATES**
Open only to chemistry majors. Written report required.
*Brooks, P.R.*

**492(S) RESEARCH FOR UNDERGRADUATES**
See Chem 491.

*Brooks, P.R.*

**495(F) TRANSITION METAL CHEMISTRY** (3-0-3)
Structure, bonding, and reactivity of coordination, bioinorganic, and organometallic compounds; ligand field theory; electronic spectroscopy; magnetism; reaction mechanisms; catalysis. Chem 460 recommended. Prerequisite: Chem 311, 312.

*Whitmire, K.H., Wilson, L.*

**515(F) CHEMICAL KINETICS AND DYNAMICS**
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. Prerequisite: Chem 311, 312.

*Glass, G.P.*

**520(F) CLASSICAL AND STATISTICAL THERMODYNAMICS**
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. Prerequisite: Chem 311, 312, or equivalent.

*Colbert, D.T.*

**522(S) STATISTICAL MECHANICS**
A development of the principles of statistical mechanics with applications to problems of chemical interest. Prerequisite: Chem 311, 312, 520. Also offered as Ceng 540.

*Robert, M.*

**530(F) QUANTUM MECHANICS I**
Quantum mechanical principles, atomic structure, and chemical bonding. Prerequisite: Chem 312. Phys 202 is recommended.

*Scuseria, G.E.*

**531(S) QUANTUM MECHANICS II**
A development of the elements and techniques of quantum mechanics with applications to atomic and molecular systems. Prerequisite: Chem 430 or 530.

*Scuseria, G.E.*

**541(F) SPECIAL TOPICS IN ORGANIC CHEMISTRY** (3-0-3)
Topics in transition metal chemistry, synthesis, photochemistry and photophysics. Offered every other year. Usually alternates with Chem 543.

*Staff*

**542(S) SPECIAL TOPICS IN ORGANIC CHEMISTRY**
Seminars in mechanistic and synthetic chemistry. Prerequisite: Chem 561.

*Ciufolini, M.A.*

**543(S) SPECIAL TOPICS IN ORGANIC CHEMISTRY**

**561(F) ADVANCED ORGANIC CHEMISTRY** (3-0-3)
The disconnection approach to organic synthesis. Heavy emphasis on reactions, reagents, and mechanisms. Prerequisite or corequisite: Chem 401.

*Fukuyama, T.*

**562(S) ADVANCED ORGANIC CHEMISTRY** (3-0-3)
Continues in the same vein as Chem 561 but with emphasis on very recent advances in stereoselective synthesis.

*Owens, W.H.*

**575(S) PHYSICAL METHODS IN INORGANIC CHEMISTRY**
A survey course of research techniques used in modern inorganic chemistry. Topics covered will include X-ray diffraction, calorimetry, matrix isolation, mass spectrometry, magnetism, electrochemistry, and various spectroscopies (IR, Raman, UV-Vis, nmr, epr, XPS, EXAFS, and Mössbauer). Open to undergraduates by special permission only.

*Hwu, S.-J., Margrave, J., Whitmire, K., Wilson, L.*

**595(F) SPECIAL TOPICS IN INORGANIC CHEMISTRY**
Rotation of topics include solid-state chemistry, organometallic chemistry, bioinorganic chemistry, and single-crystal X-ray diffraction. Open to undergraduates by special permission only.

*Hwu, S.-J.*

**600 INORGANIC SEMINAR**
Selected topics in current research and literature.

*Hwu, S.J., Margrave, J., Whitmire, K., Wilson, L.*

**611(F) HIGH TEMPERATURE AND HIGH PRESSURE CHEMISTRY**(3-0-3)
The techniques for generation and measurement of high temperature and high pressures and of the nature of phenomena under extreme conditions.

*Margrave, J.L.*

**630(F) MOLECULAR SPECTROSCOPY AND GROUP THEORY**
Experimental and theoretical principles of the spectroscopy of simple molecules, including microwave, infrared, visible, ultraviolet, and Raman spectra; introduction to molecular symmetry and group theory. Prerequisite: Chem 531.

*Johnson, B.R.*

**800 GRADUATE RESEARCH** (Variable)

*Staff*

# Civil Engineering

## The George R. Brown School of Engineering

**Professor Merwin,** *Chair*
**Professors Nordgren, Spanos, and Veletsos**
**Associate Professors Dakoulas and Durrani**
**Assistant Professor Conte**
**Lecturers Banavalkar, Gosain, Hanks, and Sedlak**

*Degrees Offered:* B.A., B.S.C.E., M.C.E., M.S., Ph.D.

The profession of civil engineering is concerned with the development, planning, design, construction, and operation of large facilities and systems. These include buildings, bridges, and other structures of various forms; transportation systems, water supply systems, drainage and flood control and systems for waste disposal and pollution control. The planning of new communities and the redevelopment of existing cities are also within the spectrum of civil engineering activities.

**Undergraduate Program.** The professional degree is the Bachelor of Science in Civil Engineering. The programs leading to this degree are accredited by the Accreditation Board for Engineering and Technology. The student may choose to take a quite general basic program or a more specialized option: the Environmental Engineering Option (offered in conjunction with the Department of Environmental Science and Engineering). The departmental requirements are as follows:

*Basic Program*
Math 101, 102, 211, 212, and Caam 223, 335 or 353, and 381 or Stat 310
Phys 101, 102, 132, Chem 101, 102
One of the following: Chem 211, Geo 101, 102, Envi 201, 443, Phys 201, Biosciences 201, 202
Materials Science 301, Mech 200 or Elec 241
Civi 211, 251, 300, 302, 304, 305, 306, 363, 400, 403, 404, 451, 464, 470, Envi 403
One of the following: Civi 530 or 540
An approved elective at the 400 or 500 level in Civi or a closely related area

*Environmental Option*
Math 101, 102, 211, 212, Math 223, 335 or 353, and 381 or Stat 310
Phys 101, 102, 132, Bios 201 or 202, Chem 101, 102, 105, 211, 213
One of the following: Geol 341, 352, Envi 443, Chem 212 and 214, 311
Civi 211, 300, 302, 304, 306, 363, 403, 404, 470
Envi 201, 401, 403, 412
Two of the following: Envi 518, 530, 534, 536, 550

In addition to the departmental requirements above, students must satisfy the university distribution requirements (page 65-85), and must complete a total program of at least 134 semester hours. More information on the civil engineering program, including a recommended course of study by semesters and suggestions for selecting electives, may be obtained from the departmental office. The program of each student is formulated in consultation with a departmental adviser. As soon as students decide on an engineering major, they should consult the departmental advisers.

A Bachelor of Arts degree with a civil engineering major is also available for students not interested in a professional career in civil engineering. The B.A. program has less technical content than the B.S.C.E. program and hence more flexibility with electives. It is not accredited as a professional engineering curriculum. The detailed curriculum may be obtained from the departmental office. This curriculum requires at least 124 semester hours of which no fewer than 60 must be outside of the specific departmental requirements.

The Bachelor of Science in Civil Engineering is a suitable terminal degree for students interested in a professional career, but a master's degree is highly desirable. The Doctor of Philosophy degree is generally required for a career in teaching or in research and development.

**Graduate Program.** Programs of study in structural engineering and structural mechanics and geotechnical engineering can lead to the degrees of Master of Civil Engineering, Master of Science, and Doctor of Philosophy. Special attention is given to developing the student's interest in and ability for independent study and research in the M.S. and Ph.D. degree programs.

Applicants for graduate study are generally required to have a Bachelor of Science in Civil Engineering, with a significant emphasis on structural engineering. Consideration may be given to applicants with some other undergraduate degrees if they have adequate preparation in mathematics, mechanics, and structural analysis and design. Curricula such as engineering technology or construction technology do not represent adequate preparation.

The requirements for a professional Master of Civil Engineering degree are described on page 132. University requirements for other advanced degrees are described begins on page 129. Departmental requirements for the M.S. and Ph.D. degrees are as follows. A candidate for the Master of Science degree is required to (1) complete at least 24 semester hours of approved courses; (2) complete an acceptable thesis; and (3) pass a final oral examination on the thesis. A candidate for the degree of Doctor of Philosophy must satisfy the following requirements: (1) complete at least 48 semester hours of approved courses with high standing; (2) pass a comprehensive preliminary examination designed to test the candidate's knowledge of the field and ability to think in a creative manner; (3) pass an oral qualifying examination on the proposed thesis research and related topics; (4) complete a thesis that shall constitute an original contribution to knowledge; and (5) pass a final public oral examination on the thesis and related topics. If the departmental faculty concludes at any stage of a student's doctoral program that he or she is unqualified to continue, the student is denied further registration.

The research interests of the members of the civil engineering faculty lie in the areas of structural and foundation dynamics, including earthquake engineering and offshore structures, applications of probability theory to civil engineering problems, particularly random vibrations and structural fatigue; behavior of concrete components and structural systems; experimental studies of fatigue in steel structural assemblies; the mechanical properties of soils; and the mechanics of solids.

M.S. and Ph.D. students are expected to participate in the instructional activities of the department as part of their educational experience. This service will not usually be required for more than one semester of an M.S. program or two semesters of a Ph.D. program nor for more than six hours per week in any semester.

*Civil Engineering Courses*

**211(F) ENGINEERING MECHANICS** (3-0-3)
Equilibrium of static systems, dynamics of a particle, dynamics of particle systems, and rigid-body dynamics. Elements of vibrational analysis. Prerequisite: Phys 101, 102, Math 101, 102. Also offered as Mech 211.

*Staff*

**251(F) PLANE SURVEYING** (1-3-2)
Fundamental surveying principles and techniques.

*Hanks, M.*

**300(S) MECHANICS OF SOLIDS** (3-0-3)
Stresses and deformations due to various loads. Study of engineering properties of materials and failure theories. Prerequisite: Civi 211.

*Merwin, J.*

**302(S) STRENGTH OF MATERIALS LABORATORY** (0-3-1)
Standard tension, compression, and torsion tests of ferrous and nonferrous metals; experimental techniques, behavior of structural elements. Enrollment limited, preference given to Civi majors.

*Merwin, J.*

**304(S) STRUCTURAL ANALYSIS I** (3-0-3)
Analysis of statically determinate structures; stability and determinacy; influence lines and moving loads. Calculation of deflections. Introduction to analysis of indeterminate structures. Prerequisite: Civi 211 and concurrent registration in Civi 300.

*Staff*

**305(F) STRUCTURAL ANALYSIS II** (3-0-3)
Force and displacement methods of analysis of indeterminate structures; influence lines; energy methods. Limit analysis of beams and frames. Prerequisite: Civi 304.

*Staff*

**306(S) STEEL DESIGN** (3-0-3)
Design of steel members, connections, and assemblies. Behavior of steel members as related to design. Prerequisite: Civi 304.

*Staff*

**363(F) APPLIED FLUID MECHANICS** (3-0-3)
Fluid properties, fluid statics and incompressible fluid steady flow. Energy and momentum equations with many applications. Similitude and dimensional analysis. Viscous fluid flow in pipes and pipe networks.

*Merwin, J.*

**400(F) MECHANICS OF SOLIDS II** (3-0-3)
Continuation of Civi 300. Additional topics include curved beams, beams on elastic foundations, torsion of noncircular sections, energy methods, and failure modes. Intended for undergraduates. Does not count toward graduate degree requirements in Civil Engineering. Prerequisite: Civi 300.

*Merwin, J.*

**403(F) REINFORCED CONCRETE DESIGN** (3-0-3)
Material properties, flexural strength of rectangular and T-sections; strength design of beams, one-way slabs and footings; shear strength; deflections; and column design. Use of handbooks and computer programs for design. Prerequisite: Civi 304.

*Durrani, A.*

**404(F) CONCRETE LABORATORY** (0-3-1)
Tests of materials and reinforced concrete members. Prerequisite: Civi 403 (concurrent).
*Durrani, A.*

**451(S) INTRODUCTION TO TRANSPORTATION** (3-0-3)
Operational characteristics of transport modes, elements of transportation planning, and design of stationary elements.
*Sedlak, J.*

**464(S) HYDROLOGY AND WATERSHED ANALYSIS** (3-3-4)
Fundamentals of the hydrologic cycle, hydrography techniques, flood routing, and open channel flow; local watershed application and laboratory. Also offered as Envi 412.
*Bedient, P.*

**470(F) BASIC SOIL MECHANICS** (3-3-4)
Soil exploration, soil properties and behavior, soil classifications, hydraulics of soil moisture, consolidation and settlement, strength characteristics, soil stabilization, lateral earth pressure, slope stability, and retaining wall design.
*Dakoulas, P.*

**499 SPECIAL PROBLEMS** (Variable)
Study of selected topics including individual investigations, special lectures, and seminars. Offered upon mutual agreement of faculty and student.
*Staff*

**500(F) ADVANCED MECHANICS OF SOLIDS I** (3-0-3)
General analysis of stress and infinitesimal strain, linear elastic and thermo-elastic stress-strain relations. Formulation and solution of boundary value problems, including torsion and flexure of cylinders, plane problems, flexure of plates, and selected three-dimensional problems. Approximate solutions by energy methods and the finite element method. Intended for graduate students, others by permission of instructor.
*Carroll, M., Nordgren, R.*

**501(S) ADVANCED MECHANICS OF SOLIDS II** (3-0-3)
Analysis of the nonlinear behavior of elastic and inelastic solids with application to engineering materials. Nonlinear theory of rods and the stability of columns. Prerequisite: Civi 500.
*Nordgren, R.*

**503(F) STRUCTURAL ANALYSIS BY MATRIX METHODS** (3-0-3)
Flexibility and stiffness of structural elements. Compatibility and equilibrium. Force and displacement methods of analysis. Finite element methods. Nonlinear structures. Prerequisite: Civi 305 or equivalent. Offered irregularly.
*Staff*

**509(S) DYNAMIC ANALYSIS OF OFFSHORE STRUCTURES** (3-0-3)
Loads on offshore structures are described on deterministic and probabilistic basis. Methods are examined for calculating the structural response. Specific examples involving drill strings, marine risers, fixed and compliant structures are given. Offered irregularly.
*Staff*

**512(F) ENGINEERING APPLICATIONS OF PROBABILITY** (3-0-3)
Applications of probability theory and statistics in planning, analysis, and design of civil engineering systems. Probabilistic modeling of random phenomena. Occurrence models; extreme value distributions. Statistical inference methods. Modeling and analysis of uncertainties in engineering. Introduction to Bayesian statistical decision theory. Prerequisites: Masc 381 or 382.
*Conte, J.*

**513(F) THEORY OF ELASTICITY** (3-0-3)
Advanced topics in the linear and nonlinear theory of elasticity. Offered irregularly.
*Staff*

**515(S) STRUCTURAL PLASTICITY, FATIGUE, AND FRACTURE** (3-0-3)
Problems in limit analysis and design, plastic behavior of structures, fatigue failure and brittle fracture of structural components. Also offered as Mech 515.
*Merwin, J.*

**516(F) PLATES** (3-0-3)
Introduction to theories of plates and cylindrical shells with applications to practical problems. Offered irregularly.
*Staff*

**519(S) SHELLS** (3-0-3)
Introduction to theories of shells with applications to practical problems. Offered irregularly.
*Staff*

**521(F) STRUCTURAL DYNAMICS I** (3-0-3)
Dynamics of force-excited discrete linear systems with applications to design. Prerequisite: permission of instructor for undergraduates.
*Veletsos, A.*

**522(S) STRUCTURAL DYNAMICS II** (3-0-3)
Dynamics of force-excited continuous linear systems and ground-excited linear and yielding structures. Fundamentals of earthquake engineering. Prerequisite: Civi 521.
*Veletsos, A.*

**523(S) PROBABILISTIC STRUCTURAL DYNAMICS** (3-0-3)
Introduction to probability theory and random processes. Dynamic analysis of linear and nonlinear structural systems subjected to analysis of stationary and nonstationary random excitations. Reliability studies related to first excursion and fatigue failures. Applications to earthquake engineering, offshore engineering, and wind engineering. Prerequisites: Civi 521 or Mech 412 and basic knowledge of probability theory. Also offered as Mech 523.
*Conte, J.*

**524(S) STRUCTURAL RELIABILITY THEORY AND APPLICATIONS** (3-0-3)
Probability theory and random processes; fundamentals of structural reliability theory. Methods of reliability analysis; structural component and system reliability. Reliability-based design codes; structural load modeling and combination for performance and safety evaluation. Seismic risk analysis of structural systems. Prerequisite: basic knowledge of probability theory.
*Conte, J.*

**525(F) STRUCTURAL DYNAMICS III** (3-0-3)
Special topics in structural dynamics, including problems of wave propagation, response of structures to waves, dynamics of foundations, soil-structure and fluid-structure interaction. Offered irregularly. Prerequisite: Civi 521.
*Veletsos, A.*

**526(S) STRUCTURAL STABILITY** (3-0-3)
Stability criteria. Flexural and torsional buckling of columns and frames, lateral buckling of beams, plate buckling. Effect of imperfections on strength. Beam-columns. Evaluation of design code provisions.
*Staff*

**530(F) CONCRETE BUILDING DESIGN** (3-0-3)
Design of reinforced concrete building structures and floor slab systems. Case histories will be discussed. Prerequisite: Civi 403.

*Gosain, N.*

**531(F) BEHAVIOR OF REINFORCED CONCRETE MEMBERS** (3-0-3)
Moment-curvature relationship for beams and columns, biaxally loaded columns, slenderness effects, interaction diagrams, shear and torsion in members, shear wall-frame interaction, behavior under large load reversals; extensive use of microcomputers. Prerequisite: Civi 403.

*Durrani, A.*

**532(S) PRESTRESSED CONCRETE** (3-0-3)
Prestressing techniques, prestress losses, deflections, shear and torsion, analysis and design of members using microcomputers, composite members, continuous beams and prestressed slabs. Prerequisite: Civi 403.

*Durrani, A.*

**540(S) STEEL BUILDING DESIGN** (3-0-3)
Practical considerations from the conceptual stage to the final analysis; including design parameters and serviceability limitations. Prerequisite: Civi 305, 306, 403.

*Banavalkar, P.*

**570(S) FOUNDATION ENGINEERING** (3-0-3)
Geotechnical engineering applications to the analysis, design, and construction of shallow and deep foundations and earth retaining structures. Prerequisite: Civi 470.

*Dakoulas, P.*

**571(F) SOIL DYNAMICS** (3-0-3)
Introduction to Vibrations and Wave Propagation in Elastic Media. Behavior of soil subjected to dynamic and cyclic loading, including field and laboratory testing. Engineering applications, focusing on earthquake engineering problems such as modification of ground shaking caused by the soil, liquefaction of sands, machine foundations, etc.

*Dakoulas, P.*

**699 SPECIAL PROBLEMS** (Variable)
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.

*Staff*

**800 RESEARCH AND THESIS** (Variable)

*Staff*

# Classics

## The School of Humanities

**Associate Professors Wallace and Yunis**
**Assistant Professor Mackie**

*Degrees Offered:* B.A. in Classics (Greek and Latin), B.A. in Latin.

**Undergraduate Program.** The program in Classics offers instruction in the languages, literature, history, and culture of ancient Greece and Rome. We offer two types of major: Classics, which entails the study of both ancient Greek and Latin, and Latin. Both majors stress the study of the literature of the classical civilizations in the original languages. The student who chooses one of these two majors will learn that the study of ancient Greek and Latin is a demanding but rewarding discipline. For our majors we advise, and will try to facilitate, travel to Greece or Italy and experience on a dig or study at the Intercollegiate Center for Classical Studies in Rome. Rice is now a supporting member of the Intercollegiate Center.

Each year we also offer courses about various aspects of the classical civilizations using English translations. These courses are organized below under the rubric "Classical Studies."

A major in Classics is essential preparation for graduate study in Classics, ancient history, ancient philosophy, ancient religion (especially early Christianity), and ancient art history. Knowledge of Greek and Latin is useful for graduate study in English, the Romance languages, German, the Slavic languages, theology, European history, and linguistics. A Secondary Teaching Certificate in conjunction with a B.A. in Latin or Classics is available through the Department of Education. The program in Classics is formally administered as part of the Department of Hispanic and Classical Studies. Students interested in majoring in Classics or finding out more about the program should see Professor Wallace.

**Requirements for the Major.** Students may choose a major in either Classics (Greek and Latin) or Latin.

For the major in Classics, the student must take 27 semester hours (9 courses):

1. 21 semester hours (7 courses) in Greek and Latin at the 200 level or above including at least 6 semester hours (2 courses) in each language.
2. 3 semester hours (1 course) at the 300 level in Classical Studies or one of the following fields from outside the Classics program: Greek and Roman history, philosophy, art or religion.
3. Latin 493 in the spring semester of the senior year, in order to prepare for and then take the comprehensive examination in the 9th week of the semester. Latin 493 is to be taken in addition to the 21 semester hours required above.

For the major in Latin, the student must take 24 semester hours (8 courses):

1 18 semester hours (6 courses) in Latin at the 200 level or above.
2. 3 semester hours (1 course) at the 300 level in Classical Studies or one of the following fields from outside the Classics program: Greek and Roman history, philosophy, art or religion.
3. Latin 493 in the spring semester of the senior year, in order to prepare for and then take the comprehensive examination in the 9th week of the semester. Latin 493 is to be taken in addition to the 18 semester hours required above.

*Classical Studies*

**222(S) PERSPECTIVES ON GREEK TRAGEDY** (3-0-3)
We shall read several crucial works by each of the three great tragedians: Aeschylus' *Seven against Thebes* and the *Oresteia* trilogy; Sophocles' *Ajax, Philoctetes,* and *Oedipus at Colonus*; and Euripides' *Hippolytus, Suppliant Women, Heracles,* and *Orestes.* We shall attempt to understand the nature of Greek tragedy by considering the civic setting and production, the mythological tradition, contemporary philosophical issues, and the poetic conventions of the genre.

*Mackie, H.*

**315(S) SOCRATES: THE MAN AND HIS PHILOSOPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
An appraisal of Socrates' life, thought, and achievements. Extensive readings in Plato's Socratic dialogues, especially the *Gorgias* and *Protagoras.* Not offered 1993-94.

*Yunis, H.*

**321(F) THE AGE OF NERO** (3-0-3)
Study of the history of Nero's reign (54-68 A.D.) and of the literary and artistic works of the period. Authors read will include Tacitus, Suetonius, Seneca, Lucan, Persius, and Petronius. Not offered 1993-94.

*Wallace, K.*

**335(S) CLASSICAL MYTHOLOGY I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Survey of Greek myths and their extension to Rome and modern European literature. All works are read in English translation.

*Ramos, C.*

**351(F) CLASSICAL EPIC** (3-0-3)

*Wallace, K.*

**352(S) PERICLEAN ATHENS** (3-0-3)
A close examination of what was unique about Athens during the age of Pericles: the Athenian empire and democracy, the crisis of the Peloponnesian war, the influence of the sophists, social crises as reflected in tragedy and comedy, the life and trial of Socrates. Not offered 1993-94.

*Yunis, H.*

**491(F) SPECIAL TOPICS** (3-0-3)
Independent work for qualified juniors and seniors.

*Staff*

**492(S) SPECIAL TOPICS** (3-0-3)
Independent work for qualified juniors and seniors.

*Staff*

*Greek*

**101(F) ELEMENTARY GREEK I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
NOTE: 102 must be completed to receive distribution credit for 101. Fundamentals of ancient Greek grammar with emphasis on acquisition of reading skills.

*Mackie, H.*

**102(S) ELEMENTARY GREEK II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Continuation of Gree 101.

*Mackie, H*

**201(F) INTERMEDIATE GREEK I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Review of forms and syntax followed by readings in Plato's *Apology*.

*Ramos, C*

**202(S) INTERMEDIATE GREEK II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Homer: Reading of selections from the *Odyssey*.

*Ramos, C*

**301(S) ADVANCED GREEK: HERODOTUS** (3-0-3)
Not offered 1993-94.

*Staff*

**302(S) ADVANCED GREEK: TRAGEDY** (3-0-3)
Study of language, diction, grammar, meter and conventions of Attic tragedy. Reading: Euripides' *Medea*. Not offered 1993-94.

*Yunis, H.*

**491(F) DIRECTED READING** (3-0-3)
Independent work for qualified juniors and seniors in genres or authors not presented in other courses.

*Staff*

**492(S) DIRECTED READING** (3-0-3)
Independent work for qualified juniors and seniors in genres or authors not presented in other courses.

*Staff*

*Latin*

**101(F) ELEMENTARY LATIN I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
NOTE: 102 must be completed to receive dist. credit for 101. Fundamentals of Latin grammar with emphasis on acquisition of reading skill.

*Wallace, K.*

**102(S) ELEMENTARY LATIN II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Continuation of Lati 101.

*Wallace, K.*

**201(F) INTERMEDIATE LATIN: PROSE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Review of grammar and readings in Cicero. Prerequisite: Lati 101, 102 or equivalent.

*Staff*

**202(S) INTERMEDIATE LATIN: POETRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Readings in Catullus. Not offered 1993-94.

*Wallace, K.*

**301(S) ADVANCED LATIN: HORACE** (3-0-3)
Reading of selections from the Epodes, Odes, Satires, and Epistles. Not offered 1993-94.
*Staff*

**302(F) ADVANCED LATIN: TACITUS** (3-0-3)
After a brief introduction to Roman historiography, we shall examine the political attitudes expressed in the Agricola. Most of the course will be devoted to the methods, aims, and techniques of Tacitus as displayed in the *Annals*. Not offered 1993-94.
*Staff*

**305(F) VIRGIL** (3-0-3)
Reading of selections from the *Eclogues, Georgics*, and *Aeneid* (especially Books 7-12).
*Wallace, K.*

**401(S) HORACE** (3-0-3)
Enriched version of Lati 301.
*Staff*

**402(F) TACITUS** (3-0-3)
Enriched version of Lati 402.
*Staff*

**405(F) VIRGIL** (3-0-3)
Enriched version of Lati 305.
*Wallace, K.*

**420(S) SATIRE IN ENGLAND AND ROME** (3-0-3)
Close study of selected satires of Horace and Pope and of Juvenal and Dryden and Johnson. Also offered as Engl 408. Not offered 1993-94.
*Piper, W., Wallace, K.*

**491(F) DIRECTED READING** (3-0-3)
Independent work for qualified juniors and seniors in genres or authors not presented in other upper-level courses.
*Staff*

**492(S) DIRECTED READING** (3-0-3)
Independent work for qualified juniors and seniors in genres or authors not presented in other courses.
*Staff*

**493(S) COMPREHENSIVE EXAMINATION** (3-0-3)
Reading course to be taken by all majors in the spring semester of the senior year. Preparation for the comprehensive examination that is to be taken in the last week of the semester. For Classics and Latin majors only.
*Staff*

# Cognitive Sciences

**Professor Martin,** *Chair*
**Professors Cartwright, Cheatham, Copeland, P.W. Davis, Gorry, Grandy, Lamb, Roediger, J.R. Thompson, Tyler, and Watkins**
**Associate Professors D.M. Lane and Polanyi**
**Assistant Professors Kemmer and Sullivan**
**Lecturer Duba**

*Degree Offered:* B.A.

Cognitive Sciences are concerned with how the mind works. Cognitive scientists seek to understand perceiving, thinking, remembering, understanding language, learning, concept formation, and other mental phenomena. This field of study constitutes, under a new name and aided by new technologies, a restoration of lines of study that were pursued before a restructuring of universities in the eighteenth century broke it up into separate disciplines. As a result of that dismemberment, Cognitive Sciences are now treated as an interdisciplinary field.

Research in cognitive sciences ranges from observing children through programming computers to do complex problem solving to analyzing the nature of meaning. The methods include observation and analysis, model building, experimentation, and computer simulation of mental structures and processes.

Some students see cognitive sciences as a way to study the last frontier, the mind. Some see it as a way to get in on the ground floor of the information society. Some see it as a way to get useful experience with computers.

Suggested preparation for the major: Computer Science 200; Psychology 101; Philosophy 106 or mathematical maturity; and calculus or probability theory.

**Requirements:** A student majoring in Cognitive Sciences must complete twelve 3-hour or 4-hour courses plus Cognitive Sciences 491, a 1-hour course to be taken in the fall term of the senior year. The twelve courses include eight core courses as follows:

Cognitive Sciences 492, Cognitive Sciences Seminar (spring term of senior year);
Computer Science 210, Introduction to Scientific Computation (4 hours);
Computer Science 440, Artificial Intelligence,
or Electrical Engineering 437, Introduction to Artificial Intelligence;
Linguistics 200, Language,
or Linguistics 300, Linguistic Analysis;
Linguistics 306, Cognitive Linguistics,
or Linguistics 315, Information Structures;
Philosophy 305, Mathematical Logic,
or Philosophy 312, Philosophy of Mind
Psychology 203, Introduction to Cognitive Psychology;
Psychology 351, Psychology of Perception,
or Psychology 362, Physiological Psychology.

Of the four additional courses, no more than two courses from a single department can be counted toward the requirements for the major; and students may not count both Psychology 339 and Statistics 301 toward the major requirements.

*Courses:*

## Anthropology

**406 COGNITIVE ANTHROPOLOGY** (3-0-3)

*Tyler, S.*

## Cognitive Sciences

**491(F) COGNITIVE SCIENCES SENIOR SEMINAR** (2-0-1)
Discussion of current research, issues, and problems in Cognitive Sciences. Seniors majoring in Cognitive Sciences will participate in discussions and begin work on their projects. Content varies from year to year. Restricted to Cognitive Sciences majors. Credit is contingent upon completion of Csci 492.

*Grandy, R.*

**492(S) COGNITIVE SCIENCES SENIOR SEMINAR** (2-0-3)
Continuation of 491. Seniors majoring in Cognitive Sciences will work on projects and present reports. 491 is an absolute prerequisite.

*Grandy, R.*

## Computer Science

**210 INTRODUCTION TO SCIENTIFIC COMPUTATION** (4-0-4)

*Staff*

**240 THE AGE OF INTELLIGENT MACHINES** (3-0-3)

*Gorry*

**320 INTRODUCTION TO COMPUTER ORGANIZATION** (3-0-3)

*Soltero, L.*

**382 DESIGN AND ANALYSIS OF ALGORITHMS** (3-0-3)

*Krentel, M.*

**425 COMPUTER SYSTEMS** (3-0-3)

*Bennett, J.*

**440 ARTIFICIAL INTELLIGENCE** (3-0-3)

*Duba, B.*

## Electrical Engineering

**326 DIGITAL LOGIC DESIGN** (3-0-3)

*Cyprus, J.*

**437 INTRODUCTION TO ARTIFICIAL INTELLIGENCE** (3-0-3)

*Staff*

**498 INTRODUCTION TO ROBOTICS** (3-0-3)

*Walker, J.*

## Linguistics

**200 LANGUAGE** (3-0-3)
*Kemmer, S.*

**300 LINGUISTIC ANALYSIS** (3-0-3)
*Copeland, J.*

**301 PHONOLOGY** (3-0-3)
*Staff*

**306 COGNITIVE LINGUISTICS** (3-0-3)
*Lamb, S.*

**315 INFORMATION STRUCTURES** (3-0-3)
*Lamb, S.*

**402 SYNTAX AND SEMANTICS** (3-0-3)
*Davis, P.W.*

**411 NEUROLINGUISTICS** (3-0-3)
*Lamb, S.*

**467 COMPUTATIONAL PROJECTS** (3-0-3)
*Lamb, S., Polanyi, L.*

**490 DISCOURSE ANALYSIS** (3-0-3)
*Polanyi, L.*

**491 SEMANTICS: INTERDISCIPLINARY PERSPECTIVES** (3-0-3)
*Polanyi, L.*

## Philosophy

**303 THEORY OF KNOWLEDGE** (3-0-3)
*Sullivan, S.*

**305 MATHEMATICAL LOGIC** (3-0-3)
*Grandy, R.*

**312 PHILOSOPHY OF MIND** (3-0-3)
*Sullivan, S.*

**353 PHILOSOPHY OF LANGUAGE** (3-0-3)
*Grandy, R.*

**357 ADVANCED TOPICS IN MATHEMATICAL LOGIC** (3-0-3)
*Grandy, R.*

## Psychology

**203 INTRODUCTION TO COGNITIVE PSYCHOLOGY** (3-0-3)
*Martin, R.C.*

**308 HUMAN LEARNING AND MEMORY** (3-0-3)

*Staff*

**309 PSYCHOLOGY OF LANGUAGE** (3-0-3)

*Martin, R.C.*

**339 STATISTICAL METHODS** (3-0-3)

*Lane, D.*

**340 RESEARCH METHODS** (3-0-3)

*Watkins, M.*

**351 PSYCHOLOGY OF PERCEPTION** (3-0-3)

*Pomerantz, J.*

**362 PHYSIOLOGICAL PSYCHOLOGY** (3-0-3)

*Staff*

## Sociology

**353 CONCEPTIONS OF HUMAN NATURE** (3-0-3)

*Klineberg, S.*

## Statistics

**301 MODEL BUILDING** (3-0-3)

*Athinson, E.*

# Computational and Applied Mathematics

## The George R. Brown School of Engineering

**Professor W.W. Symes,** *Chair*
**Professors Akin, Bixby, Carroll, S.H. Davis, Dennis, Miele, Pfeiffer, D. W. Scott, Sorensen, Tapia, J. R. Thompson, C.C. Wang, and Wheeler**
**Adjunct Professors Eisner, Glowinski, Kendall, Matthews, Morshedi, Mufti, Nunez, Peaceman, and Vu**
**Assistant Professors Cox and Dawson**
**Faculty Fellow Todd Arbogast**

*Degrees Offered:* B.A., M.C.A.M., M.C.S.E., M.A., Ph.D.

**Undergraduate Program.** The program allows each student considerable freedom to plan a course of study consistent with his or her particular interests in mathematics and its applications. Available courses provide foundations for applications to many fields of engineering, physical sciences, life sciences, behavioral and social sciences, and computer science.

Within the flexible framework of university requirements, the program consists of three parts: (1) basic courses in mathematics and computer science, (2) introductory courses in appropriate areas of computational and applied mathematics, and (3) electives for which major credit is given.

1. Students normally take eight basic courses, as follows:
   Calculus—Mathematics 101, 102 (or honors equivalent);
   Differential equations —Mathematics 211;
   Multivariable calculus — Mathematics 212;
   Linear algebra — Mathematics 355 or Computational & Applied Mathematics 310;
   Foundation mathematics — Mathematics 321;
   Computer programming — Computer Science 210 or 212;
   Numerical analysis — Computational & Applied Mathematics 353.

2. Students take one course in each of three of the following areas:
   Computing — At least three hours of Computer Science (but not Computational & Applied Mathematics 223) in addition to the above;
   Numerical analysis — Computational & Applied Mathematics 451, 452, or 454;
   Operations research/optimization — Computational & Applied Mathematics 460, 471, 472, 475, or 476; or Economics 472.
   Physical mathematics: Computational & Applied Mathematics 335, 336, or Mathematics 381,382.
   Applied probability: Computational & Applied Mathematics 381.

3. Each student will take, as a *minimum,* two additional courses in one of these areas. Students are expected to consult with a faculty adviser to work out a coherent package (of some three to five courses) which provides a reasonable foundation in the area of emphasis.

To these are added courses in computational and applied mathematics, computer science, statistics, or mathematics, and appproved electives in other areas to bring total major credits to 55 semester hours.

In addition to departmental requirements for the major, students must also satisfy university distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

A student contemplating a major in Computational and Applied Mathematics is encouraged to contact any member of the department, particularly a member of its undergraduate committee. A faculty member will help the student explore possible programs suited to his or her individual needs and interests.

The Department of Computational and Applied Mathematics participates in the interdisciplinary program in Managerial Studies. More information may be obtained from the description Managerial Studies program on page 404.

**Graduate Program.** 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 physical, biological, mathematical, or behavioral sciences. The credentials of each applicant will receive individual evaluation by the faculty of the department. A complete application folder should include the quantitative, verbal, and advanced scores from the Graduate Record Examination, all transcripts, and evidence of proficiency in English (such as the TOEFL) where appropriate.

The graduate program is designed for students seeking the professional degree of Master of Computational and Applied Mathematics or the research degrees of Master of Arts or Doctor of Philosophy. It normally takes one or two years to obtain a master's and three or four years to obtain a doctorate. A master's degree is not a prerequisite for the doctoral degree.

The professional degree emphasizes the applied aspects of mathematics. This degree is intended for persons who plan careers as practitioners rather than primarily as researchers. Presently, this degree emphasizes the following areas, singly or in combination: (1) general applied mathematics, (2) operations research and optimization, and (3) numerical analysis. Further information about this degree may be obtained from the department.

The granting of a research degree presupposes demonstrated ability to do advanced original research. Students are encouraged to initiate research activities at the earliest possible time in their graduate study. Presently, the research interests of the faculty are in the following four major areas: (1) numerical analysis and computation, (2) physical mathematics, (3) operations research and optimization, (4) mathematical modeling in physical, biological, or behavioral sciences. Further information about these areas may be obtained from the department.

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. As an integral part of their scholarship programs, all graduate students are expected to attain some proficiency in teaching by engaging in instructional assignments of the department.

**Requirements for the Degree of Master of Computational and Applied Mathematics:**

1. Satisfactory completion of at least 30 semester hours of coursework approved by the department.
2. At most two courses may be at the 300- (junior) level; at most two may be taken outside the department; and at most two courses may be transferred.

**Requirements for the Degree of Master of Arts:**

1. Satisfactory completion of at least 30 semester hours (including thesis) at the graduate level. Normally five courses must be in Computational & Applied Mathematics.
2. An original thesis acceptable to the department. Note, however, that successful performance on the qualifying examination fulfills the master's thesis requirement for a student working toward the Ph.D. degree.
3. Satisfactory performance on a public oral examination on the thesis; the procedure for the public oral examination is given in the general rules of the University.

**Requirements for the Degree of Doctor of Philosophy:**

1. Satisfactory completion of courses of study approved by the department. At least two courses outside the major area are required.
2. Satisfactory performance on preliminary and qualifying examinations and reviews.
3. Satisfactory completion of two semester courses or a reading examination on an approved foreign language.
4. An original thesis acceptable to the department.
5. Satisfactory performance on a final public oral examination on the thesis; the procedure is given in the general rules of the university.

**Computational Science and Engineering Degree Program**

Modern science and engineering have become increasingly reliant upon computation as an aid to research, development, and design. However, using the newest and most powerful computers requires a knowledge of parallel and vector capabilities along with a variety of other things such as visualization, networking, and programming environments. It is also necessary to be aware of a variety of new algorithms and analytic techniques that have been developed to utilize most effectively the power of these computational tools.

In order to address this need, the computational and applied mathematics department in conjunction with the biochemistry and cell biology, geology and geophysics, computer science, chemical engineering, electrical engineering, and statistics departments, has established an advanced degree program in an area called Computational Science and Engineering (CSE). The program focuses attention upon modern computational techniques and provides a resource of training and expertise in this area.

**Oversight.** The program is governed by a committee of faculty chosen by the deans of engineering and natural sciences, with ultimate oversight by the provost. This Computational Science Committee (CSC) is responsible for assisting the student in designing an appropriate course of study. It also sets the examination requirements for each student.

There are *two degree tracks*. One leads to a Ph.D. and the other to a professional degree, Master of Computational Science and Engineering (M.C.S.E.).

**The Professional Master's Degree.** At the master's level the intent is to produce a professional expert in scientific computing who will be able to work as part of an interdisciplinary research team. A recipient of this degree will be well trained in state of the art numerical methods, high performance computer architectures, use of

software development tools for parallel and vector computers, and in the application of these techniques to at least one scientific or engineering area.

**Requirements for the Degree of Master of Computational Science and Engineering:**

1. Satisfactory completion of at least 30 semester hours of course work approved by the department.
2. At most two courses may be at the 300 (junior) level; at most two may be taken outside the department; and at most two courses may be transferred. The program of study will be designed by the student with the advice and approval of the CSC. The student will be required to adhere to the following specifications:
   **Required Courses:** Comp 412, Elec 425, Caam 420, one of Caam 451, 452, 453, 454, 471. The central course (420) should be taken in the first semester of study.
   **Computational Science Electives:** Four courses selected from an approved list of Comp or Caam courses, including at least two at the 500 level.
   **Open Electives:** Two approved courses from a department other than Caam or Comp at the 300 level or above. Students may elect to undertake a computational project within a participating department to satisfy this requirement. Examples would be Elec 490 or 590, Ceng 584.
   **Application Areas:** Appropriate sequence from a participating application area at the level of 300 or above.

**Requirements for the Degree of Doctor of Philosophy:**

1. Satisfactory completion of courses of study approved by the CSC. At least two courses outside the major area are required.
2. Satisfactory performance on preliminary and qualifying examinations and reviews administered by the CSC.
3. Satisfactory completion of two semester courses or a reading examination on an approved foreign language.
4. An original thesis acceptable to the CSC.
5. Satisfactory performance on a final public oral examination on the thesis; the procedure is given in the general rules of the university.

**Administration.** Administratively, the Computational Science and Engineering Program will be handled through the offices of the Computer and Information Technology Institute (CITI). Secretarial support and record-keeping needs will be met through this resource. CITI already serves as a focal point for faculty interested in computation.

**Recruitment, Financial Aid, and the Associated Department.** Students may be recruited either directly into the Computational Science and Engineering Program or indirectly through one of the participating departments. In all cases, however, the student must fulfill the admissions requirements of one department that will then agree to act as the student's associated department. The student then participates as a normal graduate student within that department in every way except that the curriculum and examination requirements will be set by the CSC. This means that the student must fulfill the normal teaching requirements of the associated department as well as any other normal duties.

Initially, funding for the first year of those CSE students who seek the Ph.D. has been provided for by graduate fellowships through the Center for Research on Parallel Computation. Six fellowships have been allocated to this program for as long as the center exists. It is assumed that all CSE Ph.D. students will be supported from research grants for the subsequent years.

# Computational and Applied Mathematics

*Computational and Applied Mathematics Courses*

**223 INTRODUCTION TO COMPUTING** (Variable)
* DISTRIBUTION COURSE: CATEGORY III.6
A self-paced (with deadlines), variable-credit course in the use of the programming languages FORTRAN 77, MATLAB, MAPLE, and MATHEMATICA to solve technical problems. The course is divided into four parts. Each part may be taken in separate semesters, but no more than four hours of credit may be taken. Numerical techniques for solving systems of equations and computer graphics are emphasized. Note: This course will not be offered after 1993-94.
*Staff*

**310(S) LINEAR ALGEBRA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Concepts and results of linear algebra useful in a variety of fields of application.
*Staff*

**335(F) FOUNDATIONS OF APPLIED MATHEMATICS I** (3-0-3)
Analytical and numerical methods for problems of fluid and solid mechanics and electromagnetism. First of a two-semester sequence. Prerequisites: Mathematics 211, 212. Matlab will be used extensively.
*Cox, S.*

**336(S) FOUNDATIONS OF APPLIED MATHEMATICS II** (3-0-3)
Continuation of Caam 335.
*Symes, W.*

**353(S) COMPUTATIONAL NUMERICAL ANALYSIS** (3-0-3)
An introductory course in numerical analysis with computer applications. Prerequisite: Math 211.
*Dawson, C.*

**376(F) INTRODUCTION TO MANAGEMENT SCIENCE** (3-0-3)
Mathematical models in deterministic and stochastic situations, including linear programming, inventory theory, decision theory, waiting line theory. Prerequisite: a statistics course.
*Staff*

**378(S) INTRODUCTION TO OPERATIONS RESEARCH** (3-0-3)
An alternative to Caam 376 for students with a year of calculus. Some knowledge of linear algebra and of probability is desirable.
*Staff*

**381 INTRODUCTION TO APPLIED PROBABILITY** (3-0-3)
Concepts, interpretations, elementary techniques, and applications of modern probability theory, Prerequisite: Math 102. Also offered as Elec 331 and Stat 381.
*Pfeiffer, P.*

**400(F) CASE STUDIES IN APPLIED MATHEMATICS** (3-0-3)
In-depth study of selected scientific and technological problems and the mathematical tools useful in their solution. Formulation of mathematical models from physical principles; application of dimensional analysis, perturbation theory, asymptotic expansions, eigenfunction series, and other techniques. Recommended background: Caam 335/336 or Math 381.
*Ryan, F.*

**420(S) INTRODUCTION TO COMPUTATIONAL SCIENCE** (3-0-3)
Basic principles of computational science, including vector and parallel computer architectures, parallel numerical algorithms, scientific visualization, analysis and enhancement of performance, and use of programming tools and environments. Programming assignments will involve hands-on experience with supercomputers and parallel computers. Prerequisites: Comp 210 and Caam 353.
*Sorensen, D.*

**432 TENSOR ANALYSIS** (3-0-3)
Review of Linear Algebra. Tensor Algebra. Tensor analysis on Euclidean spaces. Applications to particle mechanics, continuum mechanics, and electromagnetic theory. Prerequisite: Linear Algebra. Not offered every year.

*Staff*

**435(S) ORDINARY DIFFERENTIAL EQUATIONS** (3-0-3)
The existence and continuous dependence of solutions. The theories of Floquet (periodic coefficients), Sturm-Liouville, Titchmarsh, and Weyl (boundary value problems), Liapunov (stability), Hartman, and Grobman (stability via linearization), and Poincare and Bendixson (periodic solutions). Prerequisites: Math 211, 321.

*Cox, S.*

**451(F) NUMERICAL LINEAR ALGEBRA** (3-0-3)
A detailed study of numerical methods for the basic problems of linear algebra. Derivation, analysis, and computer implementation of algorithms for the solution of linear systems, least squares problems, eigenvalue problems, floating point arithmetic, rounding error analysis, matrix and vector norms, sensitivity analysis. Prerequisite: Caam 310 or Math 355.

*Sorensen, D.*

**452(S) COMPUTATIONAL METHODS FOR DIFFERENTIAL EQUATIONS** (4-0-4)
Finite difference, variational, and collocation methods for approximating numerically the solutions of ordinary and partial differential equations. Computer implementation to verify convergence to the solution.

*Wheeler, M.F.*

**453(F) NUMERICAL ANALYSIS OF ORDINARY DIFFERENTIAL EQUATIONS** (3-0-3)
Runge-Kutta, linear, multistep methods; stability analysis and stiffness for initial-value problems; finite difference, finite element, collocation, and shooting methods for two-point boundary value problems. Prerequisite: Math 211.

*Dawson, C.*

**454(S) COMPUTATIONAL METHODS NONLINEAR SYSTEMS** (3-0-3)
Analysis and computer applications of modern methods for solving nonlinear algebraic systems and nonlinear constrained optimization problems. Prerequisite: Math 211, 212, Linear Algebra.

*Staff*

**460(F) OPTIMIZATION THEORY** (3-0-3)
Derivation and application of necessity conditions and sufficiency conditions for constrained optimization problems. Prerequisite: 212 and Linear Algebra.

*Tapia, R.*

**471(F) LINEAR PROGRAMMING** (3-0-3)
Formulation of managerial and technical problems; simplex method; revised simplex method; duality theory and applications; transportation problems; decomposition techniques. Also offered as Econ 471.

*Bixby, R.*

**472 GAME THEORY AND DECISION ANALYSIS** (3-0-3)
Matrix games; relation to linear programming; nonzero sum games; games againstnature; decision trees; models for group decisions; utility theory; benefit-cost models. Not offered every year.

**475(S) INTEGER AND COMBINATORIAL OPTIMIZATION** (3-0-3)
Modeling and solving optimization problems with discrete components; graphs and networks; network flow problems; minimum spanning trees; basic polyhedral theory; some standard problems; computational complexity; branch and bound; cutting planes; Lagrangian relaxation; Benders' decomposition. Prerequisite: Caam 471. Also offered as Econ 475.

*Staff*

**476(S) OPERATIONS RESEARCH—STOCHASTIC MODELS** (3-0-3)
Probability and decisions; random selection; Markov chains and decision processes; waiting lines; martingale models. Prerequisite: Computational & Applied Mathematics 381 or Statistics 310. Also offered as Econ 476.

*Pfeiffer, P.*

**479 OPERATIONS RESEARCH: ELEMENTARY DISCRETE OPTIMIZATION** (3-0-3)
Elementary treatment of ill-behaved optimization problems. Discrete dynamic programming and integer programming. Emphasis on theory, formulation, and computational methods. Prerequisite: Caam 471. Not offered every year.

**483 MARKOV AND MARTINGALE SEQUENCES—RENEWAL PROCESSES** (3-0-3)
The Markov property and Markov sequences. Discrete parameter martingales. Poisson and other renewal processes. Prerequisite: Caam 381. Also offered as Stat 483. Not offered every year.

**490(F) INDEPENDENT STUDY** (Variable)

*Staff*

**491(S) INDEPENDENT STUDY** (Variable)

*Staff*

**533 ADVANCED TENSOR ANALYSIS** (3-0-3)
Differential and integral calculus on manifolds. Riemannian geomentry. Calculus of variations. Hamilton-Jacobi theory. Applications to analytical mechanics, relativity and continuum mechanics. Prerequisite: Caam 432. Offered occasionally.

*Staff*

**535 MATHEMATICAL THEORY OF NONLINEAR ELASTICITY** (3-0-3)
Representation theory for the constitutive relations for elasticity; homogeneous and inhomogeneous bodies; wave propagation; second-order elasticity and approximations. Prerequisite: Mech 511, 512, or Caam 432. Offered occasionally.

*Staff*

**540(S) APPLIED FUNCTIONAL ANALYSIS** (3-0-3)
Applications of basic concepts and theorems in functional analysis to mechanics, quantum mechanics, and/or optimal control problems. Not offered every year.

*Staff*

**541(F) PARTIAL DIFFERENTIAL EQUATIONS I** (3-0-3)
Boundary value problems of mathematical physics; function spaces and distributions; direct method in the calculus of variations; Green's functions and integral equations; compact operators, spectral theory, regular and singular Sturm-Liouville problems. Prerequisite: Math 423 and 425, or consent of the instructor.

*Staff*

**542(S) PARTIAL DIFFERENTIAL EQUATIONS II** (3-0-3)
Continuation of 541. Local existence of solutions, Hamilton-Jacobi theory; classical theory of the heat and wave equaitons; weak solutions, Sobolev spaces, and boundary regularity of solutions of elliptic boundary value problems; additional topics at the discretion of the instructor.

*Cox, S.*

**551(S) ADVANCED NUMERICAL LINEAR ALGEBRA** (3-0-3)
Numerical methods for large (sparse) linear algebra problems. Classical iterative methods for solution; Krylov subspace projection methods for large-scale eigenvalue problems and linear systems; introduction to multigrid techniques; direct methods for sparse symmetric positive definite systems. Content selected from the above will vary from year to year. The course may be repeated with consent of instructor. Prerequisite: Caam 451 or consent of instructor.
*Sorensen, D.*

**552 NUMERICAL METHODS PARTIAL DIFFERENTIAL EQUATIONS I** (3-0-3)
Analysis of modern numercial methods, including finite-difference methods, finite-element methods, collocation methods, and associated algebraic problems. Not offered every year.

**553 NUMERICAL METHODS PARTIAL DIFFERENTIAL EQUATIONS II** (3-0-3)
Continuation of Caam 552.

**554(S) NUMERICAL NONLINEAR PROGRAMMING** (3-0-3)
Analysis of modern numerical methods for constrained problems, including variable metric methods, successive quadratic programming, and trust region methods. Not offered every year.
*Tapia, R.*

**563(F) ENGINEERING APPROACH TO MATHEMATICAL PROGRAMMING** (3-0-3)
Minimization of functions of variables that are either unconstrained or subject to equality constraints, or subject to inequality constraints, or subject to both equality and inequality constraints. Analytical methods: first-order conditions and second-order conditions. Numerical methods: first-order methods and second-order methods. Also offered as Mech 563.
*Miele, A.*

**564(S) ENGINEERING APPROACH TO OPTIMAL CONTROL** (3-0-3)
Optimal control theory and calculus of variations. Minimization of functionals depending on variables subject to differential constraints. Numerical methods; first-order methods and second-order methods. Also offered as Mech 564.
*Miele, A.*

**571(S) ADVANCED INTEGER AND COMBINATORIAL OPTIMIZATION** (3-0-3)
Material will vary from year to year. Emphasis will be on methods for solving optimization problems with discrete components. Possible topics include polyhedral structure of fundamental problem classes; matrix properties of integral polyhedra; cardinality and weighted matching; matroids and polymatroids; submodular functions; the ellipsoid algorithm and its consequences; integer lattices; advanced integer programming techniques. Prerequisite: Caam 475.
*Bixby, R.*

**574 INTEGER PROGRAMMING** (3-0-3)
Applications, theory and computational methods in pure and mixed interger programming. Special problem structures. Not offered every year.

**581(F) MATHEMATICAL PROBABILITY I** (3-0-3)
Measure-theoretic foundations of probability for students who need access to advanced mathematical literature in probability and random processes. Open to qualified undergraduates. Prerequisite: Caam 381. Also offered as Stat 581.
*Pfeiffer, P.*

**582(S) MATHEMATICAL PROBABILITY II** (3-0-3)
Continuation of Caam 581. Also offered as Stat 582.
*Pfeiffer, P.*

**583(F) INTRODUCTION TO RANDOM PROCESSES & APPLICATIONS** (3-0-3)
Formulation, analysis, representations, and applications of some standard random processes. Prerequisite: Caam 381; Recommended: Caam 581 or a course in real variable theory. Also offered as Elec 533 and Stat 583.

*Aazhang, B.*

**584(S) ESTIMATION THEORY** (3-0-3)
Maximum likelihood and Bayesian vector parameter estimation. Minimum mean square error estimation. Time series analysis. Algorithms based on state variable and ARMA models for signal estimation, model identification, and spectral estimation. Prerequisite: Caam 381 (583 Recommended). Also offered as Elec 534 and Stat 584. Not offered every year.

*Johnson, D.*

**585 INFORMATION AND CODING THEORY** (3-0-3)
See Elec 535. Prerequisite: Caam 381. Also offered as Elec 535.

**587 ADVANCED STOCHASTIC PROCESSES** (3-0-3)
Measure-theoretic probability. Separability and measurability. Analytic properties of sample functions. Standard properties of second-order processes. Continuous-parameter Markov processes and martingales. Prerequisite: Caam 581 or 583. Also offered as Elec 587. Not offered every year.

**590(F) INDEPENDENT STUDY** (3 to 6 hours)

*Staff*

**591(S) INDEPENDENT STUDY** (3 to 6 hours)

*Staff*

**592/593 TOPICS IN APPLIED MATHEMATICS** (3-0-3 each semester)

*Staff*

**594/595 TOPICS IN APPLIED PROBABILITY** (3-0-3 each semester)

*Staff*

**597(S) SPECIAL TOPICS IN COMPUTATIONAL AND APPLIED MATHEMATICS** (3-0-3 each semester)

*Staff*

**652 TOPICS IN NUMERICAL DIFFERENTIAL EQUATIONS** (3-0-3)
The content of this course varies from year to year. It may be repeated if the change of content justifies. Not offered every year.

*Staff*

**654(F) TOPICS IN OPTIMIZATION** (3-0-3)
Content varies from year to year.

*Staff*

**800a,b,c THESIS** (Variable)

# Computer Science

## The George R. Brown School of Engineering

**Professor Dennis,** *Chair*
**Professors Cartwright, Felleisen, Goldman, Gorry, Kennedy, and Zwaenepoel**
**Adjunct Professors Dongarra and Fox**
**Associate Professors Cooper and Warren**
**Assistant Professors Cox, Djidjev, Krentel, and Schäffer**
**Faculty Fellows Mellor-Crummey and Torczon**
**Adjunct Associate Professors Callahan and S. Warren**
**Research Scientists Briggs, Carle, Dwarkadas, Koelbel, and Moore**
**Research Associate Fagan**
**Lecturers Clarkson and Duba**

*Degrees Offered:* B.A., M.C.S., M.S., and Ph.D.

**Undergraduate Program.** During the first two years, all computer science majors are required to take the following courses:

Mathematics 101, 102 (or 121, 122)
Physics 101
Computer Science 210, 212, 280, 320

In addition, the following courses are strongly recommended:

Mathematics 211, 212
Physics 102, 132

During the spring semester of the sophomore year, prospective majors should apply for admission into the program. Because enrollment in the major is limited to the number of students that the facilities can handle, some applications may be turned down. After admission, a student will plan a course of study for the junior and senior years with a departmental undergraduate adviser. To complete the major, a student must fulfill the following requirements:

Algorithms: Computer Science 382
Linear algebra: Computational and Applied Mathematics 310 or Mathematics 355
Probability/Statistics: Statistics 310 or 381
Software systems (two of): Computer Science 310, 412, or 421
Hardware and architecture: Electrical and Computer Engineering 326 or 425
Computational mathematics: one of Computational and Applied Mathematics 353, 451, 452, 453, 454, 471
Mathematics: one of 212, 312, 356, 425, or 463

plus two of the following courses not used to satisfy the above requirements:

Computer Science 310, 311, 409, 411, 412, 421, 425, 440, 460, 480, 481

The courses required for the major sum to between 59 and 61 hours. Since the university requires 60 hours in addition to those used for the major, as many as 121 hours may be needed to graduate.

**Undergraduate Honors Program.** A student can, with the permission of the department, join the undergraduate honors program in Computer Science. The requirements for the freshman and sophomore years of the program are identical to the first two years in the standard program above. In order to complete the requirements for the major, a student must take the following courses:

Software engineering: Computer Science 310
Algorithms: Computer Science 382
Linear algebra: Computational and Applied Mathematics 310 or Mathematics 355
Probability/Statistics: Statistics 310 or 381
Software systems: Computer Science 412 and 421
Formal languages: Computer Science 481
Hardware systems: Electrical and Computer Engineering 425
Computational mathematics: one of Computational and Applied Mathematics 451, 452, 453, 454, 471
Mathematics: 425 or 463

plus one of

Computer Science 311, 409, 411, 460, 480, 492

For more information about the program, please contact the departmental secretary.

**Graduate Program.** The department offers three graduate programs: the professional master's, the research master's, and the doctoral. The professional program, a terminal degree program for students intending to pursue a technical career in the computer industry, awards the Master of Computer Science degree. To earn the degree, the student must successfully complete thirty semester hours of course work approved by the department. Up to six hours may be accepted as transfer credit. A minimum grade point average must be achieved over all courses counting toward the degree. The professional master's program normally requires three semesters of study.

The research master's program requires a thesis in addition to course work and culminates in the Master of Science degree. Admission to this program, however, is reserved for special situations.

The doctoral program, offered to students planning to pursue a career in computer science research and education, awards the degree of Doctor of Philosphy. To earn this degree, the student must pass a comprehensive examination covering the core areas of computer science, pass a qualifying examination in an area of specialization, conduct original research, submit an acceptable thesis proposal, successfully defend the thesis proposal, submit an acceptable thesis reporting research results, and pass a final oral defense. Upon successful completion of the comprehensive examination, the qualifying examination and the proposal defense, the student will be awarded the Master of Science degree. After a successful thesis defense and the completion of all departmental and university requirements, the student will be awarded the Doctor of Philosophy degree. The doctoral program normally requires four to five years of study.

Fellowships and research assistantships are available to students in the doctoral 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. During the academic year, students in the doctoral program assist the department in the teaching and administration of undergraduate and graduate courses. However, such duties will not be required of any student for more than four semesters and will not exceed an average of ten hours per week.

Current research interests of the faculty include algorithms, compiler construction, distributed systems, geometric modeling and robotics, parallel processing, performance evaluation, programming environments, programming languages, program verification, semantics, symbolic computation, and the theory of computation.

For further information and application materials, write the Department of Computer Science, Rice University, P. O. Box 1892, Houston, Texas 77251-1892.

*Computer Science Courses*

Note that course registrations at the 300 and 400 level may be restricted. In addition, course registrations at the 500 level and above require the permission of the instructor.

**100 INTRODUCTION TO COMPUTING AND INFORMATION SYSTEMS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Introduction to computer organization, operating systems, programming languages, artificial intelligence, and programming. Not intended for science-engineering students. May not be taken for credit after any other programming course.

*Staff*

**200(S) ELEMENTS OF COMPUTER SCIENCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
A broad introduction to the major topics of computer science, including algorithms, mathematical models of computation, machine organization and design, programming languages, communication, and artificial intelligence. Not intended for science-engineering students.

*Staff*

**210 INTRODUCTION TO PRINCIPLES OF SCIENTIFIC COMPUTATION** (3-3-4)
*DISTRIBUTION COURSE: CATEGORY III.6
Fundamental concepts of scientific computation including recursive and iterative problem decomposition. Functional and imperative programming paradigms. Basic numerical methods. Laboratory assignments using Scheme and MATLAB, a high-level language for matrix computations and graphics. Limited enrollment.

*Staff*

**211(F) INTRODUCTION TO PROGRAMMING** (3-6) variable credit
* DISTRIBUTION COURSE: CATEGORY III.6
Introduction to programming using Pascal. Problem solving and algorithms, elementary data structures, procedures and functions, debugging. No longer offered. Remains as a course number in awarding transfer and advanced placement credit. NOTE: Only ONE of Comp 211 or 212 may be counted for distribution.

*Staff*

**212 INTERMEDIATE PROGRAMMING** (3-1-4)
Programming methodology, problem solving, recursion, data structures, introduction to analysis of algorithms, sorting techniques. NOTE: Only ONE of Computer Science 211 or 212 may be counted for distribution. Prerequisite: Comp 210.

*Staff*

**240(F) THE AGE OF INTELLIGENT MACHINES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Problems of creating minds for computers, problems commonly addressed by the field of computer science known as artificial intelligence. History and accomplishments of artificial intelligence. Approaches to aspects of intelligence and mind through readings drawn from logic, philosophy, religion, psychology, linguistics, neuroscience and science fiction.

*Staff*

**280(F) MATHEMATICS OF COMPUTER SCIENCE** (4-0-4)
Mathematical induction, recursive definitions and recurrence equations, finite state machines, computability, logic. Prerequisites: Math 102, Comp 210.

*Staff*

**290(F/S) COMPUTER SCIENCE PROJECTS** (1-4)
Theoretical and experimental investigations under staff direction. Prerequisite: permission of department.

*Staff*

**310(F) PROGRAMMING STUDIO** (2-6-4)
Advanced programming methods, including structured programming, team programming, program specification and testing. Prerequisites: Comp 212, 280.

*Staff*

**311(S) PROGRAMMING LANGUAGES** (3-3-4)
The design, definition, and interpretive implementation of programming languages including methods for precisely specifying syntax and semantics. Prerequisite: Comp 210, Corequisite: Comp 280.

*Staff*

**320(S) INTRODUCTION TO COMPUTER ORGANIZATION** (3-3-4)
Basic computer architecture and assembly language programming. System software, including loaders and assemblers. Input-output devices and programming. Prerequisite: Comp 212.

*Staff*

**382(S) DESIGN AND ANALYSIS OF ALGORITHMS** (4-0-4)
Design and analysis of efficient computer algorithms and data structures. Prerequisites: Comp 212, 280. Also offered as Elec 322.

*Staff*

**390 COMPUTER SCIENCE PROJECTS** (1-4)
See Comp 290.

*Staff*

**409(F) LOGIC IN COMPUTER SCIENCE** (3-0-3)
Set-theoretic concepts. Propositional and first-order logic. Soundness, completeness, incompleteness, and undecidability. Functional programming as an extension of first-order logic. Logical issues in computer science. Prerequisites: Comp 210, 280, 311.

*Staff*

**411(S) ADVANCED PROGRAMMING LANGUAGES** (3-0-3)
Formal methods for the specifications of operational semantics. Operational equivalence and programming language calculi. Approaches to a formalization of the programming language design space. Prerequisites: Comp 280, 311, 320.

*Staff*

**412(F) COMPILER CONSTRUCTION** (3-3-4)
Topics in the design of programming language translators, including parsing, run-time storage management, error recovery, code generation and optimization. Prerequisite: Comp 382.

*Staff*

**421(S) OPERATING SYSTEMS AND CONCURRENT PROGRAMMING** (3-3-4)
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. Prerequisites: Computer Science 212, 320. Also offered as Elec 421.

*Staff*

**425(F) COMPUTER SYSTEMS** (3-3-4)
Memory hierarchy, storage management, addressing, control, and input-output. Microprogramming. Comparison of solutions to computer system design problems. Prerequisites: Comp 320 and Elec 326. Also offered as Elec 425.

*Staff*

**440(S) ARTIFICIAL INTELLIGENCE** (3-0-3)
Techniques for simulating intelligent behavior by machine, problem solving, game playing, pattern perceiving, theorem proving, semantic information processing, and automatic programming. Prerequisites: Comp 210. Also offered as Elec 521.

*Staff*

**441(S) APPLIED ARTIFICIAL INTELLIGENCE PROJECTS** (3-0-4)
Seminar on the development of knowledge-based (expert) systems. In addition to reading original papers on aspects of knowledge engineering and expert systems development, students will work as members of teams to develop a knowledge-based system using an expert systems tool. Potential applications include medical decision making, molecular biology, and banking. Prerequisite: Comp 440.

*Staff*

**460(S) INTRODUCTION TO COMPUTER GRAPHICS** (3-0-3)
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. Not necessarily offered every year. Prerequisite: Comp 382.

*Staff*

**461(S) COMPUTER-AIDED GEOMETRIC DESIGN** (3-0-4)
Fundamental representations and algorithms for curves and surfaces in computer-aided geometric and hermite interpolation. Bezier and B-spline approximation. Geometric continuity and Beta-splines. Recursive algorithms for evaluation, differentiation, subdivision and knot insertion. Blossoming and polar forms. Descartes' law of signs and the variation diminishing property. Prerequisite: Masc 353.

**480(S) CONCRETE MATHEMATICS** (3-0-3)
Discrete and combinatorial mathematics, including sums and products, integer functions, elementary number theory, factorials, binomial coefficients, harmonic numbers, Fibonacci numbers, generating functions, asymptotic representations. Applications to advanced algorithm analysis. Not offered every year. Prerequisite: Comp 382.

*Staff*

**481(F) AUTOMATA, FORMAL LANGUAGES, AND COMPUTABILITY** (4-0-4)
Finite automata, regular expressions, regular languages, pushdown automata, context-free languages, Turing machines, recursive languages, computability, and undecidability. Prerequisite: Comp 382.

*Staff*

**490 COMPUTER SCIENCE PROJECTS** (1-9)
Theoretical and experimental investigations under staff direction. Prerequisite: permission of department.

*Staff*

**491 COMPUTER SCIENCE TEACHING** (3-0-3)
A combination of in-service teaching and a seminar. Prerequisite: permission of department.

*Staff*

**492 COMPUTER SCIENCE HONORS PROJECT** (3-9)
Theoretical and experimental investigations under staff direction. Open only to students in the undergraduate honors program in Computer Science. Prerequisite: permission of the department.

*Staff*

**511 DENOTATIONAL SEMANTICS OF PROGRAMMING LANGUAGES** (3-0-3)
The operational and denotational semantics of programming languages. Prerequisites: Comp 311, 411, 481.

*Staff*

**512(F) ADVANCED COMPILER CONSTRUCTION** (3-3-4)
Advanced topics in the design and implementation of programming language translators. Data flow analysis and optimization, code generation and register allocation, attribute grammars and their evaluation, translation within programming environments, the implementation of advanced language features. Prerequisite: Comp 412.

*Staff*

**513(F) IMPLEMENTATION OF PROGRAMMING LANGUAGES** (3-3-4)
Automatic storage management. Representation of function closures and continuations. Implementation of logic programming. Type checking in the presence of polymorphic typing and overloading. Compiler generation from formal semantics.

*Staff*

**514(F) PROGRAMMING LOGICS** (3-0-3)
Formal systems for specifying and verifying properties of programs. First order predicate logic, models of programming languages, and deductive systems for proving properties of programs.

*Staff*

**515(S) ADVANCED COMPILATION FOR VECTOR AND PARALLEL PROCESSORS** (3-0-3)
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.

*Staff*

**519 TOPICS IN PROGRAMMING LANGUAGE** (3-0-3)
Content varies at the discretion of the instructor.

*Staff*

**520(F) DISTRIBUTED SYSTEMS** (3-3-4)
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 destributed systems. Emphasis on performance aspects of system software design. Prerequisites: Comp 421, 425. Also offered as Elec 520.

*Staff*

**525 ADVANCED COMPUTER ARCHITECTURE** (3-0-3)
Design issues of pipelined, vector, and multiprocessor architectures. Development of performance evaluation techniques to model and simulate configuration of concurrent architectures. Software aspects of processing and their effects on performance. Prerequisite: Comp 425. Also offered as Elec 525.

*Staff*

**526(S) COMPUTER NETWORKS: DESIGN AND ANALYSIS** (3-0-3)
Design and comparison of computer networks, techniques for performance analysis, connectivity and reliability, capacity assignment. Network topologies. Local area networks, including rings, busses, and contention networks. Prerequisite: Elec 428. Also offered as Elec 526.

*Staff*

**529(S) COMPUTER NETWORKS: ARCHITECTURE AND PROTOCOL** (3-0-3)
Introduction to computer networks and computer communication. Design of protocols for error recovery, reliable delivery, routing and congestion control. Store-and-forward networks, satellite networks, local area networks and locally distributed systems. Case studies of networks, protocols and protocol families. Emphasis on software design isues in computer communication. Prerequisites: Stat 382, Comp 421. Also offered as Elec 529.

*Staff*

**530 DATABASE SYSTEM** (3-0-3)
Survey of database system implementation and design techniques. File structures, relational, hierarchical and network schemes, query languages, protection and concurrent access. Prerequisite: Comp 382. Not offered every year.

*Staff*

**541(S) KNOWLEDGE-BASED SYSTEMS** (3-0-3)
The uses of artificial intelligence to augment human capabilities. Decision support systems, expert systems with emphasis on applications in complex organizational settings. Conceptual and technical limitations of existing expert systems technology and possible remedies. Prerequisite: Comp 440.

*Staff*

**561(F) GEOMETRIC MODELING** (3-0-3)
Curves and surfaces: parametric form, implicit form, conversion between forms. Representation of solids: wireframes, octtrees, boundary representations, constructive solid geometry. Applications: graphics, motion planning, simulation, finite element mesh generation. Prerequisite: Comp 382.

*Staff*

**563(F) ALGORITHMIC ALGEBRAIC GEOMETRY** (3-0-3)
Coordinate systems, commutative algebra, algebraic curves and surfaces, relational maps. Prerequisite: permission of instructor.

*Staff*

**581 THEORY OF COMPUTATION** (3-0-3)
Computational complexity, abstract complexity, NP- and PSPACE-completeness, polynomial hierarchy, cryptography, Kolgomorov complexity, parallel algorithms, random algorithms. Prerequisite: Computer Science 481.

*Staff*

**582 ADVANCED ALGORITHMS** (3-0-3)
Advanced design and analysis of efficient computer algorithms and data structures, lower bound techniques, semi-numerical algorithms, and fast Fourier transforms. Prerequisite: Computer Science 481.

*Staff*

**583(S) VLSI ALGORITHMS** (3-0-3)
Models of parallel computation. Design and analysis of parallel algorithms. VLSI complexity. Area-time tradeoffs. Area efficient VLSI networks. Prerequisite: Comp 382. Also offered as Elec 519.

*Staff*

**584(F) COMPUTATIONAL GEOMETRY** (3-0-3)
Point location, range searching, convex hulls, proximity algorithms, intersections, geometry of rectangles.

*Staff*

**589(F) TOPICS IN THEORY OF COMPUTATION** (3-0-3)

*Staff*

**590 COMPUTER SCIENCE PROJECTS** (1-9)
Advanced theoretical and experimental investigations under staff direction.

*Staff*

**600 GRADUATE SEMINAR** (1-0-1)
A discussion of selected topics in computer science.

*Staff*

**609 UNIVERSAL ALGEBRA** (1-0-3)
Elements of Universal Algebra (isomorphic algebras, quotients, direct products, varieties). Boolen algebras (rings, filters, ideals, Stone duality, connection to model theory and logic). Prerequisite: Math 463, Comp 409.

*Staff*

**610 GRADUATE SEMINAR IN PROGRAMMING LANGUAGES** (1-0-1)
A discussion of programming language semantics in computer science.

*Staff*

**612 GRADUATE SEMINAR IN COMPILER CONSTRUCTION** (2-0-2)
Topics in construction of programming language translators. Prerequisite: Comp 412. Not offered every year.

*Staff*

**615(F) GRADUATE SEMINAR IN PARALLEL PROGRAMMING SYSTEMS** (2-0-2)
Topics in parallel programming environments and compilers for parallel computers.
*Staff*

**620 GRADUATE SEMINAR IN DISTRIBUTED COMPUTATION** (1-0-1)
Content varies at discretion of instructor. Prerequisite: Computer Science 520.
*Staff*

**661 GRADUATE SEMINAR IN GEOMETRIC COMPUTATION**

**680 GRADUATE SEMINAR IN COMPUTABILITY THEORY** (1-0-1)
Content varies at discretion of instructor. Prerequisite: Comp 581, 582.
*Staff*

**682 GRADUATE SEMINAR IN GRAPH ALGORITHMS** (3-0-3)
Advanced graph algorithms, separator theorems, planar graphs. Prerequisite: Comp 582
*Staff*

**690 RESEARCH AND THESIS** (1-15)
*Staff*

**800 DOCTORAL RESEARCH** (1-15)
*Staff*

# Economics

## The School of Social Sciences

**Professor B.W. Brown,** *Chair*
**Professors Brito, J. Brown, Bryant, Hartley, Mieszkowski, Sickles, Smith, Soligo, and Zodrow**
**Associate Professor Chae**
**Adjunct Professors Lairson and Swint**
**Adjunct Associate Professor Begley**
**Assistant Professors Dudey, Kim, Rau, Vella, and Yi**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** Undergraduates may major in either economics or mathematical economic analysis. Major requirements are not subject to change for students who are multiple majors.

**Economics** majors are required to take a minimum of ten courses including nine in economics plus one in quantitative methods as specified in (5) below.

Course requirements include:

1. Economics 211 and 212;
2. Economics 370 or 372;
3. Economics 375;
4. At least three of the following: Economics 301, 355, 415, 416, 417, 420, 421, 430, 435, 436, 438, 440, 445, 448, 450, 455, 461, 483, 485, 486
5. One course in quantitative methods selected from Economics 382, 400, 471, 475, 476, Computational and Applied Mathematics 223, Stat 301, 310, 381, 410, 431, 432, Computer Science 211, and Accounting 305 or an approved equivalent.
6. No more than three of the nine economics courses may be transferred from other schools (If Econ 211 or 212, department qualifying exam must be taken). Additional transfer credits in economics may count toward meeting university graduation requirements but not toward fulfillment of the departmental major requirements. The required course in quantitative analysis may also be transferred. It is strongly recommended that students take two semesters of calculus (Math 101/102 or Math 111/112) and a course in probability and statistics (Econ 382/Stat 310). Failure to take these courses will limit the range of electives available to the student.

Students may graduate with "honors in Economics" by achieving a B+ (3.33) average in all Economics courses and writing a senior thesis while taking Econ 403 and 404 (two semesters of independent research).

**Mathematical economic analysis majors** are required to take a minimum of 15 courses, including:

1. Economics 211, 212, 372, 375;
2. At least three of the following: Economics 301, 355, 415, 416, 417, 420, 421, 430, 435, 436, 438, 440, 445, 448, 450, 455, 461, 483, 485, 486;
3. Economics 400.

4. Mathematics 101 and 102, 212, either Mathematics 211 or 355 or Computational and Applied Mathematics 310, and Econ 382/Stat 410, 431 or 432.
5. At least one of the following: Economics 440, 471, 472, 475, 476, 477, 478; Computational and Applied Mathematics 451, 460, 472, or an approved equivalent;
6. At least one research course, with prior approval, selected from: Economics 403, 404, 495, 496, or a graduate course.

Students may graduate with "Honors in Mathematical Economic Analysis" by achieving a B+ (3.33) average in the fifteen courses required for the major and any other economics electives taken.

The major in Mathematical Economic Analysis is recommended for students intending to do graduate work in economics. Additional information regarding major requirements can be obtained from the departmental office.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors.

**Graduate Program.** The graduate program is designed for students who wish to pursue a course of study leading to the Ph.D. degree.

Training in mathematics including at least two semesters in calculus and one in linear algebra is a prerequisite for admission to the Ph.D. program. Students who have not met these requirements may take these prerequisites as Class III students before being admitted to the graduate program. All applicants are required to take the Graduate Record Examination.

Candidates for the Ph.D. degree should expect to devote two to two and one-half years to full-time course work plus a minimum of one additional year for the completion of the dissertation. Completing the program in four years is a reasonable goal.

**Requirements for the Degree of Doctor of Philosophy:**

1. Complete an approved program of at least 18 courses, including Econ 593, 594, 595, and 596 (workshops in economics/econometrics).
2. Perform satisfactorily on written general examinations in economic theory.
3. Demonstrate proficiency in a major field by:
   a. Taking the relevant courses in that field;
   b. Performing satisfactorily on a written field examination in which the candidate plans to write a dissertation. Fields may be chosen from the following areas of interest: (1) econometrics, (2) economic development, (3) economic theory, (4) industrial organization and regulation, (5) international trade and finance, (6) labor, (7) macroeconomics/monetary theory, or(8) public finance.
4. Complete and defend orally a doctoral dissertation setting forth in publishable form the results of original research.

*Economics Courses*

**211(F/S) PRINCIPLES OF ECONOMICS I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Nature of economics; the price system; household decisions; cost and supply; marginal productivity and capital theory; industrial organization and control; economic efficiency, externalities, and public goods. Also offered in summer under Continuing Studies.
*Staff*

**212(F/S) PRINCIPLES OF ECONOMICS II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Measurement and determination of national income; money, banking, and fiscal policy; busines cycles, unemployment, and inflation; international trade and balance of payments; othe contemporary economic problems. Prerequisite: Econ 211. Also offered in summer unde Continuing Studies.

*Staf*

**301 HISTORY OF ECONOMIC ANALYSIS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The fundamental ideas of great economic thinkers from Plato to the present. Prerequisite: Eco 211. Not offered every year.

*Staf*

**355(S) MONEY AND BANKING** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
Demand and supply of money and other financial assets. American and international institutional trends and reforms. Prerequisite: Econ 211, 212.

*Smith, G*

**370(F/S) MICROECONOMIC THEORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Intermediate level analysis of markets, firms, households, income distribution, and general equilibrium. Prerequisite: Econ 211. Also may be offered in summer under Continuing Studies.

*Staff*

**372(F) MATHEMATICAL MICROECONOMICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Mathematical approach to microeconomic theory. Recommended for engineering and science students. Students may not receive credit for both Econ 370 and Econ 372. Prerequisite: Econ 211, Math 101, 102.

*Vella, F.*

**375(F/S) MACROECONOMIC THEORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Intermediate level analysis of relationships between the levels of income, employment, interest, investment, consumption, and government spending. Prerequisite: Econ 211, 212, and Nsci 101-102, or equivalent. Also may be offered in summer under Continuing Studies.

*Yi, K.*

**382 ELEMENTS OF STATISTICAL METHODS** (3-0-3)
Basic concepts and techniques of probability and statistics. Applications to economics, marketing, and finance. Prerequisite: Econ 211 and Math 102. Also offered as Stat 310.

*Staff*

**400(S) ECONOMETRICS** (3-0-3)
Estimation and forecasting models; topics include multiple regression time series, contingency table analysis, and Bayesian inference. Prerequisite: Econ 382 or Stat 310 or 381. Also offered as Stat 400.

*Vella, F.*

**403(F/S) SENIOR INDEPENDENT RESEARCH** (3-0-3)
Independent research project for seniors on an approved topic of their own choosing. Prerequisite: permission of instructor.

*Zodrow, G.*

**404(F/S) SENIOR INDEPENDENT RESEARCH** (3-0-3)
See Econ 403.

*Zodrow, G.*

**415(F) HUMAN RESOURCES, WAGES, AND WELFARE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Study of labor markets and wage determination. Special emphasis on "investment in human capital" through education, training, and health services.

*Vella, F.*

**416 ECONOMIC HISTORY OF THE U.S.: 1700-1945** (3-0-3)
Economic history of the United States from the colonial period to the end of World War II. Attention focuses upon the trends in per capita income and the forces behind these trends. Prerequisite: Econ 211. Not offered every year.

*Staff*

**417 COMPARATIVE HISTORY OF INDUSTRIALIZATION** (3-0-3)
Comparative historical analysis of industrialization of Western Europe, the United States, and Russia from the eighteenth century to World War I. Prerequisite: Econ 211. Not offered every year.

*Staff*

**420(F) INTERNATIONAL ECONOMICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A study of the economic relationships between countries. Trade theory, tariffs and other trade restrictions, international finance, trade and development, and current policy issues. Prerequisite: Econ 211, 212, 370.

*Smith, G.*

**421(S) INTERNATIONAL FINANCE** (3-0-3)
Analysis of foreign exchange and international capital markets. Linkages between exchange rates, interest rates, and prices. Overview of historical and institutional developments, and current policy issues. Prerequisite: Econ 370, 375; Stat 280 or Econ 382. Not offered every year.

*Yi, K.*

**430(F) COMPARATIVE ECONOMIC SYSTEMS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Theoretical models of various economic systems as a basis for analyzing the operation and institutional characteristics of economies including the U.S., Japan, and others selected from Europe and Asia. Discussion includes problems of transition of former planned economies to market systems.

*Soligo, R.*

**435(F) INDUSTRIAL ORGANIZATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Market structure, concentration, barriers to entry, and oligopoly pricing. Application of micro theory to industry problems. Prerequisite: Econ 211, Math 101, 102 or permission of instructor.

*Dudey, M.*

**436(S) GOVERNMENT REGULATION OF BUSINESS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Analysis of governmental regulatory activities under antitrust laws and in such regulated industries as communications, energy, and transportation. Prerequisite: Econ 211. Econ 370, 435 recommended.

*Johnson, W.*

**438(F/S) ECONOMICS OF THE LAW** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The role of economic reasoning in understanding the enactment, interpretation, and enforcement of the law. Applications to contracts, property, torts, discrimination, and criminal just. Prerequisites: Econ 211 and 370 (or permission of instructor).

*Brito, D.*

**440(F) ECONOMICS OF UNCERTAINTY** (3-0-3)
Decision making under uncertainty with applications to the choice of financial assets, the operation of insurance markets, research in markets with imperfect information and the microeconomic foundations of macroeconomics. Prerequisites: Econ 211, 212, Math 101, 102 and some familiarity with probability theory as gained in Econ 382, Stat 381 or 382.

*Hartley, P.*

**445(S) MANAGERIAL ECONOMICS** (3-0-3)
Application of economics to decision making within the firm; organization theory, cost, pricing, and problems of control. Econ 212 desirable. Prerequisite: Econ 211.

*Sickles, R.*

**448(F/S) CORPORATION FINANCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Financial analysis, planning, and control in modern corporations; includes valuation, cost and allocation of capital, capital markets. Prerequisite: Econ 211 and Acco 305.

*Staff*

**450(F) WORLD ECONOMIC AND SOCIAL DEVELOPMENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Examines past and future development in advanced and poor countries emphasizing resources, population, entrepreneurship, education, and planning. Prerequisite: Econ 211, 212. Not offered every year.

*Staff*

**455(S) MONEY AND FINANCIAL MARKETS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Determinants of the demand and supply of money, bonds, stocks, and other financial assets. Financial intermediaries. Monetary policy. Inflation. International linkages of financial markets. Prerequisites: Econ 375 and Math 101-102, or equivalent.

*Bryant, J.*

**461(S) URBAN ECONOMICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Economic analysis of the development and problems of urban areas with particular attention to current policy issues. Prerequisite: Econ 211 or permission of instructor.

*Mieszkowski, P.*

**471(F) LINEAR PROGRAMMING** (3-0-3)
Formulation of managerial and technical problems; simplex method; revised simplex method; duality theory and applications; transportation problems; decomposition techniques. Also offered as Caam 471.

*Bixby, R.*

**472 INTRODUCTION TO GAME THEORY** (3-0-3)
Solution concepts for different games: strategic form game, coalition form game, and extensive form game. Elementary application to economics and political science.

*Staff*

**475(S) INTEGER AND COMBINATORIAL OPTIMIZATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.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. Also offered as Masc 475. Prerequisite: Econ 471 or Masc 471.

*Bixby, R.*

**476(S) OPERATIONS RESEARCH—STOCHASTIC MODELS** (3-0-3)
Probility and decisions; random selection; Markov chains and decision processes, waiting lines; martingale models. Prerequisite: Masc 381 or Stat 382. Also offered as Masc 476.

*Pfeiffer, P.*

**477 MATHEMATICAL STRUCTURE OF ECONOMIC THEORY** (3-0-3)
Competitive economics from a mathematical prespective, unifying calculus, matrix algebra, and set-theoretic approaches. Theories of household, firm; production models. Prerequisite: Econ 211, Math 212, Caam 310. Also offered as Caam 477. Not offered every year.

*Staff*

**478(S) ECONOMIC APPLICATIONS OF MATHEMATICAL PROGRAMMING** (3-0-3)
Topics include activity analysis; computational general equilibrium, intertemporal optimization; market games; peak load and public good pricing. Prerequisite: Masc/Econ 471 and Masc 461. Not offered every year.

*Staff*

**479 OPERATIONS RESEARCH, ELEMENTARY DISCRETE OPTIMIZATION** (3-0-3)
Elementary treatment of ill-behaved optimization problems. Discrete dynamic programming and integer programming. Emphasis on theory, formulation, and computational methods. Prerequisite: Econ 471/Masc 471. Not offered every year.

*Staff*

**483(F) PUBLIC FINANCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Tax and expenditure policies at the federal, state, and local levels; emphasizes resource allocation and equity. Prerequisite: Econ 211.

*Zodrow, G.*

**485(F)/486(S) CONTEMPORARY ECONOMICS ISSUES** (3-0-3)
Analysis of urgent and significant economic problems. Emphasis on the evaluation of policy remedies. Principal topics vary from year to year. Not offered every year.

*Staff*

**495(F)/496(S) SENIOR SEMINAR** (3-0-3 each semester)
Reading and discussion of topics in advanced economics. Open to seniors with special approval.

*Staff*

**500(F/S) M.A. THESIS RESEARCH** (Variable)
Research on an approved topic in partial fulfillment of the requirements for the master's degree.

*Brown, B.*

**501(F) MICROECONOMIC THEORY I** (3-6-5)
Theory of the firm, the theory of consumer behavior, duopoly, bilateral monopoly, imperfect competition, capital theory, and the theory of income distribution.

*Dudey, M.*

**502(F) MACROECONOMICS/MONETARY THEORY I** (3-6-5)
Macroeconomic theory of output, consumption, investment, interest rates, inflation and employment.

*Bryant, J.*

**504(F) ADVANCED ECONOMIC STATISTICS** (3-6-5)
Statistical inference and the testing of hypotheses multiple and partial correlation analysis; analysis of variance and regression.

*Rau, H.*

**505(S) MACROECONOMICS/MONETARY THEORY II** (3-6-5)
More detailed discussion of selective macroeconomic and monetary topics.

*Hartley, P.*

**506(F) TOPICS IN MACROECONOMICS/MONETARY THEORY** (3-6-5)
Selected topics of current interest. The purpose of the course is to introduce students to active research issues and to methods of the neoclassical school.

*Hartley, P.*

**507(F) MATHEMATICAL ECONOMICS I** (4-0-5)
Theory of household, firm; activity analysis; set theory, matrix algebra, vector calculus, metric spaces, separation theory, constrained optimization.

*Kim, D.*

**508 MICROECONOMIC THEORY II** (4-0-5)
Continuation of Econ 507. Set theoretic approach to general equilibrium; aggregate linear and nonlinear production models; existence, stability, optimality.

*Staff*

**510(S) ECONOMETRICS I** (3-6-5)
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. Prerequisite: Econ 504.

*Brown, B.*

**511(F) ECONOMETRICS II** (3-6-5)
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. Prerequisite: Econ 510.

*Sickles, R.*

**512(F) INTERNATIONAL TRADE THEORY** (3-6-5)
Classical, neoclassical, and modern trade theory; some welfare aspects of trade, including the theory of commerical policy. Applications are emphasized.

*Smith, G.*

**514(S) INDUSTRIAL ORGANIZATIONS AND CONTROL** (3-6-5)
Industrial markets and public policy.

*Dudey, M.*

**515(F) LABOR ECONOMICS** (3-6-5)
The economics of the labor market and the economic implication of trade unions. Attention is given to major public policy issues. Not offered every year.

*Brown, J.*

**516 ECONOMIC HISTORY AND DEVELOPMENT** (3-6-5)
Historical analysis of economic growth and industrialization of the U.S., Western Europe, and Russia in the last 150 years. Stresses conditions that favored or retarded growth. Not offered every year.

*Staff*

**517 HISTORY OF ECONOMIC ANALYSIS** (3-6-5)
The development of economic analysis from the scholastics to the neoclassical school. Not offered every year.

*Staff*

**518(S) INTERNATIONAL MACROECONOMICS** (3-6-5)
Effects of fiscal and monetary policies on exchange rates, the current account and balance of payments. Other topics include exchange market efficiency, exchange rates and prices, LDC debt and policy coordination.

*Yi, K.*

**519 ECONOMIC GROWTH AND DEVELOPMENT** (3-6-5)
Analysis of theory and policy questions relating to the level and rate of economic development.

*Staff*

**521(F) PUBLIC FINANCE I** (3-6-5)
Theory of public goods and externalities, poliltical mechanisms and public choice, theory of local public goods, cost-benefit analysis and project evaluation issues of income redistribution.

*Mieszkowski, P.*

**522(S) PUBLIC FINANCE II** (3-6-5)
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.

*Staff*

**523(S) OPTIMIZATION AND CAPITAL THEORY** (3-6-5)
Dynamics, capital theory and intertemporal optimization.

*Brito, D.*

**530 COMPARATIVE ECONOMIC SYSTEMS** (3-6-5)
Analysis of theoretical models of market and centrally planned economics; national economic systems of the Soviet Union, China, Yugoslvia, Western European countries, and the United States. Not offered every year.

*Staff*

**536 GOVERNMENT REGULATION OF INDUSTRY** (3-6-5)
Advanced analysis of the economics of antitrust and other forms of regulation. Not offered every year.

*Staff*

**561(S) URBAN ECONOMICS** (3-6-5)
Analysis of urban development and such urban problems as housing, land use, transportation, discrimination, and pollution.

*Mieszkowski, P.*

**565(F) HEALTH ECONOMICS** (3-6-5)
Economic aspects of health; production, cost demand and supply factors; methods of payment and effects of regulation.

*Begley, C. Lairson, D., Swint, J.*

**573 NONLINEAR PROGRAMMING** (3-0-5)
Theory and computational methods for nonlinear programming, including: Kuhn-Tucker conditions, duality theory, methods for constrained optimization of convex and nonconvex problems. Also offered as Caam 573. Not offered every year.

*Staff*

**577 TOPICS IN ECONOMIC THEORY I** (3-0-5)
Selected topics in advanced economic theory. Prerequisite: Economics 508. Not offered every year.

*Staff*

**578 ECONOMIC THEORY II** (3-0-3)
Selected topics inadvanced mathematical economics. Not offered every year. Prerequisite: Econ 508 or Econ/Masc 478.

*Staff*

**579 TOPICS IN ECONOMETRICS** (3-0-5)
Selected topics in advanced econometrics. Prerequisite: Econ 511. Not offered every year.

*Sickles, R.*

**591(F)/592(S) TOPICS IN POLICY AND APPLIED ECONOMICS**
(3-6-5 each semester)

*Kim, D.*

**593(F) WORKSHOP IN ECONOMICS I** (3-0-3)
This course is designed to expose graduate student to advanced topics through guest lectures by leading researchers. Students participating in the seminars are expected to prepare, over the course of the year, a research paper and present it in the workshop. Workshops are offered in microeconomics, macroeconomics, and econometrics.

*Staff*

**594(S) WORKSHOP IN ECONOMICS I** (3-0-3)
Continuation of Econ 593.

*Staff*

**595(F) WORKSHOP IN ECONOMICS II** (3-0-3)
This is the second-year continuation of Econ 593/594.

*Staff*

**596(S) WORKSHOP IN ECONOMICS II** (3-0-3)
Continuation of Econ. 595.

*Staff*

**597 READINGS IN ADVANCED TOPICS** (3-0-5)

*Staff*

**598 READINGS IN ADVANCED TOPICS** (3-0-5)

*Staff*

**800 GRADUATE RESEARCH** (Variable)

*Brown, B.*

# Education

## School of Humanities

**Associate Professor D. Shirley, *Chair***
**Associate Professor J.D. Austin and L. McNeil**
**Assistant Professor E. Harcombe**
**Clinical Professors M. Hoffman and D. Mancus**
**Visiting Assistant Professor E. Heckelman**
**Adjunct Professor R. Sass**
**Adjunct Assistant Professor A. Papakonstantinou**
**Faculty Fellow L. Miller**

*Degrees Offered:* Secondary Teaching Certificate in conjunction with B.A. in major field; Master of Arts in Teaching

**Teacher Education and Certification.** Rice University seeks to prepare teachers who will be leaders in their schools and in the profession. Students are admitted into the teacher education program on the basis of their commitment to teaching, their record of scholarship in their subject fields, and their promise as reflective, engaging teachers. Students graduate from the professional preparation at Rice knowledgeable about their own teaching fields, about children and children's learning, about schools and school policy, and about a broad diversity of teaching styles and methods. Rice offers three teacher education plans: undergraduate preparation in combination with the undergraduate degree in the subject field/s; a Master of Arts in Teaching; a postbaccalaureate plan under Class III status that involves taking only those courses needed for certification but does not confer a degree. All three plans include intensive study in the teaching field, courses in professional preparation, teaching in the Rice Summer School for High School Students and, for post baccalaureate students in the MAT or Class III plans, a paid internship in an accredited secondary school. While maintaining complete institutional integrity, Rice University teacher education programs comply with state of Texas certification requirements.

In addition, the Rice University Department of Education closely cooperates with departments offering work in subject matter fields. It is the function of this department to provide rigorous professional courses and to administer the established teacher education programs.

The Rice University teacher education program strives to fit the prospective teacher to perform all the roles that may be expected of a teacher. To accomplish this objective, it gives sustained close attention to the following vitally interrelated components:

1. A sound liberal or general education.
2. An extended knowledge of the subject(s) or area(s) to be taught.
3. Professional knowledge (i.e., relevant historical, philosophical, social, and psychological basis of education).
4. Skills in classroom teaching, in working with children and adults, and in supervising the learning process.

**Admission to the Undergraduate Teacher Education Program.** Students who have satisfied the following requirements may apply to the Rice University Teacher Education Council for admission to the teacher education program:

1. Junior standing at Rice University.

2. A grade of "C" or better in all semester hours attempted in applicant's teaching field(s).
3. Evidence of adequate physical vigor and strength and absence of obvious physical conditions that might interfere materially with performance as a teacher in a classroom.
4. Approval of a completed Teacher Certification Program form by the appropriate departmental representatives and the Teacher Education Council prior to registration for the junior year.
5. Satisfactory scores on all preprofessional skills tests.

Applications for both undergraduate and postbaccalaureate teacher education programs are available in the department offices.

**Requirements for a Texas Provisional Teaching Certificate (Grades 7-12).** Rice University is approved by the state of Texas to offer teacher preparation programs in the following fields: art, biology, chemistry, computer education, earth science, economics, English, French, German, health education, history, Latin, mathematics or mathematical sciences, physical education, physics, political science, psychology, Russian, general science, social studies, sociology, and Spanish.

After satisfactory completion of the Rice University teacher education program, the student will be recommended for a Texas teaching credential. The Texas Education Agency will then award the student a Texas Provisional Teaching Certificate, Grades 7-12.

For undergraduate students, the Rice University teacher preparatory program requires the following:

1. A bachelor's degree.
2. Foundations in Arts and Sciences (recommended to be completed during the freshman and sophomore years): a broad base of liberal arts courses, including Rice distribution requirements and a state requirement for computer literacy. Please check with education faculty for requirements for students who are undergraduates, MAT candidates or nondegree (Class III) candidates to satisfy those courses deemed necessary to support their preparation to teach. The state of Texas permits each university to devise a course of study for postbaccalaureate students according to their need to have a sound general education. The faculty member in the Department of Education assigned to advise the student will be responsible for determining those background courses needed.
3. Academic Specialization (student selects one of the following plans):
   - Plan I. Preparation to teach one field: At least 36 hours in teaching field with at least 12 semester hours of advanced work. All courses must be approved by the Rice Teacher Education Council.
   - Plan II. Preparation to teach two fields: At least 24 semester hours in each field with 12 semester hours of advanced work in each field. Courses must be approved by the Rice Teacher Education Council.
   - Plan III. Preparation to teach related fields: At least 48 semester hours in a composite field (general science or social studies) with at least 18 semester hours of advanced work. Courses must be approved by the Rice Teacher Education Council.

4. Professional Education, 18 semester hours consisting of the following: Educ 311, 312, 409, 3 semester hours in the appropriate Seminar in Teaching, and 6 hours in student teaching (Principles of Teaching).

**Supervised Teaching Experience.** Either of two plans may be followed by teacher education candidates.

1. **Apprenticeship Plan (Plan A):**
   Prerequisite: Educ 304, 311, 312.
   Apprenticeship is designed for students who wish to complete preparation for their teaching careers in four years and two six-week summer sessions. Candidates will enroll for the summer session following their junior year. The apprentice will assist and teach under the supervision of a master teacher and university faculty in the Rice Summer School for High School Students.
   Educ 409 and a 400-level course, Seminar in Teaching, are to be completed during the senior year.
   Following graduation from Rice, the apprentice will again teach in the Rice Summer School for High School Students under the supervision of a master teacher and university faculty. The apprentice is not remunerated for teaching either summer. He or she is recommended for the Texas Provisional Teacher's Certificate following successful completion of the second summer and state ExCET tests.
2. **Internship Plan (Plan B):**
   Prerequisite: Completion of all course work except student teaching.
   Under this plan, students are expected to attend a six-week summer session immediately following their graduation from Rice. Each intern will observe and teach classes under the supervision of a master teacher and university faculty in the Rice Summer School for High School Students. During the following fall semester, interns will teach in a neighboring school system. Such placement will be subject to the availability of openings in the intern's teaching field(s).

The intern will be employed for full-time duty and will teach under the supervision of a member of the cooperating school system and a faculty member from the university. The intern will complete all requirements in the seminar accompanying intern teaching. During the half year of service, the intern will be paid a salary commensurate with the salary being paid a full-time teacher with a degree and an emergency teaching permit by the cooperating school system. Upon successful completion of the internship semester and upon the recommendation of the secondary school principal, the intern will be offered a regular teaching contract for the spring semester if a suitable vacancy exists. He or she will be recommended for a Texas Provisional Teacher's Certificate after successful completion of state ExCET tests.

**Program for the Master of Arts in Teaching.** Most candidates entering the program will have had no professional education courses. During the program, candidates usually fulfill all requirements for a Texas Provisional Teaching Certificate. The program consists of the following components:

1. Courses in secondary school educational theory, teaching strategies, educational practice, and evaluation.
2. Graduate and upper division courses in the candidate's teaching field(s). (See teaching fields, above.)
3. Supervised full-time teaching in the Rice Summer School for High School Students for one summer. Candidates will be responsible for the design and implementation of courses, for teaching, and for evaluation.
4. Supervised teaching internship for one semester in a cooperating public school system, including the seminar accompanying the internship.

Normally, the degree program will consist of 11 semester courses. However, some candidates may need to remove deficiencies for certification and may therefore require additional courses.

Students in the **internship** semester will not normally be eligible for Rice graduate fellowships or scholarship support since the cooperating school districts pay a salary for internship teaching. However, a limited number of tuition waivers is available, as are paid assistantships.

Please refer to page 132 for additional information regarding admission to the graduate program in education.

**Class III Certification.** The Rice Department of Education also provides a non-degree (Class III) plan for teacher certification for those who hold a bachelor's degree but do not choose to pursue a graduate degree. Inquiries should be directed to the Office of Continuing Studies for their admission requirements. Once the applicant is approved by Continuing Studies for admission to Rice, application to the Teacher Education Program can be reviewed by the Department of Education.

*Education Courses*

**304(S) SEMINAR IN TEACHING** (1-0-1)
A study of procedures and materials used in teaching various subject areas. Preparation of teaching units, orientation to secondary school teaching. Prerequisite: Educ 311. Science education, english education, social studies education, physical education, art, foreign language education, mathematics education. (See appropriate section designation.)
*Staff*

**311(F) HISTORICAL AND PHILOSOPHICAL FOUNDATIONS** (3-0-3)
Analysis of historical and contemporary theories and practice in American education. Prerequisite (for those intending to complete Rice teacher preparatory program): permission of instructor and filing of Teacher Certification Plan. May be elected by students not in the teacher education program.
*Heckelman, E.*

**312(S) PSYCHOLOGY OF HUMAN LEARNING** (3-0-3)
Introduction to theoretical systems of human learning with emphasis on implications for secondary education; introductory tests and measurements. May be elected by students not in the teacher education program.
*Heckelman, E.*

**400(S) SEMINAR IN TEACHING** (2-0-2)
(Apprentice English teachers only.) Prerequisites: Educ 304, 409.
*McNeil, L., Hoffman, M.*

**402(S) SEMINAR IN TEACHING** (2-0-2)
(Apprentice social studies teachers only.) Prerequisites: Educ 304, 409.

*Staff*

**404(S) SEMINAR IN TEACHING** (2-0-2)
(Section I, apprentice teachers in mathematics education only; section 2, apprentice teachers in science education only.) Prerequisites: Educ 304, 409.

*Heckelman, E.*

**406(S) SEMINAR IN TEACHING** (2-0-2)
(Apprentice health and physical education teachers only.) Prerequisites: Educ 304, 409.

*Staff*

**407(S) SEMINAR IN TEACHING** (2-0-2)
(Apprentice art teachers only.) Prerequisites: Educ 304, 409.

*Staff*

**408(S) SEMINAR IN TEACHING** (2-0-2)
(Apprentice foreign language teachers only.) Prerequisites: Educ 304, 409.

*McNeil, L., Staff*

**409(F) FUNDAMENTALS OF SECONDARY EDUCATION** (3-0-3)
Background, purposes, and organization of modern secondary schools and their curricula; the policy and administration of secondary schools. Introductory educational research. May be elected by students not in the teacher education program.

*Austin, J.*

**410(S) SEMINAR IN TEACHING** (3-0-3)
(English teachers only.) Students with credit in Educ 304 may not enroll. Prerequisites: Educ 311, 409.

*Hoffman, M.*

**412(S) SEMINAR IN TEACHING** (3-0-3)
(Social studies teachers only.) Students with credit in Educ 304 may not enroll. Prerequisite: Educ 311, 409.

*Staff*

**414(S) SEMINAR IN TEACHING** (3-0-3)
(Section 1, mathematics education; section 2, science education.) Same as Educ 304. Students with credit in Educ 304 may not enroll. Prerequisites: Educ 311, 409.

*Heckelman, E.*

**416(S) SEMINAR IN TEACHING** (3-0-3)
(Health and physical education teachers only.) Students with credit in Educ 304 may not enroll. Prerequisites: Educ 311, 409.

*Staff*

**417(S) SEMINAR IN TEACHING** (3-0-3)
(Art teachers only.) Students with credit in Educ 304 may not enroll. Prerequisites: Educ 311, 409.

*Staff*

**418(S) SEMINAR IN TEACHING** (3-0-3)
(Foreign language teachers only.) Students with credit in Educ 304 may not enroll. Prerequisites: Educ 311, 409.

*McNeil, L.*

**419(F/S) SUPERVISED TEACHING** (3-0-3)
Field-based practicum for secondary teachers, with accompanying seminar.
*Heckelman, E*

**420 SUPERVISED TEACHING** (3-0-3)
Student teaching in the Rice Summer School for High School Students under the supervisio
of assigned Master Teacher. Prerequisites: Educ 311, appropriate seminar(s) in teaching an
consent of instructor. Undergraduates will typically repeat for credit.
*Staf*

**509**
MAT equivalent of Educ 409.
*Austin, J*

**511**
MAT equivalent of Educ 311.
*Heckelman, E*

**512**
MAT equivalent of Educ 312.
*Heckelman, E*

**519(F/S) SUPERVISED TEACHING** (3-0-3)
Field-based internship for secondary teachers, with accompanying seminar.
*Heckelman, E*

**590 CONTEMPORARY TOPICS IN SECONDARY SCHOOL MATHEMATICS** (6-0-6)
Selected topics in secondary school mathematics. Offered in summers as needed. Enrollment by consent of instructor.
*Austin, J.*

**591(S) INDEPENDENT STUDY AND RESEARCH** (3-0-3)
*Austin, J., Harcombe, E.,Mancus, D., McNeil, L., Shirley, D.*

**592(F) SEMINAR IN SCIENCE FOUNDATIONS** (3-0-3)
Selected topics in seminar with practicing scientists. Open to graduate-level and Class III students.
*Harcombe, E.*

**593(F) PRACTICUM IN TEACHING SCIENCE** (2-0-2)
Open to graduate-level and Class III students.
*Harcombe, E.*

**594(S) PRACTICUM IN TEACHING SCIENCE** (2-0-2)
Open to graduate-level and Class III students.
*Harcombe, E.*

**595 CONTEMPORARY TOPICS IN SECONDARY SCHOOL SCIENCE AND MATHEMATICS** (3-0-3)
Offered in summers as needed. Enrollment by consent of instructor.
*Austin, J.*

# Electrical and Computer Engineering

## The George R. Brown School of Engineering

**Professor Tittel, *Chair***
**Professors Antoulas, Burrus, Clark, Johnson, Jump, Pearson, Rabson, Sauerbrey, and Wilson**
**Adjunct Professors Giles, Porter, Sherwood, and Tsuchitani**
**Associate Professors Aazhang, Sinclair, Varman, and Young**
**Adjunct Associate Professors Eggers and Harman**
**Assistant Professors Baraniuk, Bennett, Cavallaro, Halas, and Walker**
**Adjunct Assistant Professors Golding, Jacques, and Krishen**
**Lecturers Bourland, Cyprus, Henson, Massey, Smayling, and Wendt**

*Degrees Offered:* B.A., B.S., M.E.E., M.S., Ph.D.

**Undergraduate Program.** The four-year program in electrical engineering leads to either the B.A. or the B.S. in Electrical Engineering. The B.S. program has more technical requirements and is the only degree accredited by the Accreditation Board for Engineering and Technology, while the B.A. program allows more flexibility with electives. It is possible in either program to satisfy major requirements of two departments. Students may take a double major combining electrical and computer engineering with computer science, physics, mathematics, economics, languages, or other disciplines.

Students contemplating a major in electrical and computer engineering should take:

Mathematics 101, 102, 211, 212 (or the corresponding honors courses)
Physics 101, 102, 132
Chemistry 101
Computer Science 210
Electrical Engineering 241
Two (one for CSE option, see below) courses selected from:
    Chemistry 102, Physics 201, 202
One science lab selected from:
    Chemistry 105, Physics 231

One of the following to satisfy the B.S. requirement for an engineering science course from another engineering department: Mechanical Engineering 200, 211, Materials Science 301.

Electrical Engineering 301, 305, 320, 326, 342 (all of these courses are required for the B.S. degree, while any four of them are required for the B.A. degree)

Although a general program of study can be arranged, the program in electrical engineering is best described in terms of three major areas of concentration. For areas of specialization other than Computer Engineering, this program consists of six courses taken in the area of concentration (see below) and two related electrical engineering courses outside the major area. For the B.S. degree, one of those courses must be an engineering science course and the other must be an engineering design course.

For the Computer Engineering option, the B.S. degree program consists of nine courses as specified below. Students planning to specialize in Computer Engineering need take the second semester of chemistry or one semester of second-year physics.

*Systems*

This specialization is composed of four subareas: (1) circuits and electronics, (2) robotics and control, (3) signal processing and communications, and (4) bioengineering. These are closely related and generally involve the study of processing and communicating signals and information through systems of devices. The major area courses are Computational and Applied Mathematics 330, 335, 336; Electrical Engineering 331, 401, 430, 436.

*Computer Engineering*

This program permits students to develop a broad background in the general area of computer systems engineering and provides preparation for further study and the opportunity to specialize in the subareas of computer architecture, computer hardware engineering, computer software engineering, and computer systems performance analysis. The major area courses are: Computer Science 212, Computational and Applied Mathematics 381, Computational and Applied Mathematics 310, 355, or 353, Computer Science 280, and Electrical Engineering 322, 421, 425, 427 or 426, 428.

*Lasers, Microwaves, and Solid-State Electronics*

This area of concentration permits undergraduate students to study and participate in several specialties, including laser technology, optical communication systems, application and development of tunable laser devices, semiconductor devices, opto-electronic devices, and integrated optics and VLSI circuits. The major area courses are Computational and Applied Mathematics 381, Electrical Engineering 306, 359, 461, 462, 463.

In addition to the departmental requirements for the major, students seeking the B.A. degree must also satisfy the distribution requirement and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 130 semester hours. For the B.S. degree, a total of 134 semester hours are required. See Degree Requirements and Majors, pages 65-85.

**Graduate Program.** Requirements of a general nature for advanced degrees are outlined beginning on page 129. Students should consult departmental advisers for specific courses of study.

A candidate for the professional degree of Master of Electrical Engineering is required to complete an approved sequence of ten advanced courses. See Professional Degrees in Engineering, page 139.

A candidate for the Master of Science degree in the Department of Electrical and Computer Engineering is required to complete an approved course of study. In addition, the candidate is required to complete an approved research program and to submit an acceptable thesis. The M.S. degree is not a terminal degree but part of the Ph.D. program at Rice.

The granting of the Doctor of Philosophy degree presupposes academic work of high quality and demonstrated ability to do independent and creative research. To be admitted to candidacy, the student must obtain high standing in an approved course program and perform satisfactorily on qualifying examinations. Normally, the candi-

date completes the requirements for an M.S. degree as part of the Ph.D. program. Emphasis is placed on research leading to a satisfactory dissertation. Each candidate takes a final oral examination. The doctoral candidate should expect to spend a minimum of three academic years of graduate study in this program.

*Electrical Engineering Courses*

**241(F/S) ELECTRICAL CIRCUITS** (3-3-4)
Basic circuit elements, mesh and node analysis, Thevenin and Norton equivale nt circuits, controlled sources and op-amps solution of circuits, differential equations, use of phasors and impedance for sinusoidal AC analysis, frequency response. Laboratory on basic electrical measurements. Prerequisite: Math 101, 102 or equivalent.

*Johnson, D., Burrus, C.S.*

**301(F/S) NETWORK AND SYSTEMS THEORY** (3-0-3)
Analysis of linear systems using circuits as the primary example. Time and frequency domain analysis: solution of differential equation, convolution, and the Laplace transform. State-variable analysis. Limited enrollment. Prerequisite: Engi 241.

*Walker, I., Henson, T.*

**305(F) ELECTROMAGNETIC FIELDS AND WAVES** (3-0-3)
Distributed systems. Transmission lines. Smith Charts and impedance matching. Static and oscillatory fields. Maxwell's equations. Interaction of waves with media optical fibers antennae.

*Tittel, F.*

**306(S) ELECTROMAGNETIC FIELDS AND SERVICES** (3-0-3)
Magnetic fields and interactions with materials; antennas, including arrays; electrostatic field synthesis; analytical and numerical solutions of boundry value problems; waveguides and resonators; optical fibers. Prerequisite: Elec 305.

*Young, J.*

**320(F/S) INTRODUCTION TO COMPUTER ORGANIZATION** (3-3-4)
Basic computer architecture and assembly language programming. Systems software, including loaders and assemblers. Input-output devices and programming. Prerequisite: Comp 211 or Comp 210.

*Varman, P., Staff*

**322(S) DESIGN/ANALYSIS OF ALGORITHMS** (3-3-4)
Design and analysis of efficient computer algorithms and data structures. Prerequisite: Comp 212, Comp 280. Also offered as Comp 382.

*Warren, J.*

**326(F/S) DIGITAL LOGIC DESIGN** (3-3-4)
Gates, flip-flops, combinational and sequential switching circuits, registers, logical and arithmetic operations. Prerequisite: Comp 211 or Comp 210, Elec 241.

*Cyprus, J., Staff*

**331(F/S) APPLIED PROBABILITY** (3-0-3)
Concepts, interpretations, elementary techniques, and applications of modern probability theory, including a brief introduction to statistical inference. Prerequisite: Math 102. Also offered as Caam 381 and Stat 381.

*Pfeiffer, P.*

**342(F/S) ELECTRONIC CIRCUITS** (3-3-4)
Models of transistors, FETs, and integrated circuits. Biasing methods, two-port analysis, single and multistage amplifiers, frequency domain characteristics, feedback, stability, oscillators, power amplifiers. Prerequisite: Engi 241.

*Wilson, W., Massey, R.*

**401(F) SIGNALS AND LINEAR SYSTEMS** (3-0-3)
Representation and analysis of signals and linear systems using Fourier transforms and convolution. Applications include modulation, gating, sampling, and filtering. Generalized functions and transforms. Bilateral Laplace and Z transforms. Prerequisite: Elec 301 and a knowledge of complex variable theory.

*Antoulas, A.C.*

**403(F) SIGNALS AND SYSTEMS LABORATORY** (1)
This is a sequence of two laboratory courses for seniors in the Systems area of the ECE department. This course is designed to provide students with hands-on experience in simulation of signals, systems and their interactions; time and frequency domain analysis. Prerequisite: Concurrent enrollment in Elec 401.

*Aazhang, B.*

**421(F) OPERATING SYSTEMS AND CONCURRENT PROGRAMS** (3-3-4)
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. Prerequisite: Comp 212, Elec 320. Also offered as Comp 421.

*Zwaenepoel, W.*

**422(F) VLSI DESIGN I** (4)
A study of VLSI technology and design. MOS devices, characteristics, and fabrication. Logic design and implementation.VLSI design methoodology, circuit simulation, and verification. Course includes group design projects. Enrollment is limited due to equipment limitations. Students are required to enroll in Elec 423 VLSI Design II in the following spring semester. Prerequisite: Elec 326.

*Cavallaro, J.*

**423(S) VLSI DESIGN II** (2)
Testing and evaluation of VLSI circuits designed in VLSI Design I, Elec 422. Topics in computer-aided design. Prerequisite: Elec 422.

*Cavallaro, J.*

**424(S) COMPUTER SYSTEM DESIGN** (3-4-4)
The specification, design, and implementation of practical computer systems, taking into account such factors as cost constraints and available technology. Details of data path, control unit, and memory system design. Comparison of various bus architectures. Techniques for peripheral interfacing. Laboratory will include a major design project. Prerequisite: Elec 326, 425, 426.

*Bennett, J.*

**425(F) COMPUTER SYSTEMS ARCHITECTURE** (3-3-4)
Structure and organization of processor, memory and control elements. Management of memory hierarchy. Microprogramming. Interaction of instruction set and system architecture. Prerequisite: Elec 320, 326. Also offered as Comp 425.

*Staff*

**426(F) DIGITAL SYSTEM DESIGN** (3-3-4)
Synchronous and asynchronous sequential circuits. Techniques for processing and control unit design including microprogrammed controllers and high speed arithmetic circuits. Prerequisite: Elec 320, 326.

*Bennett, J.*

**427(F) PULSE AND DIGITAL CIRCUITS** (3-3-4)
Discrete and integrated solid state circuits. Interaction of linear components with diodes, bipolar transistors, and field effect transistors. Monostable, bistable, and astable multivibrators. Applications of linear one and two degree of freedom circuits to digital hardware. Analysis of circuits and their interconnection to form digital systems. Construction of digital projects from discrete and integrated circuits. Prerequisite: Elec 342 and Elec 326.

*Cyprus, J.*

**428(F) COMPUTER SYSTEMS PERFORMANCE** (3-3-4)
Analytical models of computer systems. Queueing theory and Markov chains. Simulation and analysis of simulation results. Operational analysis. Course will include a project. Prerequisite: Elec 425, Caam 381 or Caam 382.

*Sinclair, J.*

**430(S) COMMUNICATION THEORY AND SYSTEMS** (3-0-3)
Review of applied probability theory. Introduction to stochastic processes. Complex-signal analysis. AM and FM. Digital communication, PCM, signal transmission, optimum receiver theory, information theory and coding. Prerequisite: Elec 401 and either Elec 331 or Caam 382.

*Aazhang, B.*

**433(S) COMMUNICATIONS SYSTEMS LAB** (1)
This lab course is designed to provide students with hands-on experience in simulation of communication systems; Monte Carlo simulation of random signals (noise); block-oriented simulation of physical links; performance evaluation of data network. Prerequisite: Concurrent enrollment in Elec 430.

*Aazhang, B.*

**436(S) CONTROL SYSTEMS I** (3-0-3)
Representation, analysis, and design of simple control systems in the frequency domain. Prerequisite: Elec 301.

*Pearson, J.B.*

**438(S) REMOTE SENSING** (3-0-3)
Remote sensing using wave propagation. Statistical formulation of diffraction problems. Wave scattering from rough surfaces. Applications include monitoring from space and noncontact sensing for robotics and automation. Not offered spring 1994.

*Staff*

**442(F) ADVANCED ELECTRONIC CIRCUITS** (3-3-4)
Electronic circuits used in communication and other systems, including principles of feedback, modulation, detection, and active filtering. Emphasis on design. Prerequisite: Elec 342.

*Massey, R.*

**443(S) POWER ELECTRONIC CIRCUITS** (4-0-4)
Emphasis on design of electronic circuits used in power systems, including principles of phase-controlled rectification, high-frequency inversion, conversion and cyclo-conversion. Prerequisite: Elec 342.

*Massey, R.*

**461(F) ELECTRICAL PROPERTIES OF MATERIALS** (3-0-3)
Properties and parameters of dielectric, conducting, and semiconducting materials important in the understanding of device characteristics. Corequisite: Elec 459.

*Halas, N.*

**462(S) SEMICONDUCTOR DEVICES** (3-4-4)
Physical principles and operational characteristics of semiconductor devices. Prerequisite: Elec 461.

*Wilson, W.*

**463(S) QUANTUM ELECTRONIC DEVICES** (3-0-3)
Lasers, optoelectronics, integrated optics, nonlinear optics, holography, and optical processing.

*Sauerbrey, R.*

**481(F) FUNDAMENTALS OF NUEROSCIENCE** (4-0-4)
An introduction to the field of neuroscience that includes the anatomy and physiology of the vertebrate nervous system, as well as electrical measurement and mathematical modeling techniques that are frequently employed in the study of the nervous system. The topics covered in the area of neurophysiology include the electrophysiology of peripheral and central nervous system neurons, skeletal muscle, synaptic and neuromuscular transmission, evoked potentials form the spinal cord and brain. The electrophysiology of selected general sense receptors and the auditory, vestibular, and visual systems are also included. Electronic fundamentals associated with the design and construction of useful instrumentation systems are studied, as well as the numerical methods used to implement mathematical models that describe various biological elements of the nervous system. A term project is required. Prerequisite: Engi 241, 342.

*Clark Jr., J.*

**482(S) FUNDAMENTALS OF THE CARDIOVASCULAR, PULMONARY AND RENAL SYSTEMS** (4-0-4)
An introduction to the anatomy and physiology of a number of organ systems in the body including the cardiovascular, pulmonary, and renal systems as well as the autonomic nervous system controlling their function. Specific topics covered in the cardiovascular area include cardiac electrophysiology, ventricular mechanics, neural control of heart rate, myocardial contractility and vasomotor tone; in the pulmonary area: pulmonary mechanics, gas exchange and neural control of respiration; in the renal area: transport and exchange mechanisms in the kidney, neurohormonal control of tubular function and water balance. The class is exposed to advanced topics concerned with the design and construction of useful instrumentation systems as well as mathematical models associated with these research areas. For example, fundamental methods of sensing pressure, length, temperature, etc. are discussed as well as the design of instrumentation systems for monitoring these physical variables. A term project is required. Prerequisite: Elec 342, Elec 301, Elec 481.

*Clark Jr., J.*

**490(F/S) ELECTRICAL ENGINEERING PROJECTS** (Variable)
Theoretical and experimental investigations under staff direction.

*Staff*

**491(F) SENIOR HONORS PROJECTS** (2)
A two-semester sequence for individual projects supervised by a faculty member of the department. The portions of the first semester course (491) are devoted to group discussion of professional aspects of engineering: technical writing, engineering ethics, research protocols, patent considerations. A written proposal describing the project is required. Oral presentations throughout the year culminating in a final written report and in an oral, conference-style presentation. Senior standing in the department and permission of the course coordinator required. No credit will be given for Elec 491 without completion of Elec 492.

*Johnson, D.*

**492(S) SENIOR HONORS PROJECTS** (3)
A two-semester sequence for individual projects supervised by a faculty member of the department. The portions of the first semester course (491) are devoted to group discussion of professional aspects of engineering: technical writing, engineering ethics, research protocols, patent considerations. A written proposal describing the project is required. Oral presentations throughout the year culminating in a final written report and in an oral, conference-style presentation. Senior standing in the department and permission of the course coordinator required. No credit will be given for Elec 491 without completion of Elec 492.

*Johnson, D.*

**496(F) ROBOTICS LABORATORY** (1-0-1)
Computer vision experiments, programming a mobile robot and an industrial-type PUMA robot, operating a CNC mill and an industrial-size CNC lathe, projects.

*Cheatham Jr., J.*

**498(F) INTRODUCTION TO ROBOTICS** (3-0-3)
A survey of topics in robotics including kinematics, dynamics, and control theory applied to robotics. Lectures are given on image processing and computer vision, voice synthesis and speech recognition, artificial intelligence, and computer robot simulation. Laboratory includes programming of Microbot and PUMA robotic arms.

*Cheatham Jr., J.*

**501(S) LINEAR SYSTEM THEORY** (3-0-3)
Basic concepts: reachability, observability. Realization theory. Interpolation. General time series modeling. Matrix Fraction description of linear multivariable systems. Prerequisite: Elec 301 or equivalent.

*Antoulas, A.*

**502(S) CONTROL SYSTEM SYNTHESIS** (3-0-3)
Optimal synthesis of control systems using various norms. Stability robustness. Computational solutions using state space methods. Prerequisite: Elec 501. Not offered 1993-94.

*Staff*

**503(F) ROBOTICS II** (3-0-3)
Study covering important aspects of recent research in kinematics, dynamics, and control of advanced robotic systems. To include redundant manipulators, dual and multiple armed systems, and multifingered grasping. Not offered 1993-94.

*Staff*

**504(S) CONTROL OF ROBOTICS** (3-0-3)
Modeling of robots, kinematics, dynamics. Review of basic control methods. Approaches to robotic control, including linearization (featuring "computed torque") variable structure and adaptive control of manipulators. Prerequisite: Elec 501 or consent of instructor.

*Walker, I.*

**505(S) ADVANCED ELECTROMAGNETIC FIELD THRY** (3-0-3)
Boundary-value problems in electrostatics and magnetostatics. Propagation of electromagnetic waves. Time-varying fields. Wave guides and resonant cavaties. Not offered 1993-94.

*Tittel, F.*

**506(F) APPLIED ELECTROMAGNETIC FIELD THEORY** (3-0-3)
Basic plasma physics and gaseous electronics, laser-produced plasmas and their properties, fundamentals of controlled nuclear fusion. Not offered every year.

*Sauerbrey, R.*

**507(F) DYNAMICS OF NONLINEAR SYSTEMS** (3-0-3)
Analytical methods for analyzing nonlinear dynamical systems, including stability analysis via state space and describing function methods. Numerical methods for solving nonlinear ordinary differential equations are introduced, as well as methods for parameter estimation and sensitivity analysis. Techniques will be introduced for the study of the chaotic behavior of a variety of physical systems. Prerequisite: Elec 401,436, or equivalent.

*Clark Jr., J.*

**519(S) PARALLEL ALGORITHMS AND ACRCHITECTURE** (3-0-3)
Parallel architectures: arrays, trees, hypercubes and shared memory. Structure and relation between architectures. Parallel time, work, and efficiency. Parallel algorithms for fundamental computational problems and applications. Inherently sequential problems. Prerequisite: Elec 322. Also offered as Comp 583.

*Varman, P.*

**520(F) DISTRIBUTED SYSTEMS** (3-3-4)
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. Prerequisite: Elec 421, 425. Also offered as Comp 520.

*Zwaenepael, W.*

**521(F) ARTIFICIAL INTELLIGENCE** (3-3-4)
Techniques for simulating intelligent behavior by machine: problem solving, game playing, pattern perceiving, theorem proving, semantic information processing, and automatic programming. Prerequisite: Elec 322, Elec 331 or Caam 382. Also offered as Comp 440.

*Staff*

**522(S) ADVANCED VLSI DESIGN** (3-0-3)
Design and analysis of algorithm-specific VLSI processor architectures. Topics include the implementaino 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. Prerquisite: Elec 422 and 423. Enrollment limited to 15.

*Cavallaro, J.*

**525(S) ADVANCED COMPUTER ARCHITECTURE** (3-0-3)
Design issues of pipelined, vector, and multiprocessor architectures with emphasis on achieving high performance. Cache and virtual memory design. Techniques for exploiting parallelism. Prerequisite: Elec 425. Also offered as Comp 525. Not offered 1993-94.

*Sinclair, J.B.*

**526(S) COMPUTER NETWORKS DESIGN/ANALYSIS** (3-0-3)
Design and comparison of computer networks; transmission media; data enclosing; error control; techniques for performance analysis. Network topologies. Local area networks, including rings, busses, and contention networks. Prerequisite: Elec 428. Also offered as Comp 526.

*Sinclair, J.*

**529(S) COMPUTER NETWORKS: ARCHITECTURE AND PROTOCOL** (3-0-3)
Introduction to computer networks and computer communication. Design of protocols for error recovery, reliable delivery, routing and congestion control. Store-and-forward networks, satellite networks, local area networks, and locally distributed systems. Case studies of networks, protocols and protocol families. Emphasis on software design issues in computer communication. Prerequisite: Caam 382, Elec 421. Also offered as Comp 529.

*Staff*

**530(F) DETECTION THEORY** (3-0-3)
Review of stochastic processes; Karhunen-Loeve expansion; transmission and reception of digital signals over a variety of channels; intersymbol interference and equalization. Additional topics vary from year to year in modern communication theory. Prerequisite: Elec 430.

*Johnson, D.*

**531(F) DIGITAL SIGNAL PROCESSING** (3-0-3)
Analysis of discrete-time signals and systems. Design and implementation of digital filters. Efficient algorithms for the discrete Fourier transform and for convolution. Prerequisite: Elec 401, a senior-level course in signals and linear systems.

*Burrus, C.*

**532(F) SPECTRAL ANALYSIS** (3)
Classical and modern techniques for characterizing the frequency content of signals. Review of random processes and linear algebra; Fourier transform-based methods and the peridogram; parametric techniques, including autoregressive (AR) and autoregressive moving average (ARMA) modeling; nonparametric techniques, including minimum variance and eigenspace methods; and time-varing spectral analysis. Prerequisites: Elec 401 and 430. Also offered as Stat 586.

*Baraniuk, R.*

**533(F) INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS** (3-0-3)
Review of basic probability; Sequence of random variables; Random vectors and estimation; Basic concepts of random processes; Random processes in linear systems, expandion of random processes; Wiener filtering; Spectral representation of random processes; White-noise integrals. Also offered as Caam 583.

*Aazhang, B.*

**534(S) ESTIMATION THEORY** (3-0-3)
See Masc 584. Prerequisite: Elec 430. Also offered as Caam 584 and Stat 584.

*Johnson, D.H.*

**535(S) INFORMATION AND CODING THEORY** (3-0-3)
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. Prerequisite: Elec 331 or Caam 382. Also offered as Caam 585 and Stat 585. Not offered every year. Not offered 1993-94.

*Aazhang, B.*

**536(F) CONTROL SYSTEMS II** (3-0-3)
A second course in feedback control system design in which the role of uncertainty is emphasized. The 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. Prerequisite: Elec 436 or equivalent.

*Pearson, J.*

**537(F) INTRODUCTION TO ARTIFICIAL INTELLIGENCE** (3-0-3)
This course is intended to introduce the student to the fundamental problem-solving techniques of Artificial Intelligence (AI). This will be achieved through intermixing of an introduction to Symbolic Manipulation (through LISP programming) and a presentation of selected current AI topics. Emphasis will be placed on expert systems, which are powerful engineering problem-solving tools. Enrollment limited to seniors and graduate students. Prerequisite: Intro comp and probability course. Also offered as Mech 537.

*Philippe, E.*

**539(S) DIGITAL IMAGE PROCESSING** (3-0-3)
Modern techniques in 2D- and 3D-image processing. Color imaging. Scene analysis and robotic vision.

*Baraniuk, R.*

**562(F) MICROWAVE ENGINEERING** (3-3-4)
Waveguides and resonant cavities. Scattering matrix, application to two-, three-, and four-port devices. Broadband transformers, couplers, and filters. Microwave generation. Tensor susceptibility and nonreciprocal devices. Prerequisite: Elec 306.

*Staff*

**563(F) INTRODUCTION TO SOLID STATE PHYSICS I** (3-0-3)
Fundamental concepts of crystalline solids, including crystal structure, band theory of electrons, and lattice vibration theory. Also offered as Phys 563.

*Nordlander, P.*

**564(S) INTRODUCTION TO SOLID STATE PHYSICS II** (3-0-3)
Continuation of Elec 563, including scattering of waves by crystals, transport theory, and magnetic phenomena. Also offered as Phys 564.

*Rau, C.*

**565(F) PHYSICAL ELECTRONICS LAB** (2)
A laboratory course, with lecture, to introduce students to a variety of experimental techniques, methods, and intruments of current interest. The content will generally correspond to the ideas and concepts introduced in the physical electronics courses, Elec 305, 306, 461, 463, 562, 591, and 592, including general optics; lasers and fiber optics,microwaves and transmission lines; semiconductor devices and materials; spectroscopy; computer control of equipment and data collection; acousto, electro, and nonlinear optics; vacuum systems, cryogenics, etc. Enrollment open to undergraduate and graduate students.

*Young, J.*

**566(S) PHYSICAL ELECTRONICS LAB** (2)
This is a continuation of Elec 565.

*Young, J.*

**580(S) NEURONAL MODELING** (3-0-3)
This course introduces the mathematical techniques employed in modeling neurons and neuronal systems. It begins with a review of membrane ion channel kinetics and rapidly progresses to the mathematical characterization of various parts of the neuron (soma, axon and dendritic tree). Both vertebrate and invertebrate neuron models are considered; models of axonal conduction, as well as volume conduction in the medium surrounding the axon are discussed. Neuron models exhibiting pacing and bursting activity will be given particular attention. The course will include guest lectures in selected application areas. Prerequisite: Elec 481, 507 or equivalent.

*Clark Jr., J.*

**581(F) CARDIOVASCULAR DYNAMICS** (3-4-4)
Analysis of the properties and function of the cardiovascular system, including a detailed study of cardiac electrophysiology, ventricular mechanics, arterial hemodynamics, coronary and cerebral circulations, heart rate control, imaging methods for determining ventricular volume and output flow. Therapeutic devices such as mechanical circulatory-assist and total replacement devices will be studied as well as computer-controlled drug delivery systems. Mathematical models of many of these systems will be considered. As part of the course requirements the student will complete an internship project with an engineer of life scientist working in the Texas Medical Center. Prerequisite: Elec 481, 482, 507 or equivalent. Not offered every year.

*Clark Jr., J.*

**590(F/S) SPECIAL PROJECTS** (Variable)
Theoretical and experimental investigations under staff direction.

*Staff*

**591(F) OPTICS** (3-0-3)
Survey covering important aspects of classical optical theory, wave properties of light, and the Fourier analysis approach to physical optics. Holography, integrated optics, and fiber optics.

*Rabson, T.*

**592(S) TOPICS IN QUANTUM OPTICS** (3-0-3)
Latest developments in lasers, optical pumping, Raman and Brillouin spectroscopy, and mode locking. May be repeated for credit.

*Young, J.*

**594(S) SEMINAR IN BIOMEDICAL ENGINEERING** (3-0-3)
A seminar focusing on specific areas of biomedical research and involving students and faculty from other universities in the Houston area. The course is under the sponsorship of the Houston Biomedical Engineering Society and exposes students to an intense treatment of a specific biological system from several scientific and engineering viewpoints. Graduate students in chemical, electrical, and mechanical engineering are particularly encouraged to take this course.

*Staff*

**602(S) OPTOELECTRONICS** (3-0-3)
This is a broad survey course designed to cover the most current research directions in optoelectronics, photonics, and ultrafast measurement technology.

*Halas, N.*

**625(F) HIGH PERFORMANCE PROCESSOR DESIGN** (3-0-3)
An advanced course in microprocessor architecture and implementation. The course will require a major design project. Prerequisite: Elec 525, 560, and 426; Elec 424 recommended. Enrollment is limited. Permission of instructor required.

*Bennet, J.K.*

**630(S) ADVANCED TOPICS—TELECOMMUNICATIONS** (3)
This is a graduate course consisting of a sequence of lectures on telecommunications by Rice faculty, scientists from Bell Northern Research (BNR), and guest speakers. Topics include radio and optical fiber data networks; spread spectrum signaling; error conntrol coding; time-division, frequency-division, and code-division multiple-access systems; collision resolution algorithms; stability and throughput analysis; routing, flow control, switching, and buffering, as well as design examples from operational telecommunication systems.

*Aazhang, B.*

**632(S) SPEECH SIGNAL PROCESSING** (3-0-3)
Acoustic models of speech production. Pitch and format structure of speech. Estimation of speech spectra: short-time Fourier analysis, filter banks, homomorphic signal processing, auto-regressive models. Pitch detection. Vocoding algorithm: channel vocoders, homomorphic vocoders, linear predictive vocoders. Prerequisite: Elec 531.

*Staff*

**691(S) SEMINAR—QUANTUM ELECTRONICS** (Variable credit)

*Sauerbrey, R., Smayling, M.*

**692(S) MICROWAVE ENGINEERING** (Variable credit)
Not offered 1993-94.

*Staff*

**693(F) ADVANCED TOPICS—COMPUTER SYSTEMS** (3-0-3)
May be repeated for credit.

*Varman, P.*

**694(S) ADVANCED TOPICS—COMPUTER SYSTEMS** (3-0-3)
May be repeated for credit.

*Sinclair, J.B.*

**695(F) ADVANCED TOPICS IN COMMUNICATIONS AND STATISTICAL SIGNAL PROCESSING** (3-0-3)
Advanced topics which vary from year to year. Not offered every year.

*Aazhang, B.*

**696(S) DIGITAL SIGNAL PROCESSING** (3-0-3)
Advanced topics in digital signal process: time varying systems, multidimensional signal processing, and other topics of current interest. Individual projects are a part of this course.

*Burrus, C.*

**697(S) ADVANCED TOPICS IN COMMUNICATIONS AND STATISTICAL SIGNAL PROCESSING** (3-0-3)
Advanced topics which vary from year to year. Not offered every year.

*Eggers, M.*

**698(S) ADVANCED TOPICS IN ROBOTICS** (3-0-3)
Not offered every year.

*Cheatham, Jr., J.*

**760(F/S) BAYLOR/RICE/M.D./Ph.D. PROGRAM** (Variable credit)
Departmental permission required.

*Staff*

**800(F/S) RESEARCH AND THESIS** (Variable credit)

*Staff*

# English

## The School of Humanities

**Professor Skura,** *Chair*
**Professors Apple, Chance, Doody, Doughtie, Driskill, Grob, Huston, Isle, Meixner, Michie, Minter, Morris, Patten, Piper, Skura, Snow, and Wood**
**Assistant Professors Derrick, Fultz, Lamos, and Lurie**
**Lecturers Daichman, Logan, Recknagel, Tobin, and Wallingford**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** A major in English requires 36 semester hours in English; at least 24 semester hours must be courses at or above the 300 level. A double major requires 30 semester hours in English, with at least 18 hours at the advanced level. All English majors must take two semesters of Major British Writers (English 251, 252) and Introduction to the Study of American Literature (English 261) as preparatory surveys. Humanities 101 and 102 may be counted as credit toward the major.

An English major must also take advanced courses in the following categories: (1) three semester hours in English literature before 1800; (2) three semester hours in English literature after 1800; (3) three semester hours in American literature.

It is recommended that all English majors take some formal instruction in English and American history and, if they plan to do graduate work, at least six semester hours at the advanced level in a foreign language.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**The Graduate Program.** The graduate program in English is designed for thorough training of a limited number of carefully selected students. Rice offers the Ph.D. to students interested in all fields of British and American literature and in literary theory.

As a part of their training, graduate students are expected to participate in the research and teaching activities of the department.

Within the limits of available funds, graduate scholarships and fellowships are awarded to qualified students. Scholarships provide a waiver of tuition; fellowships include a stipend and a waiver of tuition.

**Requirements for the Degree of Master of Arts.** While the English department does not have an M.A. program, it does offer the M.A. under two circumstances: 1) to Ph.D. students in the process of obtaining their doctorate after official admission to candidacy for the Ph.D. and 2) to Ph.D. students who decide to leave the program before completing their doctorate. Students admitted to the graduate program may take the master's degree by meeting four requirements:

1. If they have not done so before entering the program, they must satisfactorily complete at least three semester hours at the junior or senior level in the literature of a foreign language, not in translation, either at Rice or another accredited institution.

2. They must satisfactorily complete at least 24 semester hours of graduate work in English, exclusive of the thesis.
3. They must fulfill distribution requirements by taking at least one course in each of five of the following fields: 1) Medieval Literature, 2) Renaissance Literature to 1600 (including Shakespeare), 3) Seventeenth- or Eighteenth-Century British Literature, 4) Nineteenth-Century British Literature, 5) Twentieth-Century British Literature, 6) American Literature to 1900, 7) Twentieth-Century American Literature, 8) Literary Theory.
4. They must complete a thesis of approximately 50 pages and must defend it in an oral examination. For students admitted to candidacy for the Ph.D. degree, the requirement of a thesis will be waived.

**Requirements for the Degree of Doctor of Philosophy.** Candidates for the doctoral degree must complete five requirements:

1. If they have not done so before entering the program, they must satisfactorily complete at least six semester hours at the junior or senior level in the literature of a foreign language, not in translation, either at Rice or another accredited institution.
2. They must satisfactorily complete at least 48 semester hours of course work in English, exclusive of the thesis, including a three-hour pedagogy course.
3. They must fulfill distribution requirements by taking at least one course in each of the following fields: 1) Medieval Literature, 2) Renaissance Literature to 1600 (including Shakespeare), 3) Seventeenth- or Eighteenth-Century British Literature, 4) Nineteenth-Century British Literature, 5) Twentieth-Century British Literature, 6) American Literature to 1900, 7) Twentieth-Century American Literature, 8) Literary Theory.
4. They must pass a six-hour written preliminary examination conducted by two departmental faculty members. The exam may focus on (a) one of seven traditional literary periods: (1) Medieval, 2) Renaissance, 3) British Literature 1660-1880, 4) Nineteenth-Century British Literature, 5) Twentieth-Century British Literature, 6) American Literature to 1900, 7) Twentieth-Century American Literature); (b) a theoretical tradition or topic; or (c) a combination of a traditional literary period or portion of a period and a theoretical topic or topics or a genre. In special cases the preliminary examination may be interdisciplinary in focus.
5. They must complete a dissertation that demonstrates a capacity for independent work of high quality in either traditional scholarship, critical interpretation, or critical theory; and they must pass an oral examination on the thesis and related fields.

In order to qualify for continuing financial aid, students must be approved for candidacy for the Ph.D. by the beginning of the seventh semester at Rice (fifth semester for those entering with an M.A.). To secure approval, they must satisfy the foreign language requirement, fulfill the distribution requirements, pass the preliminary examination, and have a dissertation prospectus approved by the department's graduate studies committee.

*English Courses*

**101(F) CRITICAL READING AND WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Analysis and discussion of literary texts: poetry, drama, prose, fiction. Students submit essays frequently. All students must submit section preference sheets to the English department.
*Staff*

**102(S) CRITICAL READING AND WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Continuation of Engl 101, with sections giving special emphasis to individual genres: fiction, drama, and poetry. All students must submit section preference sheets to the English department.

*Staff*

**103(F) BASIC COMPOSITION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Intended primarily for students whose English Competency Examination is below standard. Prerequisite: permission of instructor.

*Staff*

**104(S) BASIC COMPOSITION** (3-0-3)
See Engl 103. Permission of instructor is required.

*Staff*

**211 INTRODUCTION TO CREATIVE WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Discussion and analysis of student fiction and poetry. Permission of instructor is required. Not offered 1993-94.

*Staff*

**251(F) MAJOR BRITISH WRITERS: CHAUCER TO 1800** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Readings in British major authors of the Middle Ages, the Renaissance, and the eighteenth century. Required of English majors. Enrollment in each section limited. Turn in preference sheet to English office.

*Doughtie, E., Piper, W., Snow, E.*

**252(S) MAJOR BRITISH WRITERS: 1800 TO PRESENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Readings in major British authors of the nineteenth and twentieth centuries. Required of English majors. Enrollment in each section limited. Turn in preference sheet to English office.

*Doody, T., Logan, T., Wallingford, K.*

**261(F) INTRODUCTION TO THE STUDY OF AMERICAN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Required of English majors. Enrollment limited.

*Derrick, S.*

**271(F) ASPECTS OF MODERN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Modern literature in short story, drama, poetry, novel, and nonfiction, drawn from American, British, and European sources of the nineteenth and twentieth centuries.

*Morris, W.*

**302(S) BALLAD AND FOLKSONG** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
About two-thirds of this course is devoted to British and American folk ballads; the rest surveys American folk lyrics, spirituals, work songs, and blues.

*Doughtie, E.*

**303(F) AFRICAN-AMERICAN LITERATURE: THE MOTHER/DAUGHTER PLOT**
* DISTRIBUTION COURSE: CATEGORY I.1
A survey of major literary works by African Americans.

*Fultz, L.*

**303(S) AFRICAN-AMERICAN LITERATURE: BLACK WOMEN WRITERS**
*DISTRIBUTION COURSE CATEGORY I.1
A survey of major literary works by African Americans.
*Fultz, L*

**304(F) TWENTIETH-CENTURY WOMEN WRITERS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Readings in modern women novelists or modern women poets.
*Lurie, S*

**311(F) FICTION WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Discussion and analysis of student fiction. Prerequisite: permission of instructor.
*Apple, M*

**312(S) FICTION WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
See Engl 311. Prerequisite: permission of instructor.
*Apple, M*

**313(F) DRAMATIC WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The emphasis, depending on individual students, will be on the writing of drama in one of several of the chief modes of the performing arts: plays, films, musicals, opera, even dance. Prerequisite: permission of instructor. May be repeated for credit.
*Meixner, J.*

**314(F) POETRY WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Extensive reading in modern poetry as well as regular practice in the writing of various forms will be required. Prerequisite: permission of instructor. May be repeated for credit.
*Wood, S*

**315(S) EXPOSITORY WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
A course in the composition of personal essays. Prerequisite: permission of instructor.
*Piper, W.*

**317(S) TECHNICAL COMMUNICATION** (3-0-3)
*Staff*

**320 INTRODUCTION TO MEDIEVAL CULTURE** (3-0-3)
Interdisciplinary course providing insights into the literature, art, philosophy, history, music, science, and cuisine of the Middle Ages, with guest lectures by specialists in various fields, slide lectures, and field trips. Also offered as Huma 320. Not offered 1993-94.
*Chance, J.*

**321(S) OLD ENGLISH: GENDER AND POWER** (3-0-3)
An examination of the charms, "Wulf and Eadwacer," "The Wife's Lament," "Judith," "Beowulf," and related texts in the original and in translation.
*Chance, J.*

**323(F) CHAUCER** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Readings in the *Canterbury Tales* and other writings of Chaucer.
*Chance, J.*

**328 MIDDLE ENGLISH LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Mythology in medieval literature: misogyny, literacy, and myth. Not offered 1993-94.
*Chance, J.*

**329(F) SIXTEENTH-CENTURY BRITISH LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
A survey focusing on the nondramatic works of Shakespeare, Sidney, Spenser, and their contemporaries.
*Doughtie, E.*

**339(F) SHAKESPEARE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Representative plays, including tragedies, comedies, histories, and romances, will be read.
*Grob, A.*

**340(S) SHAKESPEARE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
See Engl 339. Limited to juniors and seniors only.
*Skura, M.*

**343(S) SEVENTEENTH-CENTURY BRITISH LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Poetry and prose of the seventeenth century, excluding Milton.
*Snow, E.*

**344 MILTON** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Major poems and prose of John Milton. Not offered 1993-94.
*Snow, E.*

**346(S) BRITISH LITERATURE: 1660-1800** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Major writers of the eighteenth century, with particular attention given to Swift, Pope, and Johnson.
*Piper, W.*

**351(S) BRITISH LITERATURE: ROMANTIC PERIOD** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The major writings of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats.
*Grob, A.*

**357(F) VICTORIAN LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The poetry of Tennyson, Browning, Arnold, Meredith, the Pre-Raphaelites, and Hopkins; the prose of Carlyle, Ruskin, Pater, Arnold, and Mill.
*Grob, A.*

**361 EIGHTEENTH-CENTURY BRITISH FICTION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
A course dealing chiefly in the novels of Fielding, Sterne, Smollett, and Austen. Not offered 1993-94.
*Piper, W.*

**362(F) NINETEENTH-CENTURY BRITISH FICTION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The novel from Austen to Hardy.
*Michie, H.*

**363(F) TWENTIETH-CENTURY BRITISH FICTION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Forster, Woolf, Lawrence, Joyce, and their contemporaries. Particular attention will be given to *Ulysses*.

*Doody, T.*

**364(S) TWENTIETH-CENTURY BRITISH POETRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Survey from 1890 to the present: emphasis on Hopkins, Yeats, Lawrence, Graves, Auden, Larkin, and Hughes.

*Wallingford, K.*

**367(F) MODERN DRAMA: IBSEN TO 1940** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Plays by Ibsen, Chekhov, Strindberg, Wilde, Shaw, Synge, O'Casey, Pirandello, and T. S. Eliot.

*Meixner, J.*

**368(S) MODERN DRAMA: 1940 TO PRESENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
O'Neill, Miller, and Williams; French moderns; absurdism and recent trends.

*Meixner, J.*

**369(F) THE EUROPEAN NOVEL: CERVANTES TO 1900** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Major European fiction from Cervantes to Tolstoy in translation.

*Doody, T.*

**370 THE NOVEL IN THE TWENTIETH CENTURY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Major European and Latin American fiction of the twentieth century in translation. Not offered 1993-94.

*Doody, T., Isle, W.*

**378(S) AMERICAN LITERATURE TO 1860** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Poe, Emerson, Thoreau, Melville, Hawthorne, Whitman, and other American writers.

*Derrick, S.*

**379 AMERICAN LITERATURE: 1860-1910** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
A study of Mark Twain, Emily Dickinson, Stephen Crane, Henry James, and others. Not offered 1993-94.

*Derrick, S.*

**383(F) AMERICAN FICTION: 1910-1940** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Hemingway, Fitzgerald, Faulkner, and their contemporaries.

*Minter, D.*

**384(S) AMERICAN FICTION: 1940 TO PRESENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Survey with emphasis on the work of Bellow, Mailer, Barth, and Pynchon. Limited to juniors and seniors only.

*Isle, W.*

**387(S) TWENTIETH-CENTURY AMERICAN POETRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Frost, Pound, Eliot, and Stevens with some attention to the other poets of the twentieth century.
*Lamos, C.*

**388 CONTEMPORARY AMERICAN POETRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
American poetry since Lowell. Not offered 1993-94.
*Doody, T.*

**394(S) STRUCTURE OF ENGLISH LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Also offered as Ling 394.
*Staff*

**395 HISTORY OF ENGLISH LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Also offered as Ling 395. Not offered 1993-94.
*Mitchell, E. D.*

**396(S) LANGUAGE AND PHILOSOPHY IN LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Readings and discussions of issues in the philosophy of language.
*Morris, W.*

**399 LITERARY CRITICISM: HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
A survey of the history of literary criticism from Plato to the twentieth century. Not offered 1993-94.
*Morris, W.*

**400 LITERARY CRITICISM: THEORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Recent developments in critical theory. Not offered 1993-94.
*Morris, W.*

**401 TOPICS IN LITERATURE: ISSUES IN AFRICAN-AMERICAN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Limited to 25 students.
Prerequisite: permission of instructor.
*Fultz, L.*

**402(S) TOPICS IN LITERATURE: LITERATURE AND THE VISUAL ARTS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Limited to 25 students.
Prerequisite: permission of instructor.
*Snow, E.*

**403(F) STUDIES IN MAJOR BRITISH AUTHORS: TOLKIEN AND HIS WORLD** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Limited to 25 students.
Prerequisite: permission of instructor.
*Chance, J.*

**404(S) TOPICS IN LITERATURE: MODERN DRAMA ON FILM AND IN PERFORMANCE** (3-0-3)
*DISTRIBUTION COURSE CATEGORY I.1
Limited to 25 students.
Prerequisite: permission of instructor.

*Huston, J. D*

**405/406 STUDIES IN A MAJOR AMERICAN AUTHOR** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.1
In 1993-94, 405 not offered: 406: William Faulkner.

*Staf*

**408 STUDIES IN LITERARY TYPES: U.S. POETRY OF THE 1960s** (3-0-3)
Not offered 1993-94.

*Wallingford, K*

**411(F) STUDIES IN MODERN LITERATURE: JOYCE AND WOOLF** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Not offered 1993-94.

*Lamos, C.*

**413(S) STUDIES IN LITERARY CRITICISM: FEMINIST LITERARY THEORY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1

*Lurie, S.*

**414(S) STUDIES IN LITERARY CRITICISM** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
The topics vary from year to year. May be repeated for credit.

*Morris, W.*

**415 ADVANCED CREATIVE WRITING: POETRY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Prerequisite: permission of instructor. Not offered 1993-94.

*Wood, S.*

**416(F) ADVANCED CREATIVE WRITING: FICTION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Prerequisite: permission of instructor.

*Apple, M.*

**421(F) DIRECTED READING** (3-0-3)

*Skura, M.*

**422(S) DIRECTED READING** (3-0-3)

*Skura, M.*

**423(F) SENIOR THESIS** (3-0-3)

*Skura, M.*

**424(S) SENIOR THESIS** (3-0-3)

*Skura, M.*

**425(F) SENIOR SEMINAR** (3-0-3)
425a: Literature and the Environment; 425b: Contemporary British Poetry. Permission of instructor required.

*Isle, W., Wallingford, K.*

**462(F) VICTORIAN MARRIAGE** (3-0-3)
Also offered as Hist 462.
*Michie, H., Wiener, M.*

**496(S) LANGUAGE AND PHILOSOPHY IN LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Readings and discussions of issues in the philosophy of language.
*Morris, W.*

**501(F) BRITISH AND AMERICAN LITERATURE** (3-0-3)
Directed reading in a topic in British or American literature or literary theory. Graduate students may enroll for up to two semesters of directed reading for graduate credit.
*Staff*

**502(S) SEMINAR: NEW APPROACHES TO CHAUCER AND THE FOURTEENTH CENTURY** (3-0-3)
Not offered 1993-94.
*Chance, J.*

**505(F) SEMINAR: ALTERNATIVE SHAKESPEARES: RACE, CLASS, GENDER AND SEXUALITY** (3-0-3)
*Skura, M.*

**510(F) SEMINAR: SEVENTEENTH-CENTURY POETRY AND PROSE** (3-0-3)
*Snow, E.*

**511(S) SEMINAR: AMERICAN LITERATURE** (3-0-3)
*Minter, D.*

**512(F) SEMINAR: JONATHAN SWIFT** (3-0-3)
*Piper, W.*

**513(S) SEMINAR: EIGHTEENTH-CENTURY NOVEL** (3-0-3)
*Doody, T.*

**514(S) SEMINAR: DEATH TEXTS** (3-0-3)
*Lamos, C.*

**515 SEMINAR: PEDAGOGY** (3-0-3)
*Staff*

**517(S) SEMINAR: VICTORIAN LITERATURE** (3-0-3)
*Patten, R.*

**518(S) SEMINAR: DICKINSON AND CRANE** (3-0-3)
*Derrick, S.*

**519(F) SEMINAR: CONTEMPORARY FICTION** (3-0-3)
*Isle, W.*

**521(F) SEMINAR: FEMINIST THEORY** (3-0-3)
An enriched version of Engl 321 for graduate students. Additional readings, papers, or meetings to be assigned by instructor.
*Lurie, S.*

**522(S) SEMINAR: FILM THEORY AND LITERATURE** (3-0-3)
*Snow, E.*

**621(F) DIRECTED READING** (3-0-3)

*Skura, M.*

**622(S) DIRECTED READING** (3-0-3)

*Skura, M.*

**701(F) BRITISH AND AMERICAN LITERATURE** (3-0-3)

*Skura, M.*

**702(F) BRITISH AND AMERICAN LITERATURE** (3-0-3)

*Skura, M.*

**703(F) RESEARCH LEADING TO CANDIDACY** (Variable)
Topics in British and American literary theory. To be taken after a student has completed departmental course requirements for the master's or doctorate, and before being admitted to candidacy.

*Skura, M.*

**704(S) RESEARCH LEADING TO CANDIDACY** (Variable)

*Skura, M.*

**800(F/S) PH.D. RESEARCH AND THESIS** (Variable)
To be taken after a student has been admitted to candidacy.

*Skura, M.*

# Environmental Science and Engineering

## The George R. Brown School of Engineering

**Professor Bedient, *Chair***
**Professors Few, Tomson, and Ward**
**Adjunct Professor Wilson**
**Associate Professor Wiesner**
**Adjunct Associate Professor Pier**
**Assistant Professor Hughes**
**Adjunct Assistant Professor Newell**
**Lecturer Blackburn**

*Degrees Offered:* B.A., M.E.E., M.E.S., M.S., Ph.D.

**Undergraduate Program.** The major in environmental science (offered only as a double major with other fields of science or engineering) is intended for students wishing academic training oriented toward the solution of technical environmental problems and leads to the B.A. degree.

General requirements during the first two years include: two years of mathematics, one and one-half years of chemistry, and one year of physics. Specific courses to satisfy these requirements vary somewhat and should be determined in consultation with a departmental adviser. For the B.A. degree, a specified list of environmental science and engineering courses are required during the junior and senior years. The total number of semester hours required for the B.A. with a double major depends on department requirements for the other major. Generally, however, in addition to the department requirements for the majors, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the department requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

Undergraduates interested in environmental engineering must contact the Departments of Civil Engineering and Chemical Engineering for information on the B.S. degree program with an environmental option.

**Graduate Programs.** Graduate programs in the department of Environmental Science and Engineering lead to the degrees of Master of Environmental Engineering (M.E.E.), Master of Environmental Science (M.E.S.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.). Applicants for graduate study in the department of Environmental Science and Engineering are expected to have at least a "B" (3.0) average in undergraduate work and high GRE scores in the verbal, quantitative, and analytical sections of the exam. University requirements for the advanced degrees are presented beginning on page 129.

**Masters' Programs.** The M.E.E. and M.E.S. degrees are professional nonthesis degrees requiring one year of study. To enter the M.E.S. program, applicants must have successfully completed a four-year curriculum leading to the Bachelor of Arts (B.A.) or Bachelor of Science (B.S.) in any of the natural or physical sciences. Completion of a four-year curriculum leading to the Bachelor of Science in any field of engineering qualifies the student for possible admission to the M.E.E. program.

While the M.E.S. and M.E.E. degree programs are open to all qualified applicants, these degrees are typically awarded to persons completing undergraduate programs in environmental science or environmental engineering who wish to extend their education into a fifth year of specialized study.

Most of the graduate students admitted for study towards a master's degree pursue a thesis program culminating in the degree of Master of Science (M.S.) in Environmental Science and Engineering. Candidates for the M.S. degree must complete a minimum of eight approved semester courses and present and defend, in oral examination, a research thesis. A set of four core courses in the areas of environmental chemistry, water and wastewater treatment, hydrology, and environmental modeling are required of all M.S. candidates. Comparable course work completed previously by the candidate may be substituted for core courses. Normally, two academic years and the intervening summer are required for the degree. In conjunction with the candidate's research adviser, the student will select an M.S. advisory committee. The M.S. advisory committee consists of the candidate's research adviser, one or two additional members from the environmental science and engineering (ES&E) faculty, plus at least one member from another department. Individuals from other institutions (academic, business and/or governmental) may also serve on the thesis advisory committee, but they may not substitute for any of the Rice faculty positions specified above. The advisory committee is normally established by mutual agreement between the student and the research adviser, with approval of the department chair. It is the responsibility of the student to secure the consent of faculty members to serve on the thesis advisory committee. Students are advised to discuss their progress with committee members as their work evolves. Students will be allowed to take an oral examination on their thesis only after their thesis advisory committee has determined that the thesis is in an acceptable written format for a public defense.

**The Doctoral Program.** Candidates for the degree of Doctor of Philosophy must: (1) complete a rigorous list of approved courses with high standing, (2) pass a preliminary written examination to evaluate preparation for doctoral studies in the field of Environmental Science and Engineering, (3) pass a qualifying examination on course, proposed research, and related topics, (4) complete a dissertation indicating the candidate's ability to do original research, and (5) pass a formal public oral examination on the thesis and related topics.

Successful completion of at least 90 semester hours of course work and research beyond the bachelor's degree are required for the Ph.D. University residency requirements also include at least four semesters of full-time study at Rice. Doctoral candidates typically take the written and oral preliminary exams after one to two semesters of course work in the department. This exam is administered by the ES&E faculty. Candidates' who pass the preliminary exam will be allowed to form a doctoral committee. The doctoral committee consists of no less than three members of the Rice University faculty. The candidates' research adviser chairs the doctoral committee and at least one member of the committee must be from a department other than ES&E. After the doctoral candidate has formed a committee and developed a proposal for doctoral research, the candidate must pass a qualifying examination administered by the doctoral committee. The purpose of the qualifying examination is to evaluate the candidate's preparation for his or her proposed research and to identify any areas requiring additional course work or study.

# Environmental Science and Engineering

*Environmental Science and Engineering Courses*

**201(F) INTRODUCTION TO ENVIRONMENTAL SYSTEMS** (3-3-4)
* DISTRIBUTION COURSE: CATEGORY III.5
Chemical, physical, and biological components of the environment and the effects of pollution on their maintenance and utilization. Also offered as Heal 201.

*Ward, C.*

**401(F) INTRODUCTION TO ENVIRONMENTAL CHEMISTRY** (3-0-3)
Fundamental concepts and equilibrium calculations related to environmental chemistry. Emphasis will be on aquatic systems. Prerequisites: Chem 101 and 102. Related lab, Envi 402(S) not required.

*Tomson, M.*

**402(S) CHEMICAL MEASUREMENTS OF ENVIRONMENTAL QUALITY** (1-3-2)
Principles and significance of measurements used to assess environmental quality. Hands-on measurements of both classical titration, etc. and modern instrumental methods of measuring pollutant concentrations.

*Staff*

**403(F) WATER AND WASTEWATER TREATMENT** (3-0-3)
Fundamental principles of water and wastewater treatment systems and their application to the design and operation of treatment plants.

*Hughes, J.*

**406(S) INTRODUCTION TO ENVIRONMENTAL LAW** (3-0-3)
Legal techniques used by societies to plan and regulate the use of environmental resources.

*Blackburn, J.*

**412(S) HYDROLOGY AND WATERSHED ANALYSIS** (3-3-4)
Fundamentals of the hydrologic cycle, hydrograph techniques, flood routing, and open channel flow; local watershed application and laboratory. Also offered as Civi 464.

*Bedient, P.*

**443(F) EARTH SYSTEM DYNAMICS** (3-0-3)
The dynamics of fluid flow, the dynamics of energy exchanges, and the dynamics of major active chemical components in the Earth system will be studied. Open to upper-level undergraduates majoring in science and engineering and to graduate students in science. Also offered as Spac 443 and Mech 477.

*Few, A.*

**445(F) NATURAL ENVIRONMENTAL FACTORS IN COMMUNITY DEVELOPMENT** (3-0-3)
Readings, discussion, and review of data sources on natural environmental factors affecting and affected by the development of the built environment. Also offered as Arch 345 and 645.

*Blackburn, J.*

**490 SPECIAL STUDY AND RESEARCH** (Variable)
Open to environmental science or engineering majors with permission of chairman. Written thesis required.

*Staff*

**511(F) ENVIRONMENTAL PHYSIOLOGY AND TOXICOLOGY** (3-0-3)
Physical and chemical environment as it affects the physiology and population dynamics of organisms (including humans). Stability and maintenance of biogeochemical cycles (University of Texas School of Public Health). Available to graduate students only.

*Staff*

**512(S) ENVIRONMENTAL PHYSIOLOGY AND TOXICOLOGY** (3-0-3)
See Envi 511. (University of Texas School of Public Health). Available to graduate students only.

*Staff*

**518(F) GROUNDWATER HYDROLOGY** (3-0-3)
Groundwater hydrology, hydrogeology, well mechanics, hydraulics. Pollutant transport in aquifer systems, numerical methods, and groundwater models.

*Bedient, P.*

**525(S) ENVIRONMENTAL MICROBIOLOGY** (3-0-3)
Topics will include cell biology, microbial ecology, metabolic diversity, bioenergetics, microbial growth, and the degradation of environmental contaminants. Emphasis is placed on the role of microorganisms in the environment and engineered systems for environmental applications. Offered every spring semester.

*Hughes, J.*

**530(S) PHYSICAL-CHEMICAL PROCESSES IN ENVIRONMENTAL ENGINEERING** (3-0-3)
Introduction to colloid and surface chemistry, precipitation, mixing, particle aggregation, settling, packed bed filtration, adsorption, ion exchange, gas transfer, membrane processes, chemical oxidation and disinfection operations used in environmental pollution control and potable water treatment. Prerequisities: Envi 403 or equivalent and Envi 534.

*Wiesner, M.*

**534(F) TRANSPORT PHENOMENA AND ENVIRONMENTAL MODELING** (3-0-3)
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.

*Wiesner, M.*

**536(S) BIOLOGICAL PROCESSES FOR WASTEWATER TREATMENT** (3-0-3)
Theory and application of biochemical processes in environmental engineering.

*Staff*

**550(S) APPLIED WATER CHEMISTRY** (3-0-3)
Theoretical basis for considering the chemistry of natural and waste water systems. Interfacial processes and parameter estimation methods in common use.

*Tomson, M.*

**590 M.E.E. AND M.E.S. SPECIAL STUDY AND RESEARCH** (Variable)
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 an oral presentation of results are required.

*Staff*

**601(F) SEMINAR** (3-0-3)
Continuing seminar on environmental research.

*Staff*

**602(S) SEMINAR** (3-0-3)
See Envi 601.

*Staff*

**630(F) CHARACTERIZATION, TRANSPORT, AND TREATMENT OF PARTICLES IN WATER** (3-0-3)
Theory and methods for characterizing aquasols, colloid chemistry, particle transport in porous media and simple flows, particle aggregation, aggregate and deposit morphology, and other special topics. Offered in the fall, alternate (odd) years.

*Wiesner, M.*

**631(S) WATER TREATMENT SYSTEMS** (3-0-3)
Process interactions, optimal design, focused treatment needs related to water supply, water and industrial waste treatment, water reuse, residuals management, and other special topics. Offered in the spring, alternate (even) years.

*Wiesner, M.*

**634(S) GROUNDWATER TRANSPORT** (2-0-2)
Continuation of Envi 534. Groundwater transport theory, water quality models, analytical and numerical techniques, computer applications. Formal lecture and student projects, literature review. An advanced topics course.

*Bedient, P.*

**635(F) WATER CHEMISTRY** (Variable)
Formal lecture and assigned reading in topics such as redox kinetics and thermodynamics, absorption and desorption, and the associated mathematics. An advanced topics course.

*Tomson, M.*

**636(S) WATER CHEMISTRY** (Variable)
See Envi 635.

*Tomson, M.*

**651(F) M.S. RESEARCH AND THESIS** (Variable)

*Staff*

**652(S) M.S. RESEARCH AND THESIS** (Variable)

*Staff*

**800 PH.D. RESEARCH AND THESIS** (Variable)

*Staff*

# French Studies

## The School of Humanities

**Professor Goux,** *Chair*
**Professors Alcover, Carrington, and Nelson**
**Associate Professors Aresu and Wood**
**Assistant Professors Harter and Sherman**
**Lecturers Caflisch and Datta**

*Degrees Offered:* B.A., M.A., Ph.D.

## French

**Undergraduate Program.** A major in French Studies requires a minimum of 30 semester hours (ten courses) in upper-level courses (300 or 400), while a double major or an area major requires 24 semester hours (eight courses) of upper-level courses. Any student who matriculated at Rice University before August 1993 is required to take French 301, 302, 311, and 312 unless exempted by his or her major adviser. These students also have the option of choosing to fulfill the new requirements. Students who matriculate August 1993 or later must fulfill the following requirements:

1. Courses required of all majors: a) 304; b) either 311 or 312; c) either 369, 371, or 372.
2. 7 additional courses for single majors (at least 3 at the 400 level), 5 for double majors (at least 2 at the 400 level). Of these, at least 1 must be in Group IV (Philosophy, Sociology, Politics, Theory).
3. Of the above courses, at least one must cover the period prior to 1750 (311, 369, 401, 415, 425, 430) and one must cover the period subsequent to it (312, 361, 371, 372, and other 400-level courses).

As many as two French courses taught in English may count toward a French major. Students who have taken French 300- and 400-level courses (with the exception of those courses taught in English) cannot enroll simultaneously or afterwards in French 200-level courses for credit. Students with a diploma from French-speaking institutions must consult with the department before enrolling in courses. At least half of the courses for the major must be taken at Rice University.

Students are urged to take some courses in fields closely related to French Studies, such as English, European history, and other European literatures. All majors and prospective majors must have their programs approved by one of the undergraduate advisors. In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements, for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85. Students who would like to complete the honors program in French should consult one of the undergraduate advisers concerning the requirements.

Activities sponsored by the department to acquaint students with French language and culture include a weekly French Table that meets at lunch in one of the colleges. In addition, the Club Chouette organizes outings to French movies, sponsors guest lecturers, and, in cooperation with the department, helps to produce a play during

the spring semester. Students who maintain at least a B average in two or more upper-level French courses will be invited to join Theta chapter of the honorary Pi Delta Phi.

The department encourages majors to spend time living and studying in a francophone country. The Alliance Française of Houston presents a summer scholarship of $2,500 each year to a sophomore or a junior for six weeks study in France. The Clyde Ferguson Bull Traveling Fellowship, awarded each year to a graduating senior with a major or double major in French, permits the recipient to spend an entire year in France. Members of the department are available to discuss the numerous programs of study and travel in France sponsored by both American and French institutions. Information about study abroad is also available in the Office of Academic Advising.

**Graduate Programs.** Admission to graduate study in French is granted each year to a limited number of qualified students. A distinguished undergraduate record in the study of French literature and a capacity for independent work are essential. The award of advanced degrees is not based solely on accumulation of credits or compliance with formal requirements. Candidates are expected to attain not just a wide general knowledge of French literature but also to place this knowledge within a broad spectrum of cultural, historical, philosophical, and theoretical concerns. It is expected finally that all candidates demonstrate a near-native command of the French language. In most cases, two years will be required for the completion of work for the degree of Master of Arts.

**Requirements for the Degree of Master of Arts:**

1. Completion with satisfactory standing of 24 hours (beyond B.A.) in advanced courses, plus thesis work (6 semester hours). Graduate students normally select their courses from among the 500-level courses offered each semester. However, as many as two 400-level courses may count toward fulfillment of course requirements for the M.A.
2. Satisfactory performance on a reading examination in one language other than French approved by the department.
3. Satisfactory performance on preliminary written and oral examinations in French on the works indicated on the reading list provided by the department.
4. Completion of a thesis on a subject approved by the student's graduate committee.
5. Satisfactory performance on a final oral examination on the thesis.

**Requirements for the Degree of Doctor of Philosophy:**

1. Completion with high standing of a program approved by the department. Normally, this will include 54 semester hours of course work plus 36 hours for the thesis. For those already holding the degree of Master of Arts, the requirement would be 27 semester hours of course work plus 36 hours for the thesis.
2. Satisfactory completion of an upper-level course (300 or above) in a language other than French or English, to be chosen in consultation with the graduate advisers on the basis of its relevance to the student's possible research interests.
3. Satisfactory performance on a preliminary written and oral examination based on a list of required texts for all students. This list will include selected readings in French literature from all of the major periods but also readings in what the department feels to be crucial texts in the domains of philosophy, history, critical theory and aesthetics. The oral examination may be taken only after the successful completion of the written examination.

**Note:** Requirements 2 and 3 must be fulfilled one year before the submission of a dissertation.

4. Completion of a dissertation approved by the department. The dissertation is expected to represent an original contribution to the field of French Studies.
5. Satisfactory performance on a final oral examination on the dissertation.

Graduate students normally select their courses from among the 500-level courses offered each semester. At the discretion of the instuctor, some of the courses may be listed with both a 400 and a 500 number. As many as three 400-level courses (for students entering with the B.A.) or two 400-level courses (for those entering with the M.A.) may also count toward fulfillment of course requirements. Graduate student enrollment in a course listed only at the 400-level is subject to the instructor's approval.

*French Courses*

**101(F/S) ELEMENTARY FRENCH I** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
Equal emphasis given to reading, writing, speaking and understanding. Classroom activities supplemented by work in the language laboratory. NOTE: Fren 102 must be completed to receive distribution credit for Fren 101.
*Staff*

**102(F/S) ELEMENTARY FRENCH II** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
For description see Fren 101. Prerequisite: Fren 101 or placement exam.
*Staff*

**201(F/S) INTERMEDIATE FRENCH I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Intense oral and written grammar review; literary and cultural readings serve as basis for class discussions and compositions. Prerequisite: Fren 102 or placement exam.
*Staff*

**202(F/S) INTERMEDIATE FRENCH II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
For description see Fren 201. Prerequisite: Fren 201 or placement exam.
*Staff*

**203 INTERMEDIATE CONVERSATION** (3-0-3)
Not offered regularly.

**Note that the upper-level courses are organized according to content instead of by number.**

## I. ADVANCED LANGUAGE

**301(F) ADVANCED FRENCH GRAMMAR** (3-0-3)
Intensive review of French grammar and syntax at the advanced level, with concentration on the idiomatic practice of modern French. Prerequisite: Fren 202 or placement exam.
*Alcover*

**302(S) FRENCH PHONETICS** (3-0-3)
Contrastive analysis of the French sound system, including such key areas as diction and articulation of French speech, with emphasis on class as well as laboratory practice. Prerequisite: Fren 202 or placement exam.
*Alcover*

**303 ADVANCED CONVERSATION AND COMPOSITION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Active practice of composition, oral analysis, and discussion based upon the reading of texts on selected issues and problems in contemporary French society. Prerequisite: Fren 201 and 302 or placement exam.

*Datta*

**304(F) THE ART OF WRITING** (3-0-3)
Acquisition of creative and expressive writing skills at the advanced level. Analysis and practice of modes of expression such as exposition, narration, description, and argumentation. Prerequisite: Fren 301 or equivalent.

*Alcover, Aresu*

**305(S) COMMERCIAL FRENCH** (3-0-3)
An introduction to career and to commercial French, this course will deal with the essential vocabulary and syntax specific to the language of French-speaking business. Prerequisite: Fren 301 and 302 or placement exam.

*Datta*

**401 TRANSLATION** (3-0-3)
Theory and practice of translation. Translation of modern texts from and into English. Enrollment limited to 12. Prerequisites: Fren 301, 311, or 312 and instructor's permission.

*Aresu, Wood*

## II. LITERATURE

**311(F/S) INTRODUCTION TO FRENCH LITERATURE I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Main currents in French literature from its beginning to the eighteenth century. Lectures and discussions in French. Prerequisite: Fren 202 or placement exam.

*Carrington, Nelson*

**312(F/S) INTRODUCTION TO FRENCH LITERATURE II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Main currents in French literature from the nineteenth century to the present. Lectures and discussions in French. Prerequisite: Fren 202 or placement exam.

*Aresu, Harter*

**320(S) CLASSICS OF THE FRENCH NOVEL IN ENGLISH TRANSLATION** (3-0-3)
The evolution of the novel from the seventeenth century to the present as an introduction to the history of the genre as well as of personhood, gender ideology, sexuality, and modern capitalism. Works by Mme de Lafayette, Diderot, the Marquis de Sade, Balzac, Flaubert, Proust, Sartre, Robbe-Grillet, and Duras.

*Wood*

**410(F) LITERATURE AND CULTURE OF THE MIDDLE AGES: KING ARTHUR** (3-0-3)
An examination of the origins and reasons for the popularity of the legend of King Arthur, its manifestation particularly in the literature of the French Middle Ages but also in other medieval literatures of western Europe with discussion of the influence of the legend in diverse areas even in modern times. Prerequisites: Fren 301 and 311 or placement exam.

*Nelson*

**415 COURTLY LOVE IN MEDIEVAL FRANCE** (3-0-3)
Prerequisites: Fren 301, 302, 311. See Fren 515.

*Nelson*

**425(S) FRENCH HUMANISM** (3-0-3)
Cultural, historical, intellectual, and literary traditions from Villon through Montaigne. Prerequisite: Fren 311 or placement exam.

*Carrington*

**430 FRENCH CLASSICISM** (3-0-3)
Study of the formation and the development of classicism and absolutism through the literary and visual arts. Prerequisites: Fren 301, 302, and 311.

*Alcover*

**440 FRENCH ENLIGHTENMENT** (3-0-3)
A study of literary, philosophical, and visual works that demonstrate how the ideas of the Enlightenment and the rise of the Bourgeoisie led to the French Revolution. Prerequisites: Fren 301, 302, and 311.

*Alcover*

**445 ENLIGHTENMENT AND COUNTER-ENLIGHTENMENT** (3-0-3)
See Fren 545. Prerequisites: Fren 301, 302, and 311.

*Wood*

**450 TOPICS IN NINETEENTH-CENTURY LYRIC** (3-0-3)
Study of the greatest poetry and prose poetry of the nineteenth century (from the Romantic period to the Symbolist era) through such writers as Desbordes-Valmore, Musset, Hugo, Bertrand, Nerval, Baudelaire, Verlaine, Rimbaud, and Mallarmé. Prerequisites: Fren 301 or 304 and 312 or placement exam.

*Harter*

**455 NARRATIVE IN THE NINETEENTH CENTURY** (3-0-3)
Studies in brief fiction and the novel from romanticism through realism and naturalism, with attention to modern critical perspectives. Texts will be selected from the works of such authors as Balzac, Stendhal, Flaubert, Maupassant, Zola, and Villiers de l'Isle-Adam. Prerequisites: Fren 301 or 304 and 312 or placement exam.

*Harter*

**460(F) WOMEN IN FRENCH LITERATURE** (3-0-3)
An examination of the ways in which women have been represented in fiction—by themselves and by others—since the beginning of the modern period. Readings from Mme de Lafayette, Sade, Baudelaire, Villiers de l'Isle-Adam, Duras, and Wittig will help focus attention on the constitution of "femininity" in the literary text as a cultural, historical, and social artifact. Prerequisites: Fren 301 and 311 or 312.

*Harter*

**462 THE LYRIC GENRE FROM BAUDELAIRE TO BONNEFOY** (3-0-3)
A study of major lyrical figures and poetic preoccupations of the XIXth and XXth centuries, not limited to the hexagon. Prerequisites: Fren 301 or 304 and 312.

*Aresu*

**466 THE NARRATIVE AND THE OTHER ARTS** (3-0-3)
For description see Fren 566. Prerequisites: Fren 301 and 312 or placement exam. Occasionally offered in English.

*Aresu*

**472 PROUST** (3-0-3)
See Fren 572. Prerequisites: Fren 301, 302, 312.

*Wood*

**475 FLAUBERT AND SARTRE** (3-0-3)
See Fren 575. Prerequisites: Fren 301, 302, 312.

*Wood*

## III. CULTURE/HISTORY/CIVILIZATION

**360 GENDER AND SEXUALITY IN MODERN FRENCH HISTORY** (3-0-3)
An examination of gender roles, gender ideology, and sexual practices in the construction of French society and culture from the Enlightenment to World War II. Taught in English. Cross-listed as Hist 360.

*Sherman*

**369 FRENCH CULTURE AND SOCIETY IN THE ANCIEN RÉGIME** (3-0-3)
This course covers approximately the years 1520-1750, with an emphasis on the period after 1640. Taught in English. Cross-listed as Hist 369.

*Sherman*

**371 FRANCE IN AN AGE OF REVOLUTION, 1750-1870** (3-0-3)
Transformations in French society, culture, and politics before and after the revolution. Taught in English. Cross-listed as Hist 371.

*Sherman*

**372 SOCIETY AND POLITICS IN MODERN FRANCE, 1870-1988** (3-0-3)
The emergence of modern France: the impact of war, industrialization, imperialism, and cultural mastery. Taught in English. Cross-listed as Hist 372.

*Sherman*

**405(F) PARIS** (3-0-3)
History of Paris as a city and a capital as well as a cultural, intellectual, and economic center. Texts, slides, music, and films. Prerequisite: Fren 301 or placement exam.

*Alcover*

**407 FRENCH FILM I** (3-0-3)
See Fren 507. Prerequisites: Fren 301, 302, 303.

*Alcover*

**408 FRENCH FILM II** (3-0-3)
See Fren 508. Prerequisites: Fren 301, 302, 303.

*Alcover*

**453 HISTORY AS TEXT IN MODERN FRANCE** (3-0-3)
For description see Fren 553. Cross-listed as Hist 453.

*Sherman*

**473(S) "LA REVOLUTION TRANQUILLE": SEMINAR ON THE HISTORY AND CULTURE OF MODERN QUEBEC** (3-0-3)
Prerequisites: Fren 301 and 312 or 372. For description see Fren 573.

*Aresu*

**474 COLONIAL AND POSTCOLONIAL TEXTS** (3-0-3)
Prerequisites: Fren 301 and 312 or 372. For description see Fren 574.

*Aresu*

**476 TRADITION, IDENTITY, AND HISTORICAL WRITING** (3-0-3)
Individuals and societies define themselves partly by establishing a relationship with the past. This course explores the intersection of cultural tradition, collective identity, and historical writing in the modern West. Topics include the uses of the classical past from Renaissance to the present; the development of nationalist traditions; and the creation of European identities through juxtapositions with other cultures. French examples will be considered in comparative perspective. Cross-listed with Hist 476.

*Sherman, Quillen*

## IV. PHILOSOPHY, SOCIOLOGY, POLITICS, THEORY

**452 ART, POLITICS, AND SOCIETY IN NINETEENTH-CENTURY FRANCE** (3-0-3)
Realism, impressionism, and "official" institutional culture. Taught in English.

*Sherman*

**463 FROM MODERNITY TO POSTMODERNITY AND THE THIRD TECHNOLOGICAL REVOLUTION** (3-0-3)
Prerequisites: Fren 301 and 311 or 312. See Fren 563.

*Wood*

**464 LITERATURE AND PSYCHOANALYSIS** (3-0-3)
See Fren 564. Prerequisites: Fren 301 and 312.

*Harter*

**467 THE POSTMODERN BREAK IN FRENCH PHILOSOPHY** (3-0-3)
For description see Fren 567. Prerequisites: Fren 301, 302, 312, or placement exam.

*Goux*

**468 AESTHETIC THEORIES OF MODERNISM AND POSTMODERNISM** (3-0-3)
This course will analyse the crisis of "representation" and "subjectivity" through the French theories of aesthetic modernism and postmodernism, expressed particularly in the arguments of the "avant-garde" (cubism, abstraction, surrealism, existentialism, structuralism, "Tel Quel," etc.). The parallelism between literature, painting, theater (and occasionally cinema and achitecture) will be stressed. Among the readings: Delaunay, Valéry, Breton, Artaud, Sartre, Barthes, Sollers, and Lyotard.

*Goux*

**469(S) FEMININE AND MASCULINE IDENTITY** (3-0-3)
Through philosophy, anthropology, and psychoanalysis, the issue of gender in French theory will be examined. Texts by Breton, Levi-Strauss, Beauvoir, Lacan, Bachelard, Derrida, Irigaray, Badinter, etc.

*Goux*

**470 FRENCH UTOPIANISTS** (3-0-3)
An examination of the most important utopianists: Cyrano de Bergerac, Fénelon, Fontenelle, Restif de la Bretonne, Mercier, Morelly, Fourier, Cabet, and others. Sociological as well as psycho-analytical and philosophical interpretations of utopian discourse will be discussed (Marx, Barthes, Ricoeur, and others). Prerequisites: Fren 301, 302, 312, or placement exam.

*Goux*

**471 SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE** (3-0-3)
Taught in English. Cross-listed as Hist 471. For description see Fren 571.

*Harter, Sherman*

**477 THE MEANING OF THE SACRED IN FRENCH THOUGHT, FROM SURREALISM TO THE PRESENT** (3-0-3)
See Fren 577. Prerequisites: Fren 301, 302, 311, or 312.

*Wood*

**478 CONTEMPORARY FRENCH THOUGHT: TOWARD A SYMBOLIC ECONOMY** (3-0-3)
From the works of Mauss and Levi-Strauss (about the triple "exchange of goods," "exchange of words," "exchange of women") to the later developments brought by Bataille, Lacan, Baudrillard, Irigaray, and others, we will elaborate the idea of a "symbolic economy" that widens and transforms the notions of production, exchange, and consumption at the junction of anthropology, semiotics, psychoanalysis, and aesthetics. Prerequisites: Fren 301, 302, and 312.

*Goux*

**403 SPECIAL TOPICS** (3-0-3)

## GRADUATE COURSES

**501 GRADUATE RESEARCH (MA)** (0-0-3)

**502(F) TEACHING COLLEGE FRENCH** (1-0-1)
Teaching in applied linguistics as well as practical aspects of teaching. Required for teaching assistants.

*Urrutibéheity*

**503 SPECIAL TOPICS IN FRENCH LITERATURE** (3-0-3)

**504 BEGINNINGS OF THE LANGUAGE AND LITERATURE OF FRANCE** (3-0-3)
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.

*Nelson*

**507 FRENCH FILM** (3-0-3)
An introduction, through French cinema, to film analysis and the field of cinematographic illusion.

*Alcover*

**508(S) FRENCH FILM II** (3-0-3)
Unpopular cinema: Avant-Garde and Nouvelle Vague.

*Alcover*

**510 THE LITERARY AND HISTORICAL IMAGE OF THE MEDIEVAL WOMAN** (3-0-3)
Comparison and contrast of the presentation of the medieval woman in literature with extant evidence concerning historical women from contemporary documents and records.

*Nelson*

**515 COURTLY LOVE IN MEDIEVAL FRANCE** (3-0-3)
In an attempt to define this ambiguous concept, the course will examine the social, religious, philosophical, and historical aspects of the twelfth century that combined to produce a new concept of love that found expression first in Occitan lyric poetry and later in the poetry, lais, and romances of northern France. Texts will include lyric poetry of both *langue d'oc* and *langue d'oil*, the *lais* of Marie de France, *and Le Chevalier à la charette* by Chrétien de Troyes.

*Nelson*

**525 FRENCH HUMANISM** (3-0-3)

*Carrington*

**530 FRENCH CLASSICISM** (3-0-3)
Formation and culmination of absolutism and classicism in the literary and visual arts.

*Alcover*

**540 THE AGE OF ENLIGHTENMENT** (3-0-3)
Enlightenment and "Bourgeoisie": Works of major writers and painters of this age will be examined in their social context and also in light of contemporary critical theory.

*Alcover*

**543 POLEMICS AND RHETORICS** (3-0-3)
The study of the strategies of persuasion through works such as *Satire nénippée, Mazarinades,* Pascal's *Provinciales*, Voltaire's *Sermon des Cinquante*, Béranger's *Chansons,* Hugo's *Châtiments,* and Zola's *J'accuse.*

*Alcover*

**545 ENLIGHTENMENT AND COUNTER-ENLIGHTENMENT** (3-0-3)
The classic texts of the eighteenth century—Kant, Condorcet, J'Holbach, etc.—and the anti-Enlightenment tradition: de Sade, the romantic reaction, de Maistre, Nietzsche. Continuation of this debate in French and European thought: Sartre, Marxism, poststructuralism (*e.g.*, versus Habermas), Adorno, 80s neoliberalism, the return of the sacred in recent French thought. Taught alternately in French and in English.

*Wood*

**548 FRENCH AUTOBIOGRAPHERS** (3-0-3)
Analysis of the perception, (re)presentation, and rationalization of the self as well as the study of the autobiographical form as genre through the works of Montaigne, Sévigné, Saint-Simon, Rousseau, Chateaubriand, Sand, Sartre, and Beauvoir.

*Alcover*

**553 HISTORY AS TEXT IN MODERN FRANCE** (3-0-3)
Major nineteenth- and twentieth-century historical texts examined both as narratives about the French past and as discourses embodying particular attitudes toward contemporary society and politics. Topics include the emergence of a "scientific" history of the Revolution (Michelet, Tocqueville, Taine) and its relation to the historical novel, the Annales school and the question of French identity (Bloch, Braudel), and the politics of theory in recent French history (Foucault, Chartier). Taught in English; readings in French or English according to students' abilities. Crosslisted as Hist 553.

*Sherman*

**555 STUDIES IN NINETEENTH-CENTURY FICTION** (3-0-3)
Topics will vary to include such subjects as fantastic narrative and the theoretical problems this form presents.

*Harter*

**560 DEVELOPMENTS IN FRENCH FEMINIST THEORY** (3-0-3)
A study of recent French feminist theory with a view to mapping out this critical perspective both in its ideological and in its interpretive implications.

*Alcover, Harter, Wood*

**562 THE LYRIC GENRE FROM BAUDELAIRE TO BONNEFOY** (3-0-3)
Using Bonnefoy's theoretical reflection in "La presence et l'image" as a point of departure, the seminar will study the situation of the writing subject and the strategies of representation in the modern lyric, with special reference to such poets as Baudelaire, Rimbaud, Lautréamont, Breton, Perse, Ponge, and Bonnefoy.

*Aresu*

**563 FROM MODERNITY TO POSTMODERNITY AND THE THIRD TECHNOLOGICAL REVOLUTION** (3-0-3)
Literary and philosophical postmodernity and feminism as, simultaneously, bearers and problematisers of the "postindustrial" revolution—the services/information economy, the dissolution of the nuclear family, the end of Oedipus, the functionally adaptive feminization (or rather, androgynization) of the work force, etc. Taught alternately in French and in English.
*Wood*

**564(S) LITERATURE AND PSYCHOANALYSIS** (3-0-3)
An articulation of those ways in which literature and psychoanalysis have seemed most fruitfully to inform each other. Readings in primary literature as well as in Freud, Lacan, Cixous, Lacoue-Labarthe, Silverman, Jameson, Freeman, and others.
*Harter*

**566 THE NARRATIVE AND THE OTHER ARTS** (3-0-3)
The seminar will focus on the production of *imaginaires* and on the relationship between scriptural and pictorial languages in modern culture. Theoretical texts by Breton, Bachelard, Durand, Burgos, le Doeuff, Robbe-Grillet, and Sarraute as well as narratives (textual, cinematic) by Cocteau, Breton, Robbe-Grillet, Duras, and painting (Magritte and surrealism).
*Aresu*

**567 THE POSTMODERN BREAK IN FRENCH PHILOSOPHY** (3-0-3)
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.
*Goux*

**568(F) FRENCH PHILOSOPHY** (3-0-3)
Moral philosophy from Descartes to today: the relationship between the individual and society, the problem of freedom and values, the questions of universality, humanism, the important moments of the constitution and deconstitution of the subject through a study of moral philosophers: Descartes, Rousseau, Condorcet, Comte, Guyau, Durkheim, Fouillée, Bergson, Alain, Camus, Sartre, Simone de Beauvior, Lacan, Irigaray, Foucault, Ricoeur.
*Goux*

**569 MODERN LITERATURE AND LITERARY THEORY: TOWARDS AN AESTHETICS OF THE FRAGMENTARY** (3-0-3)
A study of the way in which fragmentation, both as epistemological and linguistic phenomenon, has become in the modern/postmodern period a crucial perspective through which to view not just literary but also philosophical and theoretical texts. Readings among such writers as Baudelaire, Flaubert, Breton, Beckett, and Barthes.
*Harter*

**570 THEORY AND PRACTICE IN FRENCH CULTURAL HISTORY** (3-0-3)
An examination of significant recent work in modern French cultural history since the Enlightenment in the context of the major theoretical approaches (Marxism, cultural anthropology, and postmodernism) that have influenced it. Taught in English. Cross-listed as Hist 570.
*Sherman*

**571 SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE** (3-0-3)
This seminar will consider the body as a central text, metaphor, and contested site in French culture and society since the eighteenth century. Readings, taken from a variety of literary genres as well as from history, art history, and theory, will cover such topics as sexuality and sexual difference, science, discipline and regulation, domination and submission, and the construction of the body in such fields as pornography, lyric poetry, political imagery, and painting. Taught in English. Cross-listed as Hist 571.
*Harter, Sherman*

**572 PROUST** (3-0-3)
Extensive readings from *A la recherche du temps perdu*—mobilizing simultaneously close textual readings and broad-ranging meditations on the historical meaning of the work in terms of the history of artistic modernism and social modernity. Taught alternately in French and in English.

*Wood*

**573 "LA REVOLUTION TRANQUILLE": SEMINAR ON THE HISTORY AND CULTURE OF MODERN QUEBEC**
Literary texts by Carrier, Godbout, Maillet, and Hébert. The plastic arts: Pellan, Riopelle, and Bordaus. "Le cinema direct" and the cinematography of Perrault, Jutra, and Arcand. Emphasis varies from year to year.

*Aresu*

**574(F) COLONIAL AND POSTCOLONIAL CULTURES** (3-0-3)
History and theory of the cultural production of the Maghreb, Africa South of the Sahara, and the Caribbean, with special reference to the francophone sector. The course will examine significant essays, art, cinematography, and literature. Emphasis varies from year to year. Occasionally offered in English.

*Aresu*

**575 FLAUBERT AND SARTRE: "L'IDIOT DE LA FAMILLE"** (3-0-3)
Close readings of Flaubert (the major novels, juvenilia) in conjunction with Sartre's biography of Flaubert with a view to 1) investigating the theoretical problems entailed in mobilizing simultaneously Marxism, sociology, psychoanalysis, literary history, and literary critical analysis, and 2) comparing late Sartre with poststructuralist accounts of the construction of the subject. Taught alternately in French and in English.

*Wood*

**576 EVOLUTION OF THE NOVEL** (3-0-3)
Camus, Butor, Duras, Robbe-Grillet, Simon, Sarraute, Yourcenar, Tournier, Sollers, and Modiano. Selection of writers varies from year to year.

*Aresu*

**577 THE MEANING OF THE SACRED IN FRENCH THOUGHT FROM SURREALISM TO THE PRESENT** (3-0-3)
Surrealism, *Collège de sociologie*, Sartre, Levinas, Girard, Tournier, Derrida, etc. The reasons for, and significance of, the rise of a post-theological notion of the sacred in modernity. Postmodern theology and cosmology. Taught alternately in French and in English.

*Wood*

**578 CONTEMPORARY FRENCH THOUGHT** (3-0-3)
For description see Fren 478.

*Goux*

**580(F) TWENTIETH-CENTURY FRENCH THEORY FROM SAUSSURE TO IRIGARAY I** (3-0-3)
Introduction to psychoanalytic, Marxist, existentialist, semiotic, poststructuralist, feminist theoretical developments and their mobilization for interpretation and critical methodology. Required for graduate students. Taught in alternate years by professors Goux (in French) and Wood (in English).

**581(S) TWENTIETH-CENTURY FRENCH THEORY FROM SAUSSURE TO IRIGARAY II** (3-0-3)
See description for Fren 580. Required for graduate students.

**800 THESIS RESEARCH (Ph.D.)**

## Italian Language and Culture

A scholarship sponsored by the Italy in America Association of Houston is awarded annually to an eligible sophomore or junior to support studies in Italian language and culture. The department also sponsors a weekly Italian table at Brown College on Thursdays.

**101(F) ELEMENTARY ITALIAN I** (4-0-4)
* DISTRIBUTION COURSE: I.1
Concentration on all four language skills supplemented by work in the language laboratory. Basic elements of Italian culture and civilization: an overview of current events and ideas. This course also includes a "RAI" (Radio Audizioni Italiane) video.

*Caflisch*

**102(S) ELEMENTARY ITALIAN II** (4-0-4)
* DISTRIBUTION COURSE I.1
Continuation of Ital 101.

*Caflisch*

**201(F) INTERMEDIATE ITALIAN I** (3-0-3)
* DISTRIBUTION COURSE I.1
A review and consolidation of the structure of comtemporary Italian. Literary and cultural readings serve as a basis for class discussion and conversation. Oral reports and compositions will help increase fluency and naturalness. This course also includes a "RAI" (Radio Audizioni Italiane) video and a movie by an Italian director.

*Caflisch*

**202(S) INTERMEDIATE ITALIAN II** (3-0-3)
* DISTRIBUTION COURSE I.1
Continuation of Ital 201.

*Caflisch*

**301(F) MODERN ITALIAN LITERATURE I** (3-0-3)
* DISTRIBUTION COURSE I.1
An introductory survey of modern Italian writers used as a vehicle for reinforcing and enhancing the study of Italian langauge and culture. Prerequisite: Ital 202 or placement exam.

*Caflisch*

**302(S) IMAGES OF ITALIAN CULTURE** (3-0-3)
* DISTRIBUTION COURSE I.1
Expression and development of Italy's historical, social, and artistic achievements.

*Caflisch*

# Geology and Geophysics

## The Wiess School of Natural Sciences

**Professor Anderson,** *Chair*
**Professors Avé Lallemant, Baker** *(Emeritus),* **Bally, De Bremaecker, Gardner, Heymann, Leeman, Oldow, Stormer, Talwani, and Vail**
**Associate Professors Clark** *(Emeritus),* **Droxler, Dunbar, Levander, Sawyer, and Wright**
**Assistant Professor Sisson**
**Adjunct Professors Buffler, Burke, Cramez, Rosenbaum, Savit, Taner, and Wilson**
**Adjunct Associate Professors Dravis and Riese**
**Adjunct Assistant Professor Hegarty**
**Lecturer R. Wright Dunbar**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program in Geology.** The following courses are required for completion of the degree of Bachelor of Arts with a major in Geology:

Geology 204, 212, 311, 312, 331, 332, 334, 361, and 390.

At least 12 semester hours in additional courses at the 300 level or higher, from an approved list in science and engineering.

The following supporting courses are also required:
Mathematics 101, 102, and 211
Chemistry 101 or 111, 102 or 112, and 105
Physics 101, 102, and 132
Natural Science 230 or any 2 hours of Computational and Applied Mathematics 223

Double majors including Geology must comply with the above requirements except that six of the twelve hours of Geology electives may be deleted.

Students in the Geology major must satisfy the distribution requirements and complete no fewer than 60 semester hours in addition to the departmental requirements for the Geology major for a total of no fewer than 132 semester hours.

Students interested in careers in Environmental Geology are encouraged to take the following courses as electives:

Environmental Science and Engineering: Envi 406, Introduction to Environmental Law, Envi 412, Hydrology and Watershed Analysis

Geology: Geol 353, Environmental Geochemistry

The Department of Geology and Geophysics offers an approved curriculum leading to certification in earth science as a teaching field. The curriculum consists of 25 semester hours of introductory courses that would most benefit a secondary school teacher, i.e., earth processes, historical geology and paleontology, studies of minerals and rocks; some work in paleontology, meteorology, and oceanography.

**Undergraduate Program in Geophysics.** The following courses are required for completion of the degree of Bachelor of Arts with a major in Geophysics:
Geology 204, 313, 331, 334, 361, 390, 441, 442, 444, and 461
Mathematics 101, 102, 211, and 212
Chemistry 101 or 111, 102 or 112, and 105
Physics 101, 102, 132, 201, and 231
Natural Science 230 or any 2 hours of Computational and Applied Mathematics 223

At least three hours in additional courses at the 300 level or higher from an approved list in science and engineering.

Students in the geophysics major must also satisfy the distribution requirements and complete no fewer than 60 semester hours in addition to the departmental requirements for the geophysics major for a total of no fewer than 134 semester hours.

**Graduate Program.** The department offers graduate programs leading to M.A. and Ph.D. degrees. At present the department is prepared to offer advanced work in marine geology-oceanography, stratigraphy, sedimentation, carbonate petrology, igneous petrology, meteoritics, geochemistry, structural geology, regional tectonics, reflection and crustal seismology, and geodynamics. Programs of study and research that incorporate more than one of these specialties are encouraged.

We expect all incoming students to have a strong background in physics, chemistry, and mathematics and to have, or to acquire, a broad grounding in fundamental earth sciences. We encourage applications from well-qualified students with degrees in the other sciences and mathematics.

Fellowships and/or tuition scholarships, which do not obligate a student to specific research projects, are available for the first year of study. During the first year students select an adviser and a research project, and in the second and subsequent years they normally receive a stipend and tuition from external funds for specific research. Our degree programs require full-time study and close interaction with faculty and fellow students for the optimum educational experience. Therefore, we do not encourage part-time students who will be concurrently employed in full- (or nearly full-) time positions outside the university. As part of their training, all graduate students are expected to perform satisfactorily a limited amount of teaching as assistants in geology and geophysics courses. These teaching requirements are unrelated to stipends or scholarships.

The general requirements for the M.A. and Ph.D. are similar. However, the Ph.D. demands the attainment of a significantly higher level of knowledge, research skills, and scholarly independence. Details of the requirements are contained in the departmental "Guidelines for Advanced Degrees in the Department of Geology and Geophysics" distributed to all incoming students and are only summarized here. All university requirements apply. Most students can expect to spend at least two years beyond the bachelor's degree to complete requirements for the master's degree and at least two years beyond the master's degree for the Ph.D. Students of exceptional ability with a bachelor's degree may be allowed to work directly toward the Ph.D. In this case, the course of study will be equivalent to that required for both degrees, and performance on the examinations and the thesis will be at the level required for the Ph.D.

Course requirements are flexible to meet the needs in individual students' programs. Each candidate will complete a course of study determined by his/her major professor and advisory committee and approved by the departmental Graduate Committee. Geology 403 is the only required course, but the course program for each degree includes 20 credit hours of course work at the 400 level and above (or other approved courses), other than research courses. The department requires that a student maintain a grade point average of 3.0 (B) or better.

Usually during the second semester of residence, students will register for the preparation of a thesis proposal. The student must pass an oral qualifying exam based on the research proposal before beginning the research program. The research program culminates in a thesis representing an original contribution to science, which is ultimately published. Finally, the research and the conclusions of the thesis are defended in an oral examination.

*Geology Courses*

**101(F) THE EARTH** (3-3-4)
*DISTRIBUTION COURSE: CATEGORY III.5
Nature of the earth and the processes that change it. Laboratory includes the study of rocks, minerals, geological maps, air photos, and a one-weekend field trip.
*Heymann, D., Wright, J., Dunbar, R.*

**202(S) GEOPHYSICS IN THE STUDY OF THE EARTH** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY III.5
The historical development of geophysics. Application of geophysical methods to learn about the earth's interior and to explore for oil and other minerals. For coherent minors, nonmajors, and majors. Geol 101 is recommended but not required.
*Talwani, M., Levander, A.*

**204(S) HISTORICAL GEOLOGY AND PALEONTOLOGY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY III.5
History of the earth and evolution of continents, ocean basins, life, and climate over the past 4.6 billion years. Accompanying Geol 212 Lab is optional for nongeology majors. Prerequisite: Geol 101 is recommended but not required. Geol 212 Lab is a corequisite for geology majors.
*Wright Dunbar, R.*

**212(S) LABORATORY IN HISTORICAL GEOLOGY AND PALEONTOLOGY** (0-6-2)
Practical exercises in stratigraphy, sedimentology, and paleontology. Introduces the taxonomy, systematics, morphology, ecology, paleoecology, and correlation of fossils. Includes fundamentals of sequence stratigraphy. Laboratory exercises include one weekend field trip. Corequisite: Geol 204.
*Wright Dunbar, R.*

**214(S) THE PLANETS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY III.5
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 individually. For coherent minors and nonmajors. Prerequisite: Geol 101.
*Heymann, D.*

**311(F) MINERALOGY AND OPTICS** (3-6-5)
DISTRIBUTION COURSE: CATEGORY III.5
Introduction to crystallography, crystal chemistry, systematics and classification, physical and chemical properties, distribution, occurrence and genesis of minerals, and optical mineralogy.
*Leeman, W., Stormer, J., Sisson, V.*

**312(S) PETROLOGY** (3-3-4)
Description and interpretation of igneous and metamorphic rocks. Laboratory work emphasizes study of rock thin sections with petrographic microscope, and includes a one-weekend field trip. Prerequisite: Geol 311.
*Wright, J., Sisson, V.*

**313(F) MINERALOGY** (3-3-4)
*DISTRIBUTION COURSE: CATEGORY III.5
Introduction to crystallography, crystal chemistry, systematics and classification, physical and chemical properties, distribution, occurrence, and genesis of minerals.
*Leeman, W., Stormer, J., Sisson, V.*

**314(S) PETROLOGY** (3-0-3)
Same course as Geol 312, without the laboratory.
*Wright, J., Sisson, V.*

**326(F) ENVIRONMENTAL GEOLOGY** (3-0-3)
Course examines interrelations between humans and the geologic environment. Emphasis on geologic processes, hazards, environmental management. Topics include groundwater, soils, landslides, subsidence, river, coastal & lacustrine environments, earthquakes, and volcanic activity, mineral and energy resources, waste disposal. Course includes local field trips. Not offered every year. Offered with additional work as Geol 426.
*Wyld, S.*

**331(F) STRUCTURAL GEOLOGY** (3-3-4)
Introduction to deformation mechanics, structural analysis of faults and folds, and elementary tectonics. Laboratory emphasizes practical use of structural analysis, and includes a one-weekend field trip.
*Oldow, J., Avé Lallemant, H.*

**332(S) SEDIMENTOLOGY** (3-3-4)
Processes in sedimentation and sedimentary rocks including both clastic and carbonate rocks. Laboratory exercises include a one-weekend field trip.
*Anderson, J., Droxler, A., Dunbar, R.B.*

**333(F) STRUCTURAL GEOLOGY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY III.5
Same course as Geol 331 without the laboratory. For nonmajors only.
*Oldow, J., Avé Lallemant, H.*

**334(S) GEOLOGICAL AND GEOPHYSICAL TECHNIQUES** (0-6-2)
Beginning field techniques taught in seven labs and seven field days, plus class meetings. Geologic map and report to be submitted. Prerequisite: Geol 331 or permission of instructor.
*Oldow, J., Avé Lallemant, H.*

**341(F) THE OCEANS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY III.5
Introduction to oceanography; survey of the geological, physical, and biological aspects. There will be one Saturday field trip. For nonscience majors.
*Anderson, J., Droxler, A., Dunbar, R.B.*

**352(S) ENGINEERING GEOLOGY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY III.5
Analysis, in terms of engineering and environmental applications, of earthquakes, faults, landslides, shorelines, ground water, subsidence, and other geologic phenomena. Techniques of engineering geology investigation.
*Clark, H.C.*

**353(S) ENVIRONMENTAL GEOCHEMISTRY** (3-0-3)
Theories and problems of chemical hazards in the environment due to natural processes, with emphasis on low-temperature aqueous systems.
*Heymann, D.*

**361(F) GEOPHYSICS** (3-3-4)
Description and analysis of gravity, magnetic, thermal, and seismic properties of the earth and their bearing on plate tectonics. Prerequisite: Caam (Masc) 223 or Comp 211.
*DeBremaecker, J.*

**390(Summer) FIELD GEOLOGY** (0-18-6)
A six-week course in geology.

**403(F) ADVANCED PHYSICAL GEOLOGY** (1-0-0)
Introduction to current research in geology. Each faculty member in the department participates by describing his/her research and some of the techniques involved.

*Staff*

**405(F) SEMINAR: CURRENT RESEARCH IN EARTH SCIENCES**
A series of lectures on current research in various areas of Geology and Geophysics.

**406(S) SEMINAR: CURRENT RESEARCH IN EARTH SCIENCES**
See Geol 405.

**411(F) METAMORPHIC PETROLOGY** (3-3-4)
Evaluation of sub-solidus mineral equilibria through consideration of natural assemblages, thermodynamic calculations, and experiments. Labs will stress thin section petrography. Not offered every year. Prerequisite: Geol 312.

*Sisson, V.*

**412(S) IGNEOUS PETROLOGY** (3-3-4)
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. Not offered every year.

*Leeman, W., Wright, J.*

**413(F) ORGANIC GEOCHEMISTRY** (3-0-3)
The origin and evolution of petroleum and natural gas. The fate of biogenic compounds in sedimentary rocks over geologic time. Cross-listed with chemistry and chemical engineering departments.

*Mango, F.*

**415(S) ECONOMIC GEOLOGY—PETROLEUM** (3-0-3)
A study of the geology of petroleum: origin, migration, and accumulation will be studied. Government regulation and industry economics will be examined. Not offered every year.

**416(F) ECONOMIC GEOLOGY—MINERAL DEPOSITS** (3-0-3)
An overview of metallic and non-metallic mineral deposits, theories of their origin, and classification. The impact of government regulation, economics, production practices, and exploration will be considered. Not offered every year.

*Sisson, V.*

**418(S) GEOLOGICAL OCEANOGRAPHY** (3-3-4)
Study of geological aspects of oceanography, including geomorphology, nearshore processes, seafloor spreading, plate tectonics, marine geophysics, marine sediments, and paleoceanography. Not offered every year.

*Anderson, J., Dunbar, R.B., Droxler, A.*

**420(S) MARINE GEOPHYSICAL METHODS**
Field course that focuses on methods of seismic reflection, data acquisition, processing, and analysis. Experiments will be carried out using the research vessel. Students will process and interpret data and present findings. Not offered every year.

*Anderson, J., Sawyer, D.*

**421(F) DEEP-SEA SEDIMENTOLOGY/PALEOCEANOGRAPHY** (3-0-3)
Study of the Mesozoic and Cenozoic evolution of the ocean system based on the analyses of biogenic and terrigenous deep-sea sediments. Prerequisite: Geol 332.
*Droxler, A., Dunbar, R.B.*

**423(S) ANTARCTIC MARINE GEOLOGY** (3-0-3)
The study of marine geologic principles and processes using examples from the southern oceans. Not offered every year.
*Anderson, J.*

**426(F) ENVIRONMENTAL GEOLOGY** (3-0-3)
An enriched version of Geol 326. To receive credit at this level, students are required to complete an extra project. Students may not receive credit for both 326 and 426.
*Wyld, S.*

**427(F) SEQUENCE STRATIGRAPHY** (3-0-3)
Principles of sequence stratigraphy (a new tool used to subdivide, correlate, and map sedimentary rocks within chronostratigraphically constrained genetic intervals) and its application to outcrop, well log, and seismic data.
*Vail, P.*

**428(S) GEOLOGIC INTERPRETATION OF REFLECTION SEISMIC PROFILES** (3-3-4)
Discussion and application of seismic stratigraphic and structural interpretation procedures, including the integration of surface and subsurface data with seismic reflection profiles. Not offered every year.
*Bally, A.*

**432(F) MICROPALEONTOLOGY AND WELL LOG SEQUENCE STRATIGRAPHY** (3-0-3)
The basic concepts and procedures for interpreting stratigraphy on individual well logs and correlating between well logs. The fundamentals of micropaleontology are used to determine geologic age and environments of deposition. Well log sequence stratigraphic analysis is used to aid in the interpretation of depositional environments and lithofacies, tie in with seismic data, and correlate between wells. Not offered every year.
*Vail, P.*

**438(S) SEDIMENTARY GEOCHEMISTRY AND MINERALOGY** (3-0-3)
Study of the chemistry of environments of formation of the major sedimentary minerals and rocks and secular variations throughout geologic history. Not offered every year.
*Dunbar, R.B.*

**441(S) GEOPHYSICAL DATA ANALYSIS** (3-3-4)
Review complex variables, Fourier, Laplace, and Z-transforms; convolutions, correlation, filtering, deconvolution, probability, sampling and aliasing, spectral estimation and discrete inverse theory. Computer-based exercises. Prerequisite: Math 211.
*Sawyer, D.*

**442(F) EXPLORATION GEOPHYSICS** (3-6-5)
Principles and procedures involved in geophysical exploration. This course covers acquisition, processing, and interpretation of gravity, magnetic, and seismic data.
*Sawyer, D., Levander, A.*

**444(S) REFLECTION SEISMIC DATA PROCESSING LAB** (1-3-2)
Experience with processing reflection seismic data. The lab covers seismic data organization, velocity analysis, stacking, filtering, deconvolution, migration, and display, using the Geophysical Computing Facilities DISCO seismic processing system. Prerequisite: Geol 442.
*Levander, A., Sawyer, D.*

**452(F) ADVANCED ENGINEERING GEOLOGY** (3-0-3)
Consideration of methods and research in engineering geology. Application of geophysical techniques to specific problems will be emphasized. Students will work as teams on several field projects. Not offered every year.

*Clark, H.*

**459(F) MODELS IN GEOLOGY** (3-0-3)
Discussion of models in general; numerical solutions of heat transfer, folding, and convection problems by finite differences, finite elements, and boundary elements methods. Prerequisite: Math 211, 212, Caam (Masc) 223, 340. Not offered every year.

*DeBremaecker, J.*

**461(F) GEOPHYSICS: REFLECTION SEISMOLOGY** (3-0-3)
Principles of elastic wave initiation, propagation, and reflection in ideal media and real rocks, with applications to exploration for hydrocarbons. Prerequisite: Math 211, Phys 101, 102. Math 212 recommended, may be taken concurrently. Not offered every year.

*Levander, A.*

**462(S) GEODYNAMICS** (3-0-3)
The forces that govern the motions and deformations in the earth, and how they are constrained by geophysical and geological measurements. Prerequisite: Math 211, 212; Geol 361. Not offered every year.

*DeBremaecker, J., Sawyer, D.*

**463(F) ADVANCED TECTONICS** (3-3-4)
Mechanics of rock deformation in theory, in experiments, and in nature.

*Avé Lallemant, H., Oldow, J.*

**464(S) FUNDAMENTALS OF PLATE TECTONICS** (2-3-3)
Introduction to plate tectonics theory concerning geometric constraints to plate motions, driving mechanism, behavior at plate boundaries, and intraplate tectonism. Not offered every year.

*Oldow, J., Bally, A.*

**465 COMPARATIVE PHANEROZOIC TECTONICS** (3-3-4)
A synthesis of the Phanerozoic tectonic evolution of the earth. Global investigation of fold and thrust belts, their relationship to convergent plate boundaries, associated structural and stratigraphic relations, and the mechanics of deformation. Prerequisite: Geol 464. Best when taken with 428. Not offered every year.

*Bally, A.*

**471(F) ISOTOPE GEOLOGY** (3-0-3)
An introduction to the principles, interpretation and techniques of Radiogenic isotope systems. The course will focus on geochronology applications as well as the use of isotopes in the study of petrogenesis of igneous rocks.

*Wright, J., Heymann, D.*

**481(F) SENIOR RESEARCH IN GEOLOGY** (Variable)
Advanced work adapted to the needs of the individual student.

*Staff*

**482(S)SENIOR RESEARCH IN GEOLOGY** (Variable)
See Geol 481.

*Staff*

**491(F) SPECIAL STUDIES** (Variable)
Study in specific fields under the guidance of a staff member.

*Staff*

**492(S) SPECIAL STUDIES** (Variable)
See Geol 491.

*Staff*

**501(F) SPECIAL STUDIES** (Variable)
Advanced work in certain phases of geology adapted to the needs of individual graduate students. Prerequisite: permission of department.

*Staff*

**502(S) SPECIAL STUDIES** (Variable)
See Geol 501.

*Staff*

**503(Summer) SPECIAL STUDIES** (Variable)
See Geol 501.

*Staff*

**504(F) CLASTIC SEDIMENTARY ENVIRONMENTS, PROCESSES, AND FACIES** (3-0-3)
Study of modern and ancient sedimentary environments with emphasis on field work. Depositional models examined in relation to climatic, oceanographic, and tectonic influences.

*Anderson, J.*

**505(F) APPLIED SEDIMENTOLOGY** (1-6-3)
Field investigation of sedimentary deposits of northwestern New Mexico to provide graduate students in sedimentology with training in field methods, interpretation of sedimentary deposits, and facies mapping. Prerequisite: Geol 504. Not offered every year.

*Anderson, J., Wright Dunbar, R.*

**506(S) CARBONATE SEDIMENTOLOGY** (3-0-4)
Characterization of modern and ancient, shallow and deep sedimentary environments and facies. Examination of different depositional models in relation to climate, as well as hydrographic and geographic settings. Three field trips. Prerequisite: Geol 332.

*Droxler, A.*

**511(F)-530(S) SEMINARS IN GEOLOGY** (Variable)
Individual seminars cover different topics in different years and may be taken more than once.

*Staff*

**535(F) STABLE ISOTOPE GEOCHEMISTRY** (3-0-3)
Review of basic principles of isotope fractionation mechanisms and distribution of isotopes with focus on significance to major geological problems. Not offered every year.

*Dunbar, R.B.*

**537(F) ADVANCED SEDIMENTARY GEOLOGY** (3-3-4)
Lecture, lab, and field problems focusing on sedimentology and sedimentary petrography. Not offered every year.

*Staff*

**539(F) ADVANCED PETROLOGY** (3-3-4)
Advanced topics in igneous and metamorphic petrology with emphasis on interests of the staff. Modern developments are rigorously examined in physico-chemical terms. Not offered every year. May be taken more than once. Prerequisite: Geol 412 or equivalent.

*Stormer, J., Leeman, W., Wright, J.*

**540(S) ADVANCED PETROLOGY** (3-3-4)
See Geol 539.

*Stormer, J., Leeman, W., Wright, J.*

**542(S) WAVE PROPAGATION IN HETERGENOUS MEDIA** (3-0-3)
Review of elastodynamics. Calculation of synthetic seismograms for acoustic and elastic media using reflectivity, asymptotic and finite difference methods. Migration of reflection data by finite difference, FK and boundary integral methods. Also offered as Caam 592. Prerequisite: Geol 441, or Caam 335, 336; Geol 461 recommended.

*Levander, A., Symes, W.*

**550(S) ADVANCED MINERALOGY AND CRYSTAL CHEMISTRY** (3-0-3)
Advanced topics in crystal structure, chemistry, thermodynamics and solution models. Detailed examination of important mineral groups such as feldspars, oxides, carbonates, phyllosilicates, etc. Not offered every year.

*Stormer, J.*

**561(F) ADVANCED TOPICS IN GEOPHYSICS** (3-0-3)
Content varies from year to year: Convection, advanced wave propagation, tectonophysics, inverse problems, etc. May be taken more than once. Not offered every year.

*De Bremaecker, J., Sawyer, D.*

**562(S) ADVANCED TOPICS IN GEOPHYSICS** (3-0-3)
See Geol 561.

*De Bremaecker, J., Sawyer, D.*

**568(S) STRUCTURAL ANALYSIS OF DEFORMED ROCKS** (3-3-4)
Studies of structures, textures, and fabrics of deformed rocks, strain and kinematic analysis.

*Avé Lallemant, H.*

**572(S) INTRODUCTION TO INDUCTIVELY COUPLED PLASMA SPECTROSCOPY** (2-2-2)
An applied workshop on the theory and application of ICP spectroscopy with emphasis on practical experience in quantitative analysis. Prerequisites: approval of instructor. Not offered every year.

*Leeman, W.*

**574(S) ELECTRON MICROPROBE/SCANNING ELECTRON MICROSCOPE: THEORY** (2-2-2)
Principles, techniques, and applications of the Electron Microprobe/SEM. Emphasis on quantitative analysis and geological problems. Practical laboratory instruction and experience in analytical techniques.

*Stormer, J.*

**579(F) PREPARATION OF M.A. THESIS PROPOSAL** (0-9-3)
Students may not receive credit for both Geol 579 and 580.

*Staff*

**580(S) PREPARATION OF M.A. THESIS PROPOSAL** (0-9-3)
See Geol 579.

*Staff*

**589(F) PREPARATION OF PH.D. THESIS PROPOSAL** (0-9-3)
Students may not receive credit for both Geol 589 and 590.

*Staff*

**590(S) PREPARATION OF PH.D. THESIS PROPOSAL** (0-9-3)
See Geol 589.

*Staff*

**800 THESIS RESEARCH** (Variable)

*Staff*

# German and Slavic Studies

## The School of Humanities

**Professor M. Eifler,** *Chair*
**Professors J. Copeland, E. M. Thompson, K. Weissenberger, J. Wilson, and M. Winkler**
**Associate Professor R. G. Jones**
**Lecturers A. Hill and R. Spuler**

## German Studies

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** Students majoring in German may pursue either of two options: German Literature or German Studies.

For an option in **German Literature** the requirements are:

1. Completion of a program approved by the department.
2. The equivalent of at least 24 semester hours (eight courses) numbered German 300 or higher.

The department recommends related courses in art, music, linguistics, history, philosophy, and other literatures.

For an option in **German Studies** the requirements are:

1. Completion of a program which has been defined in close cooperation with the German departmental undergraduate adviser.
2. The equivalent of least 18 semester hours (six courses) in German courses numbered 300 or higher.
3. At least 12 semester hours (four courses) offered by the department in German Culture Studies or courses relating to the field of German in other departments.

This option in **German Studies**, which permits maximum flexibility within a frame of clearly defined objectives, allows an interdisciplinary approach to German affairs. The student can incorporate into the study of German language and literature subject-related courses in political science, history, musicology, art history, film, philosophy, and economics. The option in German Studies is designed for students who are preparing for a career in communications, international law, business, banking, or diplomacy and for graduate study in a variety of fields such as history, political science, library science, art history, etc.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**Honors Program.** The department offers a special program for outstanding German majors consisting of independent readings and research that must lead to a substantial honors essay under the supervision of a departmental faculty member.

**German Literature and Culture Studies in Translation.** Courses in German Studies are open to undergraduate students from all disciplines. Readings and discussions are in English. These courses may also fulfill the requirements of a **German Studies** major.

**Coherent Minor in German Studies.** This minor will introduce students to the history, politics, literature and culture of Germany in the twentieth century. Required are two courses of Gman 313, Gman 314, Gman 376, Poli 360 or Hist 355; and one course of Gman 361, Gman 391, Hist 376, and Phil 308.

**Requirements for the Degree of Master of Arts:**

1. Completion with high standing of a program approved by the department. Normally, this includes 24 semester hours at the graduate level plus thesis work.
2. Satisfactory performance on a reading examination in one foreign language other than German approved by the department.
3. Completion of an acceptable thesis.
4. Satisfactory performance on a final oral examination on the thesis and related topics.

**Requirements for the Degree of Doctor of Philosophy:**

1. Completion with high standing of a program approved by the department. Normally, this includes 45 semester hours at the graduate level, including those required for the degree of Master of Arts.
2. Satisfactory performance on a reading examination in two foreign languages other than German approved by the department.
3. Satisfactory performance on a preliminary written and oral examination on the general field of German studies; this examination is based in part on a reading list provided by the department.
4. Completion of a dissertation approved by the department; the dissertation is expected to represent an original contribution to knowledge.
5. Satisfactory performance on a final oral examination on the dissertation and related fields.

As part of their training, graduate students, regardless of the type of appointment, will be required to perform some duties, such as teaching or assisting in classes, work in the language laboratory, assistance in faculty research, and other activities suggested by the department.

**Scholarships:** Available for German Studies from the Dr. and Mrs. Earl Douglas Mitchell Fellowship Fund, Max Freund Prize, and the Goethe Institut Prize.

## German Courses

**101(F) ELEMENTARY GERMAN** (3-1-4)
*DISTRIBUTION COURSE: CATEGORY I.1
NOTE: 102 must be completed to receive distribution credit for 101. Introductory German with emphasis on speaking and reading. The course is supplemented by language laboratory work.

*Weissenberger, K., Staff*

**102(S) ELEMENTARY GERMAN** (3-1-4)
*DISTRIBUTION COURSE: CATEGORY I.1
Prerequisite or equivalent to Germ 101.

*Weissenberger, K., Staff*

**103 ELEMENTARY GERMAN** (6-2-8)
*DISTRIBUTION COURSE: CATEGORY I.1
Offered in summer (equivalent to Germ 101 and Germ 102).

*Staff*

**201(F) INTERMEDIATE GERMAN I** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Grammar, conversation, and extensive reading supplemented by films and language laboratory work.

*Spuler, R., Staff*

**202(S) INTERMEDIATE GERMAN II** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Intermediate language skills with readings and discussion of literary texts and related materials. Prerequisite or equivalent to Germ 201.

*Spuler, R., Wilson, J., Staff*

**203 SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.

*Staff*

**204 SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.

*Staff*

**206 SPECIAL TOPICS** (6-0-6)
*DISTRIBUTION COURSE: CATEGORY I.1
Offered in summer (equivalent to Germ 201 and Germ 202).

*Staff*

**301 SCIENTIFIC GERMAN** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Readings of reports of current scientific research in Germany, supplemented by films. Independent readings in the student's chosen field. Prerequisite: second-year competence. Not offered 1993-94.

*Wilson, J.*

**302 ADVANCED SCIENTIFIC GERMAN** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Readings of reports of current scientific research in Germany, supplemented by films. Prerequisite: second-year competence. Not offered 1993-94.

*Wilson, J.*

**303 COMMERCIAL GERMAN** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Introduction to German economic texts and contexts useful in a subsequent international business career. Prerequisite: second-year competence or permission of instructor. Not offered 1993-94.

*Eifler, M.*

**305(F) COMPOSITION AND CONVERSATION I** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
A variety of reading materials (for example, current German newspapers and video films) serve as the basis for discussions and compositions. Prerequisite: second-year competence.
*Spuler, R.*

**306(S) COMPOSITION AND CONVERSATION II** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Based on current events, as reported in German newspapers and video documentaries. Prerequisite: second-year competence. Not offered 1993-94.
*Staff*

**307 SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.
*Staff*

**311(F) SURVEY OF GERMAN LITERATURE I** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
An introduction to the historical development of German literature; the description, interpretation, and analysis of literature and literary trends through the nineteenth century. Not offered 1993-94.
*Wilson, J.*

**312(F) SURVEY OF GERMAN LITERATURE II** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
An analytical survey of the literature and culture of German-speaking countries between 1890 and 1990, with special emphasis on the conflicts between traditionalist and modernist ideologies. Shorter literary masterpieces will be discussed along with other forms of writing and within the context of societal developments.
*Winkler, M.*

**322(S) SPECIAL TOPIC: GERMAN SOCIETY AND CULTURE FROM 1800 TO THE PRESENT** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Major aspects of the political, scientific-industrial, and artistic-intellectual development of Central Europe will be discussed through integrated readings. Special emphasis on the German confrontation with modernity. Not offered 1993-94.
*Winkler, M.*

**341 THE AGE OF GOETHE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
German classical literature (1700-1820); emphasis changes from year to year. May be repeated for credit. Not offered 1993-94.
*Staff*

**342 ROMANTICISM AND REALISM** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Nineteenth-century literary tendencies related to social and political context. May be repeated for credit. Not offered 1993-94.
*Staff*

**371 GERMAN LITERATURE, 1900-1945** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.I
Concentrates on the literature of German Expressionism and the Weimar Republic. Not offered 1993-94.
*Weissenberger, K., Winkler, M.*

**372 GERMAN LITERATURE SINCE 1945** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Study of authors who began their careers after 1945; German, Austrian and Swiss writers. Not offered 1993-94.

*Eifler, M., Winkler, M.*

**375(F) GERMANY TODAY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Visiting professor Michael Steffen, who is currently director of the German American Chamber of Commerce in Houston, will lecture on recent progress and problems in unified German politics, economics, law, and social conditions. He will also focus on the gradual changeover from German national autonomy to European unity. Due to his public position he will be able to facilitate valuable meetings and contacts with German VIPs for students who seek careers in international relations. The course is open to all and taught in English. German majors may complete readings and papers in German.

*Steffen, M.*

**378(S) NEW GERMAN CINEMA** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
"Grandpa's movies are dead!" declared young German filmmakers in 1962, and so began a twenty-year revolution known as New German Cinema. Fueled by consciousness of the Nazi past, student protests, antimilitarism, and the women's movement, the films of New German Cinema were unsettling—if not shocking—in both form and content. Films by Fassbinder, Wenders, von Trotta, Herzog, Schlöndorff, Ottinger, and others will be shown (with English subtitles) and discussed in their sociopolitical and historical contexts. Taught in English, but German majors may complete readings in German and write a paper on an agreed topic.

*Frieden, S.*

**381 MAJOR AUTHORS OF GERMAN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
May be repeated for credit. Topic changes from year to year. Not offered 1993-94.

*Staff*

**391 SPECIAL TOPIC: GERMAN FAIRY TALE—OLD AND NEW** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
The course will discuss several prototypes from the fairy tale collection of the Brothers Grimm and then trace the subsequent development of the "literary" fairy tale from Goethe and the Romantics to the twentieth century. Not offered 1993-94.

*Weissenberger, K.*

**392(S) SPECIAL TOPIC: DETECTIVE NOVEL** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
The detective story from romanticism to the present. The development from the confirmation of a universal order to the absurdity of modern life.

*Weissenberger, K.*

**401(F) INDEPENDENT WORK IN GERMAN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate adviser.

*Staff*

**402(S) INDEPENDENT WORK IN GERMAN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Qualified students work on projects of their choice under the supervision of individual instructors with approval of the undergraduate adviser. Honors theses are encouraged.

*Staff*

**403(F) SPECIAL TOPICS: HONOR THESIS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Qualified students work on research projects of their choice under the supervision of individua instructors. Work must address significant topics and lead to a substantial honors essay.
*Staf*

**404(S) SPECIAL TOPICS: HONOR THESIS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Qualified students work on research projects of their choice under the supervision of individua instructors. Work must address significant topics and lead to a substantial honors essay.
*Staf*

**405 INTRODUCTION TO GOTHIC AND OLD HIGH GERMAN** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Basic reading in language and literature. Open to graduate students for credit. Not offere 1993-94.
*Wilson, J*

**411 INTRODUCTION TO MIDDLE HIGH GERMAN** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Middle High German language and representative works from literature of the courtly perio (twelfth and thirteenth centuries). Open to graduate students for credit. Not offered 1993-94
*Staf*

**412(S) MIDDLE HIGH GERMAN EPIC POETRY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Selections in the original Middle High German from two of the great medieval epics: Parzival the quest for the Holy Grail; and Tristan, the celebration of the overwhelming power of illici love. Open to graduate students for credit.
*Wilson, J*

**421 GERMAN LITERATURE OF THE RENAISSANCE AND REFORMATION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Major aspects of German literature from 1400 to 1600. Open to graduate students for credit Not offered 1993-94.
*Staf*

**422(S) GERMAN LITERATURE OF THE BAROQUE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
German literature of the seventeenth century. Open to graduate students for credit. Not offered 1993-94.
*Staf*

**431 ADVANCED STYLISTICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Analyses of different narrative styles. Prerequisite: Germ 305 or permission of instructor. Not offered 1993-94.
*Staf*

**432 SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.
*Staf*

**433(S) LINGUISTIC STRUCTURE OF GERMAN** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Synchronic study of modern German phonology, syntax, and semantics, including aspects of discourse structure. Also offered as Ling 433.

*Copeland, J.*

**434(S) HISTORY OF THE GERMAN LANGUAGE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Aspects of the history of German phonology, syntax, and semantics (with related systems) from its proto-Indo-European origins to the present. Also offered as Ling 434. Not offered 1993-94.

*Wilson, J.*

**435(F) TOPICS IN GERMANIC LINGUISTICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. Not offered 1993-94.

*Wilson, J.*

**436(S) TOPICS IN GERMANIC LINGUISTICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. Not offered 1993-94.

*Wilson, J.*

**437(S) THE INTERACTION OF GERMAN AND WENDISH (SORBIAN) IN TEXAS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Transliteration and translation of nineteenth-century manuscripts. Acquaintance with a Slavic language required. Also offered as Slavic 437. Not offered 1993-94.

*Wilson, J.*

**454 SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.

*Staff*

**500 GRADUATE RESEARCH** (Credit variable)
Graduate research and thesis in partial fulfillment for the degree of Master of Arts.

*Staff*

**511 GRADUATE WORK—GERMAN LITERATURE** (Credit variable)
With approval of the graduate adviser.

*Staff*

**512 GRADUATE INDEPENDENT WORK** (Credit variable)
With approval of the graduate adviser.

*Staff*

**521 GOTHIC** (3-0-3)
The Gothic language, its significance in Germanic subfamily, readings from the Bible translation of Bishop Ulfila (fourth century). Not offered 1993-94.

*Wilson, J.*

**522 OLD HIGH GERMAN** (3-0-3)
Language and literature of the Old High German period (eighth to eleventh centuries); texts from the pagan and the monastic traditions. Not offered 1993-94.

*Wilson, J.*

**524 OLD ICELANDIC** (3-0-3)
The earliest Scandinavian language and literature; runic inscriptions, the prose sagas of the Viking era, the Eddic poetry of Germanic gods and heroes. Not offered 1993-94.

*Wilson, J.*

**526 SPECIAL TOPIC: MEDIEVAL LITERATURE** (3-0-3)
Specific aspects and problems of medieval literature. Topics vary from year to year. May be repeated for credit. Not offered 1993-94.

*Staff*

**531 LINGUISTIC STRUCTURE OF GERMAN** (3-0-3)
Synchronic study of modern German syntax, phonology, and semantics, including discourse structure. Also offered as Ling 433.

*Copeland, J.*

**532(S) HISTORY OF THE GERMAN LANGUAGE** (3-0-3)
Aspects of the history of German phonology, syntax, and semantics (with related systems) from its proto-Indo-European origins to the present. Also offered as Germ 434. Not offered 1993-94.

*Wilson, J.*

**561 LITERARY THEORY** (3-0-3)
Introduction to the major modes of criticism. Not offered 1993-94.

*Staff*

**562(S) GERMAN CULTURAL AND SOCIAL THEORY** (3-0-3)
A survey of historically relevant theories of society and culture from Nietzsche to Habermas, including selections from G. Simmel, G. Lukács, W. Benjamin, B. Brecht, Th. W. Adorno, J. Habermas, and other members of the "Frankfurt School." Special emphasis will be placed on the interdependence of social analysis, aesthetic theory, and evaluative interpretation of art/literature. Should there be significant student interest from other departments, the seminar will be taught in English. Not offered 1993-94.

*Winkler, M.*

**563(F) SEMINAR IN LITERARY GENRES: NONFICTIONAL PROSE** (3-0-3)
The aesthetic qualities of diary, letter, autobiography, biography, travel journey, essay, and aphorism.

*Weissenberger, K.*

**565(F) SPECIAL TOPICS: WEIMAR LITERATURE** (3-0-3)
The literature and culture of the Weimar Republic (1918-1933), its principal artistic orientations as well as its artistic and ideological diversity, will be discussed in the context of social antagonisms.

*Winkler, M.*

**566(S) SPECIAL TOPICS** (3-0-3)
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.

*Staff*

**571(F) SPECIAL TOPIC: GERMAN BILDUNGSROMAN** (3-0-3)
A genre study of the historical contexts, the topical concerns and the aesthetic configurations of the German Bildungs-novels by Moritz, Goethe, Tieck, Novalis, Jean Paul, Stifter, and Keller.

*Eifler, M.*

**572(S) TURN-OF-THE-CENTURY LITERATURE** (3-0-3)
Specific aspects, problems, and authors of the period. Not offered 1993-94.

*Winkler, M.*

**578(S) NEW GERMAN CINEMA** (3-0-3)
"Grandpa's movies are dead!" declared young German filmmakers in 1962, and so began a twenty-year revolution known as New German Cinema. Fueled by consciousness of the Nazi past, student protests, antimilitarism, and the women's movement, the films of New German Cinema were unsettling—if not shocking—in both form and content. Films by Fassbinder, Wenders, von Trotta, Herzog, Schlöndorff, Ottinger, and others will be shown (with English subtitles) and discussed in their sociopolitical and historical contexts.

*Frieden, S.*

**591(F) CULTURAL DEBATES DURING THE GERMAN REUNIFICATION** (3-0-3)
Issues of division and reunification. Historical study of Germany after 1945. Materials include documentary and literary texts, videos and films. Enriched version of Germ 375. Not offered 1993-94.

*Eifler, M.*

**592(S) SELECTED PROBLEMS IN MODERN LITERATURE: LITERATURE AND MYTH** (3-0-3)
The relevance of mythological paradigms for literature and the creation of myth in literature will be discussed through interpretations of selected works. The contrastive analysis of dialectical vs. postmodern theories of history (Horkheimer/Adorno, *Dialectic of Enlightenment* vs. Blumenberg, *Arbeit am Mythos*) will provide the methodological frame.

*Winkler, M.*

**600 GRADUATE RESEARCH** (Credit variable)
With the approval of the graduate adviser.

*Staff*

**700 GRADUATE SUMMER RESEARCH** (Credit variable)
With the approval of the graduate adviser.
Staff

**800 GRADUATE RESEARCH** (Credit variable)
Graduate research and dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

*Staff*

*German Culture Studies (Taught in English)*

**313 NATIONAL SOCIALISM AND EXILE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Also satisfies coherent minor. Critical discussions of life under German fascism and the survival of German culture in exile. Not offered 1993-94.

*Winkler, M.*

**314 WEIMAR REPUBLIC AND THE AVANTGARDE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Also satisfies coherent minor. An intensive survey of the distinct complexity of Germany's intellectual-artistic, cultural, and sociopolitical life from 1918 to 1933. Not offered 1993-94.

*Winkler, M.*

**321 VIKING LITERATURE IN TRANSLATION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
The medieval literature of Scandinavia, especially Iceland. The heroic prose of the sagas; Germanic mythology and the Nibelungen cycle in the Poetic Edda; runic inscriptions. Not offered 1993-94.

*Wilson, J.*

**351(F) SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.
*Staff*

**352(S) SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.
*Staff*

**361 DISCOURSE IN ALIENATION: FROM KAFKA TO THE HOLOCAUST (1910-1945)** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Also satifies coherent minor. The sociopolitical and economic upheaval on the one hand and the religious and intellectual one on the other, which mark this period, manifest themselves in literature between the poles of artistic experimentation (expressionism, Kafka, Musil) and a forced ideological stabilization (fascism); Holocaust literature reflects the ultimate clash between these principles. Not offered 1993-94.
*Weissenberger, K.*

**362 SPECIAL TOPIC: MODERN GERMAN LITERATURE IN TRANSLATION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.
*Staff*

**376(F) GERMANY TODAY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Satisfies coherent minor. Visiting Professor Michael Steffen, who is currently director of the German American Chamber of Commerce in Houston, will lecture on recent progress and problems in unified German politics, economics, law and social conditions. He will also focus on the gradual changeover from German national antonomy to European unity. Due to his public position he will be able to facilitate valuable meetings and contacts with German VIPs for students who seek careers in international relations. The course is open to all and taught in English.
*Steffen, M.*

**391(S) NEW GERMAN CINEMA** (3-0-3)
DISTRIBUTION COURSE: CATEGORY I.1
"Grandpa's movies are dead!" declared young German filmmakers in 1962, and so began a twenty-year revolution known as New German Cinema. Fueled by consciousness of the Nazi past, student protests, antimilitarism, and the women's movement, the films of New German Cinema were unsettling—if not shocking—in both form and content. Films by Fassbinder, Wenders, von Trotta, Herzog, Schlöndorff, Ottinger, and others will be shown (with English subtitles) and discussed in their sociopolitical and historical contexts. Taught in English.
*Frieden, S.*

**392(S) SPECIAL TOPIC: GERMAN LITERATURE IN TRANSLATION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.
*Staff*

**401(F) SPECIAL TOPIC: INDEPENDENT WORK IN GERMAN FILM STUDIES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Weekly screenings of German feature films (in German with English subtitles), augmented by contextual materials and structured, independent analyses under the supervision of individual instructors. Submission of twelve written film evaluations required.

*Eifler, M.*

**402(S) SPECIAL TOPICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. May be repeated for credit. Not offered 1993-94.

*Staff*

**406(S) SPECIAL TOPICS: MIDDLE HIGH GERMAN EPIC POETRY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Selections in the original Middle High German from two of the great medieval epics: Parzival, the quest for the Holy Grail; and Tristan, the celebration of the overwhelming power of illicit love. Prerequisite: Germ 411. Open to graduate students for credit.

*Wilson, J.*

**407 GERMAN LITERATURE OF THE MIDDLE AGES IN TRANSLATION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Topic changes from year to year. Not offered 1993-94.

*Staff*

*Swedish Courses*

**101(F) ELEMENTARY SWEDISH** (3-1-4)
*DISTRIBUTION COURSE: CATEGORY I.1
Rapid progression from elementary work to challenging readings, such as the social-critical stories of Nobel Prize winner Pär Lagerkvist. Supplemented by tapes.

*Wilson, J.*

**102(S) ELEMENTARY SWEDISH** (3-1-4)
*DISTRIBUTION COURSE: CATEGORY I.1
Pre-requisite is Swedish 101. Several Bergman films will be studied. Supplemented by readings and tapes in Norwegian, Danish, and Icelandic.

*Wilson, J.*

# Slavic Studies

*Degrees offered:* B.A.

314 COURSES OF INSTRUCTION

**Undergraduate Program.** At least 24 semester hours (eight courses) offered in fulfillment of major requirements must be numbered 300 or higher. Double majors may be allowed to take 18 semester hours (six courses numbered 300 or higher) with the approval of the department and should consult with the Slavic Studies faculty to arrange a program compatible with the other major. Four of the courses may be language courses with the remainder literature or culture; these may be chosen by the student with the adviser's consent. All departmental majors must have their programs approved by the representative of the department.

No Russian is required for nonmajors who wish to take courses in Slavic or Russian literature. Lectures and readings are in English. Majors are required to read some of the works and to write assigned papers in Russian.

**Scholarships:** Available for Slavic language studies from the Dr. and Mrs. Earl Douglas Mitchell Fellowship Fund.

*Slavic Courses*

**101(F) BEGINNING SLAVIC LANGUAGE** (3-1-4)
*DISTRIBUTION COURSE: CATEGORY I.1
NOTE: 102 must be completed to receive distribution credit for 101.
Introductory study of a Slavic language other than Russian (Polish, Czech, Ukrainian) with emphasis on speaking and reading. Topic: Polish. Not offered 1993-94.
*Staff*

**102(S) BEGINNING SLAVIC LANGUAGE** (3-1-4)
*DISTRIBUTION COURSE: CATEGORY I.1
Prerequisite is Slavic 101. Not offered 1993-94.
*Staff*

**242(F) DRAMA I** (3-0-3)
May be repeated for credit. Permission of instructor required. Not offered 1993-94.
*Hill, A.*

**242(S) DRAMA II** (3-0-3)
May be repeated for credit. Permission of instructor required. Not offered 1993-94.
*Hill, A.*

**320(S) SLAVIC CULTURES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Development of Slavic cultures, with emphasis on the history of ideas. Also offered as Russ 320. Not offered 1993-94.
*Thompson, E.*

**411 CONTEMPORARY RUSSIA: CULTURE IN ITS POLITICAL CONTEXT** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Study of Soviet Russia, with emphasis on the 1980s and the changing status of Russia within the world community. No knowledge of Russian required. Not offered 1993-94.
*Thompson, E.*

**412 AND THE WALLS CAME TUMBLING DOWN: THE RISE OF EASTERN EUROPE IN THE 1980S** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Study of changes in Eastern Europe in the 1980s. Emphasis on literature and politics. No knowledge of Russian required. Not offered 1993-94.

*Staff*

**422 CONSERVATIVE AUTHORS AND READINGS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Study of conservative responses to major modern and postmodern thinkers. Readings include Mortimer Adler, Hannah Arendt, Leszek Kolakowski, Czeslaw Milosz, Alexander Solzhenitsyn, Karl Popper, Thomas Molnar, Jacques Maritain, Fyodor Dostoevsky, and Zbigniew Brzezinski. Familiarity with or additional readings in Friedrich Nietzsche, Sigmund Freud, G.W.F. Hegel, and Karl Marx will also be required. Not offered 1993-94.

*Thompson, E.*

**436 TOPICS IN SLAVIC LINGUISTICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
The Old Church Slavic language in its Indo-European, Balto-Slavic and Slavic contexts with emphasis on translation and analysis of representative Glagolitic and Cyrillic texts. Also offered as Ling 436. Not offered 1993-94.

*Jones, R.*

**437 THE INTERACTION OF GERMAN AND WENDISH (SORBIAN) IN TEXAS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Transliteration and translation of nineteenth-century manuscripts. Acquaintance with a Slavic language required. Also offered as Germ 437. Not offered 1993-94.

*Wilson, J.*

**450 INDEPENDENT STUDY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Qualified students may conduct research and write a paper on a topic of particular interest.

*Staff*

*Russian Courses*

**101(F) ELEMENTARY RUSSIAN I** (3-2-4)
*DISTRIBUTION COURSE: CATEGORY I.1
NOTE: 102 must be completed to receive dist. credit for 101. Fundamentals of Russian grammar. Pronunciation, reading, oral practice, and translation.

*Hill, A., Jones, R.*

**102(S) ELEMENTARY RUSSIAN II** (3-2-4)
*DISTRIBUTION COURSE: CATEGORY I.1
Fundamentals of Russian grammar. Pronunciation, reading, oral practice, and translation. See Russ 101.

*Hill, A., Jones, R.*

**201(F) INTERMEDIATE RUSSIAN I** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Grammar review, reading of selected texts, conversation, and composition.

*Jones, R.*

**202(S) INTERMEDIATE RUSSIAN II** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Grammar review, reading of selected texts, conversation, and composition. See Russ 201.

*Jones, R.*

**301(F) CONVERSATION AND COMPOSITION I** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Emphasis on composition and conversation with reading of relevant texts.
*Hill, A.*

**302(S) CONVERSATION AND COMPOSITION II** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Emphasis on composition and conversation with reading of relevant texts. See Russ 301.
*Hill, A.*

**312 SURVEY OF RUSSIAN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Comprehensive survey of Russian literature from the eighteenth century to the Soviet period. No knowledge of Russian required.
*Thompson, E.*

**320(S) SLAVIC CULTURES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Development of Slavic cultures, with emphasis on the history of ideas. Also offered as Slav 320. Not offered 1993-94.
*Thompson, E.*

**351(F) TOLSTOY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Study of the major works of Tolstoy. No knowledge of Russian required.
*Thompson, E.*

**352(F) DOSTOEVSKY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Study of the major works of Dostoevsky. No knowledge of Russian required. Not offered 1993-94.
*Thompson, E.*

**401(F) RUSSIAN STYLISTICS I** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Designed to improve the written and spoken language with emphasis on syntactic and idiomatic structures. Weekly papers required.
*Thompson, E.*

**402(S) RUSSIAN STYLISTICS II** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Designed to improve the written and spoken language with emphasis on syntactic and idiomatic structures. Weekly papers required.
*Thompson, E.*

**420 WOMEN IN RUSSIAN LITERATURE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
The portrayal of women in major works of Russian literature. No knowledge of Russian required. Not offered 1993-94.
*Thompson, E.*

**450 INDEPENDENT STUDY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
Qualified students may conduct research and write a paper on a topic of particular interest.
*Staff*

# Hispanic and Classical Studies

## The School of Humanities

**Associate Professor Urrutibéheity,** *Chair*
**Professors Castañeda and Leal**
**Associate Professors Kauffmann, Pérez, Rea, Wallace, Yamal, and Yunis**
**Assistant Professor Mackie**
**Lecturers Daichman and Kiperman**

*Degrees Offered:* B.A. and M.A. in Spanish; B.A. in Classics*

Study is offered in Classics, Greek, Latin, Portuguese, and Spanish. A fully equipped language laboratory is in operation. Laboratory work is required of students in the beginning classes of all modern languages.

Qualified upper-class students may engage in independent work at the discretion of the department.

*For information on curriculum in Classics please see separate section in catalog.

### Spanish

**Undergraduate Program.** A student majoring in Spanish may pursue the following options: (1) language, (2) literature, or (3) Latin American studies. For an option in language or literature, 30 semester hours (ten courses) offered in fulfillment of major requirements must be Spanish courses numbered 300 or higher. For an option in Latin American studies, a minimum of 18 semester hours (six courses) in Spanish courses numbered 300 or higher must be taken, plus six semester hours (two courses) of Portuguese, and at least 12 semester hours (four courses) related to the Latin American field in other departments. Qualified upper-class students are offered an opportunity to earn up to six semester hours in independent work. For specific requirements as to courses and the sequence to be followed, see the departmental advisers. All majors must have their programs approved by the department.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**Requirements for the Degree of Master of Arts:**

1. Completion with high standing of a program approved by the department; normally, this includes 24 semester hours in advanced courses plus six semester hours of thesis work.
2. Satisfactory performance on a reading examination in one foreign language other than Spanish approved by the department.
3. Satisfactory performance on a written comprehensive examination in Spanish, which tests the student's competence in the chosen area of specialization and in the remaining areas of Hispanic literature and linguistics.
4. One semester of college Latin or equivalent.
5. One semester of "Teaching College Spanish" and practice teaching.

6. Completion of an acceptable thesis.
7. Satisfactory performance on a final oral examination on the thesis.

## Summer Program in Spain

The Department of Hispanic and Classical Studies offers an annual six-week Summer Program in Spain. Rice students in good standing are eligible to take two courses for credit (6 hours). The program, which began in 1973, was the first of its kind established in Houston. Program participants live with Spanish families and attend classes daily (M-F) in the mornings. On weekends, they visit Spanish cities of artistic and historic interest. Courses range from second-year to graduate level. Students are granted Rice credit for courses successfully completed. Brochures and application materials are available in the department office.

## Fall Semester in Chile

The Department of Hispanic and Classical Studies offers a Fall Semester in Chile in conjunction with the University of Chile in Santiago. Rice students in good standing are eligible for this program. Since its inception in 1989 the program has attracted many students from universities all over the U.S. Students may take a variety of courses through the University of Chile in Santiago. Brochures and application materials are available in the department office.

*Spanish Courses*

**101 FIRST-YEAR SPANISH** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
NOTE: 102 must be completed to receive distribution credit for 101. Introduction to the study of the Spanish language with emphasis on the development of audiolingual skills. Language laboratory work required.

*Staff*

**102 FIRST-YEAR SPANISH** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
Continuation of Span 101. *Staff*

**103(F) ACCELERATED BEGINNING SPANISH** (6-2-8)
* DISTRIBUTION COURSE: CATEGORY I.1
Double course comparable to Span 101, 102 designed to achieve in one semester maximum proficiency in spoken language. Five classes a week, language lab twice a week. Not offered 1992-93.

*Hansz, I., Daichman, G.*

**201 SECOND-YEAR SPANISH** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
Contemporary short stories and essays provide current linguistic models and serve as the point of departure for class conversation and discussion. Thorough grammar review.

*Kauffmann, R.*

**202 SECOND-YEAR SPANISH** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
Continuation of Span 201.

*Kauffmann, R.*

**204(S) ACCELERATED INTERMEDIATE SPANISH** (6-2-8)
* DISTRIBUTION COURSE: CATEGORY I.1
Continuation of Span 103 comparable to Span 201, 202. Contemporary short stories provide current linguistic models and serve as the point of departure for class conversation and discussion.

*Daichman, G., Hansz, I.*

**304 LATIN AMERICAN LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Selected works of outstanding writers from Latin America. Readings and class discussions in English. Open to all students. Not offered 1993-94.

*Rea, J.*

**305(F) INTERMEDIATE SPANISH: LEGAL AND COMMERCIAL** (3-0-3)
Introduction to general business and legal practices and terminology useful in subsequent business or legal career. Prerequisite: second-year proficiency or permission of instructor. Offered alternate years.

*Kiperman, A.*

**306(F) INTERMEDIATE SPANISH: MEDICAL** (3-0-3)
Introduction to general medical terminology and the reading of medical texts and journals. Useful in subsequent medical career. Prerequisite: second-year proficiency or permission of instructor.

*Kiperman, A.*

**311(F) ADVANCED SPANISH** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.1
Third-year course designed primarily to improve spoken language. Emphasis is on new vocabulary and idioms, morphology, syntax, and mechanisms of interference.

*Staff*

**312(S) ADVANCED SPANISH** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.1
Third-year course designed primarily to improve spoken language. Emphasis is on new vocabulary and idioms, morphology, syntax, and mechanisms of interference.

*Staff*

**315(F) STUDIES IN HISPANIC LINGUISTICS** (3-0-3)
Topics vary: history of the Spanish language, Old Spanish, Spanish American dialectology. Not offered 1993-94.

*Urrutibéheity, H.*

**319(F) SURVEY OF SPANISH LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The history of Spanish literature through representative readings from the medieval period to the present. Emphasis on stylistic analysis.

*Pérez, J.*

**320(S) SURVEY OF SPANISH LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Same as Span 319.

*Pérez, J.*

**321(F) SURVEY OF SPANISH AMERICAN LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The main literary trends and outstanding writers in Spanish America. Not offered 1993-94.

*Rea, J.,Yamal, R.*

**322(S) SURVEY OF SPANISH AMERICAN LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The main literary trends and outstanding writers in Spanish America. Not offered 1993-94.
*Rea, J., Yamal, R.*

**323(F) HISPANIC CULTURE AND CIVILIZATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Topics relating to the development of social, political, and economic institutions of Spain form the basis for extensive conversation, discussion, and composition. Not offered 1993-94.
*Pérez, J.*

**324(S) CULTURE AND CIVILIZATION OF LATIN AMERICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The development of social, political, and economic institutions of Latin America forms the basis for extensive conversation, discussion, and composition.
*Yamal, R.*

**341(F) MODERN SPANISH LITERATURE** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.1
Topics vary. Topic for fall 1993: Miguel de Unamuno.
*Kauffmann, R., Pérez, J.*

**342(S) MODERN SPANISH LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Topics vary. Topic for spring 1993: The Contemporary Novel.
*Kauffmann, R. Pérez, J.*

**352(F) ADVANCED SPANISH COMPOSITION** (3-0-3)
Designed to strengthen written rhetorical skills by using such materials as literary texts and current periodicals.
*Yamal, R.*

**361(F) STUDIES IN GOLDEN AGE DRAMA** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.1
Development of the "comedia," illustrated by selected works of Lope de Vega, Tirso de Molina, Ruiz de Alarcón, and other seventeenth-century playwrights. Topics vary.
*Castañeda, J.*

**362(S) GOLDEN AGE DRAMA** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.1
Development of the "comedia," illustrated by selected works of Calderón de la Barca and other seventeenth-century playwrights. Not offered 1993-94.
*Castañeda, J.*

**381(F) PROSE AND LYRIC POETRY OF THE GOLDEN AGE** (3-0-3 each semester)
Analysis of poetry and prose emphasizing mysticism, the development of lyric poetry from Garcilaso to Gongora, the picaresque novel, and Cervantes' *Don Quixote, Part I.* Offered alternate years. Not offered 1993-94.
*Castañeda, J.*

**382(S) PROSE AND LYRIC POETRY OF THE GOLDEN AGE** (3-0-3 each semester)
Analysis of poetry and prose emphasizing development of the baroque and Cervantes' *Don Quixote, Part II.* Offered alternate years. Not offered 1993-94.
*Castañeda, J.*

**403(F) ADVANCED SPANISH THROUGH MEDIA** (3-0-3)
Course for advanced undergraduates. Emphasis on perfecting listening comprehension and speaking ability. Topics for oral expression developed from selected Spanish-language films to be viewed in class. Not offered 1993-94.

*Daichman, G.*

**405(F) SPANISH AMERICAN LITERATURE** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.1
Course for advanced undergraduates. A study of contemporary narrative by Borges, Cortázar, Donoso, Isabel Allende, Roa Bastos, Benedetti, and Cristina Perri Rossi.

*Yamal, R.*

**406(S) STUDIES IN SPANISH AMERICAN LITERATURE** (3-0-3 each semester)
Contemporary Mexican literature. A study of major works by Octavio Paz, Juan Rulfo, Carlos Fuente, Gustavo Sainz, Vicente Leñero, and Rosario Castellanos, etc.

*Rea, J., Yamal, R.*

**418(S) MEDIEVAL SPANISH LITERATURE** (3-0-3)
Three medieval masterpieces: *Cantar de mio Cid, Libro de buen amor*, and *La Celestina*. Not offered 1993-94.

*Leal, M.*

**420(S) LITERARY SEMIOTICS** (3-0-3)
Application of semiotic models to the study of literature. Topics vary. Also offered as Ling 420. Not offered 1993-94.

*Kauffmann, R.*

**421(F) INDEPENDENT WORK** (3-0-3)
Hispanic literature, Hispanic linguistics, and Hispanic culture and civilization. Reserved for qualified juniors and seniors who are particularly interested in a topic not covered in other courses. Prerequisite: permission of the department.

*Staff*

**422(S) INDEPENDENT WORK** (3-0-3)
Hispanic literature, Hispanic linguistics, and Hispanic culture and civilization. Reserved for qualified juniors and seniors who are particularly interested in a topic not covered in other courses. Prerequisite: permission of the department.

*Staff*

**423(F) LINGUISTIC STRUCTURE OF SPANISH** (3-0-3)
A synchronic study of modern Spanish phonology. Special attention given to Hispanic-American variants. Also offered as Ling 423. Not offered 1993-94.

*Urrutibéheity, H.*

**424(S) LINGUISTIC STRUCTURE OF SPANISH** (3-0-3)
A synchronic study of modern Spanish morphology and syntax. Not offered 1993-94.

*Urrutibéheity, H.*

**435(F) ART AND MECHANICS OF TRANSLATION** (3-0-3)
Not offered 1993-94.

*Daichman, G.*

**450(S) HISPANIC DRAMA PRACTICUM** (4-0-4)
Critical reading and performance of modern Spanish and Latin American plays. Prerequisite: approval of instructor.

*Yamal, R.*

**507(F) TEACHING COLLEGE SPANISH** (1-0-1)
Teaching methods and techniques, test preparation, and evaluation. One hour per week of discussion. Students observe language classes for three weeks and teach for three weeks. Required for graduate students.

*Urrutibéheity, H.*

**511(S) METHODS OF RESEARCH IN HISPANIC LITERATURE** (3-0-3)
Theoretical and practical course for beginning graduate students. Emphasis on techniques of stylistic and linguistic analysis and on the bibliographical resources in the field. Not offered 1993-94.

*Yamal, R.*

**515(F) STUDIES IN HISPANIC LINGUISTICS** (3-0-3)
Topics: History of the Spanish language, Spanish American dialectology, Old Spanish. Not offered 1993-94.

*Urrutibéheity, H.*

**516(S) STUDIES IN HISPANIC LINGUISTICS** (3-0-3)
May be repeated for credit when topics vary. Also offered as Ling 516.

*Urrutibéheity, H.*

**518(S) STUDIES IN MEDIEVAL SPANISH LITERATURE** (3-0-3)
*Cantar de mio Cid, Libro de buen amor, La Celestina.* Not offered 1993-94.

*Leal, M.*

**520(S) STUDIES IN LITERARY SEMIOTICS** (3-0-3)
Application of semiotic models to the study of literature. Topics vary. Not offered 1993-94.

*Kauffmann, R.*

**523(F) STUDIES IN GOLDEN AGE THEATRE** (3-0-3)
Graduate level of Span 361.

*Castañeda, J.*

**524(S) STUDIES IN GOLDEN AGE THEATRE** (3-0-3)
The School of Calderón de la Barca. Not offered 1993-94.

*Castañeda, J.*

**525(F) GOLDEN AGE PROSE** (3-0-3)
*Don Quixote, Part I.* Not offered 1993-94.

*Castañeda, J.*

**526(S) GOLDEN AGE PROSE** (3-0-3)
*Don Quixote, Part II.* Not offered 1993-94.

*Castañeda, J.*

**535(S) THE SPANISH ESSAY FROM 1700 TO PRESENT** (3-0-3)
Topic: Spanish essayism from Larra to Ortega y Gasset. Not offered 1993-94.

*Kauffmann, R.*

**541(F) STUDIES IN MODERN SPANISH LITERATURE** (3-0-3)
Graduate level of Span 341.

*Kauffmann, R.*

**542(S) MODERN SPANISH LITERATURE** (3-0-3)
Graduate level of Span 342.

*Pérez, J.*

**555(F) STUDIES IN SPANISH AMERICAN LITERATURE** (3-0-3)
Topics vary. Graduate level of Span 405.

*Yamal, R.*

**556(S) SPANISH AMERICAN LITERATURE** (3-0-3)
Topics vary. Graduate level of Span 406.

*Rea, J.*

**591(F) INDEPENDENT STUDY** (Variable each semester)

*Staff*

**592(S) INDEPENDENT STUDY** (Variable each semester)

*Staff*

**700(F) RESEARCH LEADING TO CANDIDACY** (Variable each semester)

*Staff*

**702(S) RESEARCH LEADING TO CANDIDACY** (Variable each semester)
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 and before being admitted to candidacy.

*Staff*

**800(F) RESEARCH AND THESIS** (Variable each semester)

*Staff*

**800(S) THESIS RESEARCH** (Variable each semester)

*Staff*

*Portuguese Courses*

**101(F) FIRST-YEAR PORTUGUESE** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
NOTE: 102 must be completed to receive distribution credit for 101. Introduction to the study of the Portuguese language with emphasis on development of audiolingual skills. Language laboratory work required.

*Staff*

**102(S) FIRST-YEAR PORTUGUESE** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
Introduction to the study of the Portuguese language with emphasis on development of audiolingual skills. Language laboratory work required.

*Staff*

**201(F) SECOND-YEAR PORTUGUESE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Not offered 1993-94.

*Rea, J.*

**202 SECOND-YEAR PORTUGUESE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Not offered 1993-94.

*Leal, M.*

**400 INDEPENDENT STUDY** (0-0-3)
Reserved for qualified students who wish to work on a topic not covered in other courses. Prerequisite: permission of the department.

*Staff*

## Classics

**See "Classics" section page 246.**

# History

## The School of Humanities

**Professor Wiener,** *Chair*
**Professors Boles, Drew, Gruber, Haskell, Hyman, Loewenheim, Matusow, Odhiambo, R.J. Smith, Stokes, Van Helden, and Wolin**
**Associate Professors Cox, Maas, Sanders, and Seed**
**Assistant Professors Fishman, Nirenberg, and Quillen**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** A student majoring in history must take a minimum of 30 semester hours (ten courses) in history, of which 18 semester hours (six courses) must be on the advanced level (300 or 400). Two of the student's advanced courses must be chosen from a departmental list of seminars/colloquia devoted mainly to writing and discussion. In addition, students are expected to distribute their ten courses over four fields:

I. Ancient-Medieval: one course minimum
II. Modern Europe: two courses minimum
III. United States: two courses minimum
IV. Asia, Latin America, Africa: one course minimum

History majors also are advised to acquaint themselves with humanistic disciplines other than history (for example, literature, fine arts, and philosophy) and also with social sciences such as political science, sociology, economics, and anthropology. whose contributions to historical studies are vital. Some foreign language proficiency is desirable for a history major, and the department highly recommends that students contemplating graduate work in history study at least one foreign language in some depth (most graduate schools require a reading knowledge of French and German for the Ph.D. degree).

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

The Department of History grants transfer credit to enrolled undergraduates on the following criteria: the course taken elsewhere does ***not*** have to be similar in content to one offered at Rice, but it ***does*** have to be at an intellectual standard not markedly inferior to that of a course taken at Rice. All requests for transfer credit must be accompanied with evidence of the scope and work requirements of the proposed course. Courses taken at two-year institutions are not eligible.

**GraduateProgram.** Graduate students in history are accepted for study leading to either the M.A. or Ph.D. Holders of the B.A. degree (or its equivalent) from an acceptable institution are eligible to apply. The graduate program is designed to train a limited number of carefully selected students. Both the M.A. and the Ph.D. degrees are offered in limited areas of American, European, and other history. Further information about the fields may be obtained on request from the department.

Graduate fellowships as well as graduate scholarships within the limits of available funds are awarded to qualified students with demonstrated ability. Fellowships include a stipend and a waiver of tuition; scholarships provide a waiver of tuition only. As a part of their training, graduate students are expected to render limited services to the department as tutorial instructors, as research assistants, or as assistants to the editors of the *Journal of Southern History* or *The Papers of Jefferson Davis*, both of which are sponsored by Rice University.

**Requirements for the Degree of Master of Arts.** Students pursuing the M.A. degree are expected to complete a certain amount of formal class or seminar work (at least 24 semester hours); take one graduate seminar; and write a thesis under the direction of an advisory committee of the department headed by a professor having special competence in the subject area of the thesis. An oral defense of the thesis is also required. Completion of these requirements usually takes two years. Not more than three years may elapse between the time the student is admitted to graduate study and the completion of the degree, unless an extension is approved by the departmental graduate committee. An alternate M.A. degree is available to doctoral students who fulfill the special requirements set by the department.

**Requirements for the Degree of Doctor of Philosophy.** Students pursuing a doctoral program are expected to prepare themselves in three fields of history. At least two of the three fields must be in the student's major area of concentration (European, U.S., or other history). The third field must be in an area not included in the first two fields; e.g., if the major area is European history the third area must be in U.S. or other non-European history. If the area is U.S. history the third area must be in European or other non-U.S. history. Students who wish to make their third area in a field outside the history department should petition the Graduate Committee by the end of their second semester.

In general it is expected that the student will prepare thoroughly in the field taken with his or her adviser and broadly in the other two fields. This normally includes course work, directed reading, and a substantial amount of independent reading. As part of this course work students are required to take two graduate seminars and two graduate colloquia (one each in European and U.S. history). The department has no specific requirements for the number of hours that must be completed, but Ph.D. students are expected to remain full-time students from their entry into the program until they pass their qualifying examination. The qualifying examination usually is oral, though it may be written or both written and oral at the discretion of the department. It is given only after the student has completed all necessary course and seminar work and passed reading examinations in the principle language of research (unless it is English) and one other language (not English). The qualifying examination for students entering with a B.A. is normally scheduled during the fifth semester and must be completed by the beginning of the sixth semester. Students who entered with the M.A. should take their qualifying examination during their third semester at Rice and no later than the beginning of their fifth semester.* In addition to the foreign language examinations and the qualifying examination, the Ph.D candidate must present a dissertation embodying the results of original research and defend it in a public oral examination. The dissertation must be completed within three calendar years after passing the qualifying examination, unless an extension is granted by the departmental graduate committee.

*Passing the qualifying examination allows the student to apply for formal admission to candidacy for the Ph.D. degree.

# History

*History Courses*

**101(F) EUROPE'S FIVE HUNDRED YEARS, 1450-1815** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
How was the world so thoroughly reshaped by the European experience? A comprehensive attempt to answer that question. Recommended for freshmen and sophomores. Offered with additional work as Hist 301.

*Stokes, G.*

**102(S) EUROPE'S FIVE HUNDRED YEARS, 1815-PRESENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Continuation of Hist 101. Both courses can be taken separately. Recommended for freshmen and sophomores. Offered with additional work as Hist 302.

*Stokes, G..*

**105(F) VARIETIES OF THE AMERICAN EXPERIENCE I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Interpretive approaches to American history. Not offered 1993-94.

*Staff*

**106(S) VARIETIES OF THE AMERICAN EXPERIENCE II** (3-0-3)
Interpretive approaches to American history. Not offered 1993-94.

*Staff*

**152(S) FRESHMAN SEMINAR IN ANCIENT HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The Hero and his Companion from Gilgamesh to Sam Spade. How does presentation of heroic action illustrate the basic values of a society? Through consideration as historical sources of several ancient texts, modern mystery stories, and two "western" movies, we will see the development of a style of community service that links heroism with alienation. The extent to which women participate will be traced. Limited enrollment. Not offered 1993-94.

*Maas, M.*

**154(S) LIFE OF MUHAMMAD (Freshman Seminar)** (3-0-3)
* DISTRIBUTION COURSE: CATEOGRY II.3
An examination of the life of the Prophet Muhammad in the context of Islamic history and the growth of Islamic tradition, as well as the Western view of Muhammad and Islam. We will be reading classical and modern Arabic biographies of Muhammad in translation as well as some Western polemical treatises on Muhammad and the responses to them from the Islamic world. (Limited to fifteen students). Not offered 1993-94.

*Sanders, P.*

**160(S) FRESHMAN SEMINAR: JEFFERSON AND THE ORIGINS OF THE AMERICAN REPUBLIC** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This freshman seminar considers one of the most talented of our Founding Fathers—a man who helped define our revolutionary ideals, diplomacy, and politics as well as our public lands, domestic architecture, religion, slavery, and education. Readings, discussions, and essays. Enrollment limited to eighteen. Not offered 1993-94.

*Gruber, I.*

**201(S) INTRODUCTION TO ANCIENT MEDITERRANEAN CIVILIZATIONS** (3-0-3)
* DISTRIBTION COURSE: CATEGORY II.3
An interdisciplinary introduction to the great cultural traditions of ancient Mediterranean: Mesopotamia and Israel, Greece, the Hellenistic world, Rome, early Christianity; literary, historical, philosophical, and religious texts. Not offered 1993-94.

*Yunis, H.*

**202(F) EARLY MEDIEVAL CIVILIZATION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
An introductory, interdisciplinary course emphasizing the history, religion, literature, and art of Western Europe and the Mediterranean in the period from the fall of Rome to the end of the Viking invasions. Some guest lectures by specialists in related areas as well as slide lectures and films.

*Nirenberg, D.*

**203(S) CIVILIZATION OF THE HIGH MIDDLE AGES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
A continuation of Hist 202 (not a prerequisite). This course covers the period from the year 1000 to the discovery of the New World, with an emphasis on topics such as the Crusades, the "Discovery of the Individual," and the Black Death.

*Nirenberg, D.*

**206(F) INTRODUCTION TO ASIAN CIVILIZATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
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. (Also Huma 211)

*Smith, R.J., Klein, A.*

**209(F) THE UNITED STATES, 1815-1877** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
An introductory survey of American social, political, and economic history from the Early Republic through the Civil War and Reconstruction. The course will stress industrialization and the history of labor, women's history, and race relations.

*Dailey, J.*

**210(S) THE UNITED STATES, 1860-1965** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
A continuation of Hist 209 (though 209 is not a prerequisite), from the Civil War to the Great Society.

*Dailey, J.*

**211(F) AMERICAN THOUGHT AND SOCIETY I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A topical introductory survey of seventeenth- and eighteenth-century American history, primarily concerned with intellectual and social developments underlying the surface of events. Offered with additional work as Hist 311. Not offered 1993-94.

*Haskell, T.*

**212(S) AMERICAN THOUGHT AND SOCIETY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A topical introductory survey of nineteenth- and twentieth-century American history, primarily concerned with intellectual and social developments underlying the surface of events. Offered with additional work as Hist 312. Not offered 1993-94.

*Haskell, T.*

**213(S) SLAVERY IN NORTH AMERICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An interdisciplinary examination of all aspects of United States slavery, from the African background through emancipation. Offered with additional work as Hist 413. Not offered 1993-94.

*Boles, J.*

**214(F) HISTORY OF RELIGION IN AMERICA** (3-0-3)
A survey of American religious history from the Pilgrims and Puritans to the New Age and New Right. In addition to a traditional introduction to the topic, readings and discussions will emphasize new historical approaches to popular religion, civil religion, and alternative socioreligious perspectives. Cross-listed with Reli 214. Not offered 1993-94.

*Daly, J.*

**215(F) BLACKS IN THE AMERICAS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of the history of blacks in the New World from 1619 to the present. Offered with additional work as Hist 315. Not offered 1993-94.

*Cox, E.*

**217(F) SOCIAL HISTORY OF THE UNITED STATES, 1877-1917** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An examination of how social groups, as defined by such categories as gender, class, religion, ethnicity, and race, responded to the rapid and confusing changes brought about by industrialization, urbanization, and immigration in the years of America's rise to world power and industrial supremacy. Offered with additional work as Hist 317. Not offered 1993-94.

*Staff*

**218(S) SOCIAL HISTORY OF THE UNITED STATES, 1917-1960** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A continuation of Hist 217, tracing the differential impacts of prosperity, depression, war, and economic change on the multifaceted American social structure. Offered with additional work as Hist 318. Not offered 1993-94.

*Staff*

**230(F) RETHINKING WESTERN TRADITION** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course seeks to provide a critical introduction to the major themes of modern European intellectual history from the eighteenth century to the historical present. We will concentrate on major intellectual movements, such as the Enlightenment and romanticism, examining the way in which these currents influenced developments in philosophy, literature, the arts, and political theory. Significant attention will also be paid to the ways in which these movements emerge from and respond to the historical circumstances of the day. The course will begin by reviewing Nietzsche's provocative assessment of "European nihilism" in order to pose the question: can the Western tradition truly withstand such a withering critique? Also offered as Huma 230.

*Wolin, R.*

**231(F) AFRICA TO 1884** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This survey course covers the changing historiography of Africa; the emergence of the Bantu; early Christianity and Islam; trans-Saharan trade; the medieval Sudanic empires; statelessness and state formation; Portugal in Africa; the slave trade; South Africa to 1867; the Mfecane; the Sudanic jihads; long-distance trade; African-European relations in the nineteenth century.

*Odhiambo, A.*

**232(S) THE MAKING OF MODERN AFRICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course surveys the transformation of Africa from the late nineteenth century to the present. The topics covered include Europe and Africa in the nineteenth century; the scramble for and partition of Africa; the evolution of the colonial state; economic change in the twentieth century: plantation and peasant agriculture, mining and industrialization, wage and migrant labor, African capitalism, rural differentiation, the roots of hunger and poverty; social change in the twentieth century: the invention of ethnic identity, the emergence of elites, cultural policies—language, leisure, the changing roles of women, religion and cultural resistances, the rival conceptions of law and order, changes in medicine and healing, urbanization; political developments: ethnic unions, political parties, and decolonization; Africa since independence: the economic and political crises.

*Odhiambo, A.*

**242(S) SOUTHERN AUTOBIOGRAPHY** (3-0-3)
The autobiography as a genre of historical documentation for U.S. southern history. The autobiographies discussed will cover the nineteenth and twentieth centuries and represent most segments of the population. Not offered 1993-94.

*Boles, J.*

**244(S) INTRODUCTION TO WOMEN'S HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
What does it mean to study women's history? Is women's history the same thing as the history of women? This course examines both the range of approaches and the types of evidence used by scholars in the field. We will also discuss the relationship of women's history to several related fields, including feminist theory, gender studies, and the history of sexuality. Offered with additional work as Hist 344. Not offered 1993-94.

*Quillen, C.*

**250(S) CHINESE CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An introduction to the language, philosophy, religion, art, literature, and social customs of China. Offered with additional work as Hist 450.

*Smith, R.J.*

**257(S) PERCEPTIONS OF JEWS AND JUDAISM FROM TACITUS TO TOYNBEE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
Course compares Jewish self-images with perceptions of Jews and Judaism held by the dominant cultures in the West from antiquity through the modern period. Readings include selections from Tacitus, Paul, Eusebius, Chrysostom, Halevi, Luther Modena, Grimmelhausen, da Costa, Spinoza, Gluecke of Hamelin, Solomon Maimon, Marx, Freud, Hitler, Kook Grade, and Toynbee. Cross-listed with Reli 257.

*Fishman, T.*

**265(S) CONTEMPORARY HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Our own years in historical perspective. The world since Nixon and Kissinger. Reading includes latest memoirs and biographies, leading newspapers and periodicals, also television and radio news. Not offered 1993-94.

*Staff*

**269(S) U.S.-LATIN AMERICAN RELATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course is a basic history of U.S.-Latin American relations from 1775 to the present. Particular attention is given to twentieth-century policies and problems focusing on intervention since 1945. Offered with additional work as Hist 469.

*Seed, P.*

**273(F) POSTBIBLICAL JEWISH HISTORY I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Examination of the social, political, economic, and theological contexts that shaped Jewish life under the rule of Romans, Christians, and Muslims and of developments in Jewish culture during this period in the areas of rabbinics, liturgy, poetry, philosophy and mysticism. Lecture and discussion of primary sources in translation. Offered with additional work as Hist 373.
*Fishman, T.*

**274(S) POSTBIBLICAL JEWISH HISTORY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Evolution and revolution in Jewish life under the impact of the Reformation, Sabbatean messianic movement, Hasidism, Enlightenment, Emancipation, and nationalism. Reform, positive-historical (*i.e.*, Conservative), Neo-Orthodox and Zionist redefinitions of Jewish identity. Lecture and discussion of primary source readings in translation. Offered with additional work as Hist. 374.
*Fishman, T.*

**281(F) HISTORY OF THE ISLAMIC NEAR EAST, 600-1258** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of the basic political, institutional, and social history of the Near East from the rise of Islam to the Seljuks. We will pay particular attention to the elaboration of political and religious institutions (especially the caliphate), the origins and rise of Shii Islam, the growth and subsequent fragmentation of the caliphal empires, and the advent of the Turkic peoples (lecture/discussion). Offered with additional work as Hist 381.
*Sanders, P.*

**282(S) HISTORY OF THE ISLAMIC NEAR EAST, 1258-1805** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Continues the first semester survey from the advent of the Seljuk Turks to the Ottoman conquest of Egypt. It includes discussion of the fate of the caliphate after the political fragmentation of the Abbasid empire, the rise of the mamluk military system, Mongols, Crusades, and the early history of the Ottoman and Safavid empires. Lecture/discussion. Hist 281 is recommended but not required. Offered with additional work as Hist 382. Not offered 1993-94.
*Sanders, P.*

**284(S) THE CRUSADES: HOLY WAR IN MEDIEVAL CHRISTENDOM AND ISLAM** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course examines the Crusades (eleventh-fifteentth centuries) from the point of view of both Christian Europe and the Islamic Near East. We will discuss the political and military history of the Crusades as well as the social, cultural, and religious transformations that both caused and were wrought by these conflicts. Offered with additional work as Hist 384.
*Sanders, P., Nirenberg, D.*

**286(S) THE REFORMATION AND ITS RESULTS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Theology and church-state issues from sixteenth-century Reformation to seventeenth century; medieval background; Luther, Calvin, Catholic Reformation; religious wars; Protestant Orthodoxy; Pietiest spirituality; Puritanism; calls for toleration. Also offered as Reli 286. Not offered 1993-94.
*Stroup, J.*

**292(S) THE HOLOCAUST IN HISTORY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course will examine the way historians have attempted to view the Holocaust in recent years. Many have insisted on the irreducible historical uniqueness of the Holocaust. Yet historians have been forced to compare it with other instances of genocide—for example, in Armenia, the Soviet Union, and Cambodia. One of the questions we will ask is: Do such comparisons place the alleged uniqueness of the Holocaust in jeopardy? Following an introductory treatment of the historical circumstances surrounding the Holocaust, we will proceed to review the recent, often contentious, historical debates surrounding it

*Wolin, R.*

**293(F) THE ART OF WAR FROM MACHIAVELLI TO NAPOLEON** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A study of the theory and practice of warfare from the classical age to the early nineteenth century. Reading includes selections from Thucydides, Caesar, Machiavelli, Saxe, and Napoleon. Lectures, discussions and examinations. Also offered with additional work as Hist 393.

*Gruber, I.*

**294(S) WAR IN THE MODERN WORLD** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The theory, practice, and experience of war in the nineteenth and twentieth centuries. Reading includes selections from Clausewitz and Liddell Hart. Offered with additional work as Hist 394.

*Gruber, I.*

**297(F) CONSTITUTIONAL AND LEGAL HISTORY OF THE U.S. I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Major questions in the historical development of American law and governing institutions. Offered with additional work as Hist 397. Not offered 1993-94.

*Hyman, H.*

**298(S) CONSTITUTIONAL AND LEGAL HISTORY OF THE U.S. II (3-0-3)**
* DISTRIBUTION COURSE: CATEGORY II.3
Major questions in the historical development of American law and governing institutions. Offered with additional work as Hist 398. Not offered 1993-94.

*Hyman, H.*

**299(S) CIVIL WAR AND RECONSTRUCTION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An examination of the causes, events, and results of America's most severe conflict. Special attention goes to connections between federalism, racial democracy, and military-political events. Offered with additional work as Hist 399. Not offered 1993-94.

*Hyman, H.*

**300 INDEPENDENT STUDIES**
Independent study under supervision of a history faculty member. Permission of instructor is required.

*Staff*

**301(F) EUROPE'S FIVE HUNDRED YEARS, 1450-1815** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 101. Students may not receive credit for both Hist 101 and 301. Recommended for junior and seniors.

*Stokes, G.*

**302(S) EUROPE'S FIVE HUNDRED YEARS, 1815-PRESENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 102. Students may not receive credit for both Hist 102 and 302. Recommended for juniors and seniors.

*Stokes, G.*

**303 UNDERGRADUATE INDEPENDENT READING** (3-0-3)
Independent reading under the supervision of a faculty member. Open to a limited number of advanced students with special permission.

*Staff*

**304 UNDERGRADUATE INDEPENDENT READING** (3-0-3)
Independent reading under the supervision of a faculty member. Open to a limited number of advanced students with special permission.

*Staff*

**305(S) RUSSIAN HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of Russian history from earliest times to the present. Not offered 1993-94.

*Stokes, G.*

**306(F) GREEK WORLD FROM THE PERSIAN WARS TO THE ROMAN CONQUEST (546-146 B.C.)** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
History of Classical and Hellenistic Greece covering topics such as Athenian Democracy, the Persian Wars, the Athenian Empire, Peloponnesian War, Alexander the Great, and the Successor Kingdoms, with emphasis on the importance of city-states.

*Elton, H.*

**307(S) THE ROMAN EMPIRE FROM AUGUSTUS TO JULIAN (31 B.C.-A.D. 363)** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Roman imperial history from the early empire to the eve of its fall in the west. Important themes include social change (Romanisation, paganism, and Christianity) and political change (especially development of the power of the emperor).

*Elton, H.*

**308(S) THE WORLD OF LATE ANTIQUITY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A social, religious, and political history of the Roman world from Diocletian to the rise of Islam. Focus will be on the breaking of the unity of the Mediterranean world and the formation of Byzantine society in the Greek east.

*Maas, M.*

**309(F) THE COLLAPSE OF THE ROMAN EMPIRE (A.D. 284-602)** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
Events leading to the collapse of the Roman Empire in the fifth century, the rise of the western barbarian kingdoms, and the partial restoration of Byzantine control. Covers social, political, military, and economic issues, including the Pirenne thesis, with extensive use of archaeological evidence.

*Elton, H.*

**311(F) AMERICAN THOUGHT AND SOCIETY I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Enriched version of Hist 211. Students may not receive credit for both Hist 211 and 311. Not offered 1993-94.

*Haskell, T.*

**312(S) AMERICAN THOUGHT AND SOCIETY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 212. Students may not receive credit for both Hist 212 and 312. Not offered 1993-94.

*Haskell, T.*

**313(F) THE MIND OF THE SOUTH** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course explores central themes in the intellectual history of the American South from the seventeenth century to the mid-twentieth century—race and racism, religion, slavery, honor, civil rights, and southern versions of American ideals such as freedom, equality, and independence.

*Lyerly, L.*

**314(S) AMERICAN INTELLECTUAL HISTORY IN THE NINETEENTH AND TWENTIETH CENTURIES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course will explore the influence of formal thought, systems of belief, and ideology on the development of society in the United States over the last two centuries. It will be organized around broad themes presented in rough chronological order and constructed from the written legacy of particular American philosophers, scientists, theologians, novelists, and social critics.

*Ettling, J.*

**315(F) BLACKS IN THE AMERICAS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 215. Students may not receive credit for both Hist 215 and 315.

*Cox, E.*

**317(F) SOCIAL HISTORY OF THE UNITED STATES, 1877-1917** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 217. Students may not receive credit for both Hist 217 and 317. Not offered 1993-94.

*Staff*

**318(S) SOCIAL HISTORY OF THE UNITED STATES, 1917-1960** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 218. Students may not receive credit for both Hist 218 and 318. Not offered 1993-94.

*Staff*

**319(S) THE CITY, TECHNOLOGY, AND THE ENVIRONMENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course will focus on the political, environmental, and social impacts of technology on urban growth in the U.S. during the nineteenth and twentieth centuries. We will devote particular attention to the city-building process, urban technology, public works and city services, and environmental conditions. Not offered 1993-94.

*Staff*

**320(S) SCIENCE IN ANTIQUITY AND MIDDLE AGES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of science from ancient Mesopotamia, Egypt, and Greece to the end of the Middle Ages. No expertise in science required.

*Van Helden, A.*

**321(S) SCIENCE IN EARLY MODERN EUROPE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Between 1400 and 1700, Greek science, assimilated during the High Middle Ages, was radically transformed, not only in content but also in method and institutional setting. The thought of Copernicus, Kepler, Galileo, Descartes, Newton, and others will be examined in the context of the more general cultural history of this period. Not offered 1993-94.
*Van Helden, A.*

**322(S) PHYSICAL SCIENCE FROM NEWTON TO EINSTEIN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of the physical sciences from the establishment of the Newtonian worldview, *c.* 1700, to its breakdown in the twentieth century. Not offered 1993-94.
*Van Helden, A.*

**323(F) MODERN BALKAN HISTORY I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
First of a two-semester sequence on the history of southeastern Europe. This semester will cover the Ottoman period (fifteenth-nineteenth centuries) and will discuss some of the following problems: Ottoman social and economic structure, the spread of Islam, the Ottoman impact on the society, politics, economics, and culture of the Byzantine and medieval Balkan states, the Eastern question in European international relations. Not offered 1993-94.
*Staff*

**324(S) MODERN BALKAN HISTORY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Second of a two-semester sequence on the history of southeastern Europe, this course will cover the history of the independent Balkan states (Greece, Bulgaria, Yugoslavia, Romania, Albania, and Turkey) during the nineteenth and twentieth centuries. The modernization or Europeanization of the rural societies of the Balkans in the last two centuries is a major problem to be analyzed in its different aspects. Other topics will cover ethnic conflicts, the evolution of the national question, inter-Balkan relations, and the role of the great powers in the area. Not offered 1993-94.
*Staff*

**327(F) COLONIAL LATIN AMERICAN HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The first part of a two-semester survey course of colonial Latin America focusing on construction of the self and "other" narrative strategies and rhetoric. The colonial part examines narratives of conquest, travel, and piracy in Latin America and the Caribbean in the sixteenth and seventeenth centuries.
*Seed, P.*

**328(S) MODERN LATIN AMERICAN HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This is the second part of a two-semester course on Latin America focusing on construction of the self and "other" narrative strategies, and rhetoric in contemporary Latin America. The modern half examines nineteenth- and twentieth-century essays and novels dealing with modern Latin American identity. Readings include Sarmiento, Paz, and Naipaul. Not offered 1993-94.
*Seed, P.*

**329(S) FIRST EUROPEAN EXPANSION, 1492-1640** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course covers the histories of the first European expansion in the sixteenth century and the establishment of overseas colonial empires by France, Spain, Portugal, England, and the Netherlands. It focuses on the rationales for empires created by each of the concepts of "voluntary" subjection through commercial treaty and conversion and those dealing with involuntary submission through conquest for "just war."
*Seed, P.*

**334(S) MARINERS, RENEGADES, AND CASTAWAYS: ATLANTIC DISSENT IN THE AGE OF EMPIRE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Popular life and resistance movements in the Atlantic World. Not offered 1993-94.

*Scott, J.*

**335(F) CARIBBEAN HISTORY TO 1838** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
History of the Caribbean from the arrival of Europeans to the abolition of slavery in the British West Indies in 1838. Focus will be on the social and economic history of the region during this period. Why did slavery and the plantation system emerge? Why did they fall? Not offered 1993-94.

*Cox, E.*

**336(S) CARIBBEAN HISTORY: 1838 TO THE PRESENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Social, economic, and political history of the people from the abolition of slavery to the emergence of independent nations in the modern era.

*Cox, E.*

**337(S) HISTORY OF ANCIENT AND MEDIEVAL LAW** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A history of ancient law focusing on imperial Roman law and the various forms of medieval law: vulgar Roman law, barbaric Germanic law, and English common law. Not offered 1993-94.

*Drew, K.*

**338(F) HUMANIST TRADITION AND ITS CRITICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course explores the development of the humanist tradition from its origins in the Renaissance to the present. We will focus first on the political, "civic" dimensions of humanism, concentrating on interpretations of Machiavelli's writings. Then we will study the implications of "literary" humanism for ideas about education, including our contemporary debates about university curricula and the role of the university in society. Students interested in this class should see the instructor prior to preregistration. Not offered 1993-94.

*Quillen, C.*

**339(S) MORALITY AND HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Does it subvert the very idea of morality to say that it has a history, that it is susceptible to change? Students in this discussion and writing course will grapple with this problem through selected readings drawn mainly from Anglo-American history and philosophy that range over a period of several centuries. Not offered 1993-94.

*Haskell, T.*

**340(F) VICTORIAN INTELLECTUALS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The upheaval in late nineteenth-century social thought and culture associated with Darwin's theory of evolution. Readings (mainly American, but including English and continental writers for comparison) may include Spencer, Veblen, Henry Adams, William James, Dewey, Matthew Arnold, and Nietzsche. Not offered 1993-94.

*Haskell, T.*

**341(F) HISTORY OF CHINA I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Survey of Chinese history from antiquity to about 1800, highlighting salient aspects of China's heritage.

*Smith, R.J.*

**342(S) HISTORY OF CHINA II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
China's revolutionary transformation in the nineteenth and twentieth centures—from Ch'ing dynasty to People's Republic.

*Smith, R.J.*

**343(S) CONTEMPORARY CHINA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An examination of the interplay between "tradition" and "modernity" in contemporary China. Not offered 1993-94.

*Smith, R.J.*

**344(S) INTRODUCTION TO WOMEN'S HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 244. Students may not receive credit for both Hist 244 and 344. Not offered 1993-94.

*Quillen, C.*

**345(S) RENAISSANCE EUROPE: HUMANISM AND EUROPEAN EXPANSION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A political, intellectual, and artistic survey of the decisive years in which the formation of Western Europe was completed. Not offered 1993-94.

*Quillen, C.*

**346(S) REFORMATION EUROPE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of Western Europe in the sixteenth century, emphasizing the interplay between politics and religion in the rise and consolidation of Protestantism and the Catholic revival. Not offered 1993-94.

*Quillen, C.*

**348(F) THE UNITED STATES AND VIETNAM, 1945-1975** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This reading and discussion course will explore topics such as the reasons for thirty years of U.S. involvement in Southeast Asia, the dynamics of the military struggle in Vietnam, the impact of the war on American society and politics, and the place of the Vietnam War in postwar superpower diplomacy.

*Taylor, M.*

**349(F) AGE OF BISMARCK** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The history of Europe from the French Revolution and Napoleon to Bismarck, Gladstone, and the Spanish-American War. Not offered 1993-94.

*Staff*

**350(S) AMERICA IN THE TWENTIETH CENTURY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Survey of major economic, social, and political developments in the United States from 1900 to 1940. Lectures, readings, discussions and one research paper. Enrollment limited to forty students.

*Matusow, A.*

**352(F) COMPARATIVE MODERNIZATION OF CHINA AND JAPAN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A systematic comparison of the historical development of China and Japan in the nineteenth and early twentieth centuries, giving attention not only to domestic issues and Sino-Japanese relations, but also to the larger international environment. Not offered 1993-94.

*Smith, R.J.*

**353(S) U.S. FOREIGN RELATIONS AND THE COLD WAR** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An in-depth examination of America's role in world affairs since 1945, focusing on the origins of the struggle between the free and Communist worlds, the influence of nuclear weapons on superpower relations, the interaction of foreign policy and American domestic politics, the contest for influence in the developing world, and the factors responsible for the cold war's apparent demise. Lectures, discussions, and one research paper. Enrollment limited to twenty; instructor's permission required.

*Taylor, M.*

**354(F) 1941—ANATOMY OF A WORLD HISTORICAL YEAR** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Would U.S. aid reach Britain in time? Would Nazi Germany and the Soviet Union remain at peace? Would Japan and America face off in the Pacific? A year of Tolstoyan propositions, centering around Roosevelt and Churchill, Hitler, and Stalin. Lectures and discussions. Emphasis on contemporary evidence. Not offered 1993-94.

*Staff*

**355(F) MODERN GERMANY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The German search for freedom and unity in international perspective. Special emphasis on the life and times of Frederick the Great, Otto von Bismarck, Adolf Hitler, Konrad Adenauer, the postwar division of the country and the events of 1989-1990. Not offered 1993-94.

*Staff*

**356(S) THE HOLOCAUST IN INTERNATIONAL PERSPECTIVE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The Holocaust—Nazi Germany's systematic effort to exterminate the Jews—is unique in history. But its roots go far back in European history, and it could probably not have succeeded as it did without the long-standing indifference of Great Britain and the United States and the active or passive support of the Soviet Union. The course concerns the inner history of the Holocaust, with special emphasis on what contemporaries knew and when they knew it, and how the democracies responded during and after the war, including the war crimes trials. Not offered 1993-94.

*Staff*

**357(S) PERCEPTIONS OF JEWS AND JUDAISM FROM TACITUS TO TOYNBEE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 257. Students may not receive credit for both Hist 257 and 357. Cross-listed with Reli 301.

*Fishman, T.*

**359(S) ROMAN BRITAIN AND MEDIEVAL ENGLAND** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Survey of historical developments in Roman Britain and medieval England with special attention to social, economic, and religious factors.

*Drew, K.*

**360(F) GENDER AND SEXUALITY—MODERN FRENCH HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An examination of gender roles, gender ideology, and sexual practices in the construction of French society and culture from the Enlightenment to World War II. Topics to be examined include: sexual politics and the emergent notion of the "public sphere" in the eighteenth century; masculine and feminine images of the state during the Revolutionary period; feminist discourses and politics in 1789, 1848, and in the campaign for women's suffrage; family structures, patriarchy, and notions of property. Readings will include novels and memoirs as well as historical works. Taught in English; some readings may be done in French. Also offered as Fren 360. Not offered 1993-94.

*Sherman, D.*

**361(F) HISTORY OF ENGLAND: REFORMATION TO 1815** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The personalities and forces that changed England from a backwater of Europe into the leading nation in the world. Lectures, discussions, and papers. Not offered 1993-94.

*Wiener, M.*

**362(S) HISTORY OF ENGLAND: FROM 1815 TO PRESENT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
England's take-off into the Industrial Revolution and how it has adapted to the flourishing of the Empire. The twentieth-century geopolitical and economic decline. Novels, biographies, and other materials are used to examine the transformation of Britain in the past two centuries. Lectures, discussions, and frequent short papers. Not offered 1993-94.

*Wiener, M.*

**363(S) GENDER AND SOCIETY IN EARLY MODERN EUROPE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course explores the relationship between ideas and gender and social, political, and legal institutions in Europe from about 1350-1800. Topics include: the structure and role of the family, gender roles in religious institutions, and the regulation of sexuality. Not offered 1993-94.

*Quillen, C.*

**364(S) THE RISE AND FALL OF THE BRITISH EMPIRE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
A survey of British imperialism in the nineteenth and twentieth centuries. Major themes include the evolution of empire; pro- and anti-imperialist discourses; strategic/diplomatic implications of empire; British society and the empire; and interactions between colonizer and colonized.

*Hood, A.J.*

**365(F) AMERICAN REVOLUTION, 1763-1789** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
An investigation of the causes, process, and consequences of the American Revolution. Special emphasis will be placed on the reasons why colonial Americans rebelled, on the character of the War for American Independence, and on the constitutional settlement of 1787 and the securing of fundamental liberties. Not offered 1993-94.

*Staff*

**366(S) WOMEN IN BRITAIN, 1500-1900** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
From the time of Henry VIII to the reign of Victoria, women in Britain had a different experience from that of men. This course explores their lives through their homes, work, and public actions. Particularly, it focuses on the ambiguities of women's roles in English society: their mixed feelings about marriage and motherhood; the differing reactions of middle- and working-class women, and the pressures that pushed women into the formal workplace and the woman's movement. It offers a new perspective on the modern era of British history. Not offered 1993-94.

*Staff*

**367(F) HISTORY OF SOUTH AFRICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course will survey the history of South Africa from the mid-seventeenth century. The topics to be covered include South Africa before the Europeans; white settlers and Cape colonial society to 1814; the capitalist revolution; the struggle for South Africa in the nineteenth century; the transformation of South African society; the rise and development of the apartheid state; resistances and struggles. Not offered 1993-94.
*Odhiambo, A.*

**368(S) IMPERIALISM AND NATIONALISM IN AFRICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course traces the origins, processes, and critiques of imperialism and nationalism in Africa in the twentieth century. Not offered 1993-94.
*Odhiambo, A.*

**371(F) FRANCE IN AN AGE OF REVOLUTION, 1750-1870** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Transformations in French society, culture, and politics before and after the revolution. Taught in English. Counts toward a history major. Cross-listed with Fren 371. Not offered 1993-94.
*Sherman, D.*

**372(S) SOCIETY AND POLITICS IN MODERN FRANCE, 1870-1988** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The emergence of modern France: the impact of war, industrialization, imperialism, and cultural mastery. Taught in English. Counts toward a history major. Cross-listed with Fren 372. Not offered 1993-94.
*Sherman, D.*

**373(F) POSTBIBLICAL JEWISH HISTORY I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 273. Students may not receive credit for both Hist 273 and 373.
*Fishman, T.*

**374(S) POSTBIBLICAL JEWISH HISTORY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 274. Students may not receive credit for both Hist 274 and 374.
*Fishman, T.*

**376(S) EXISTENTIALISM** (3-0-3)
An examination of the genesis and development of existentialism as an intellectual force in nineteenth- and twentieth-century Europe. Will begin with a brief treatment of Kierkegaard and Nietzsche before proceeding to a study of twentieth-century figures such as Heidegger, Sartre, and Camus. Not offered 1993-94.
*Wolin, R.*

**378(S) CULTURAL CRITICISM AND AMERICAN SOCIETY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course will focus on the tension between ideals and reality in American life as expressed by a growing number of postwar social critics and theorists such as Marcuse, Lasch, Bellah, and Daniel Bell. Not offered 1993-94.
*Wolin, R.*

**379(F) INTRODUCTION TO POSTMODERNISM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
We will begin with a survey of the most important intellectual precursors of postmodernism—Nietzsche, Heidegger, and Bataille—before moving on to consider the movement's leading representatives in contemporary France: Lyotard, Derrida, and Foucault. We will then conclude by examining some of the more important criticisms of the postmodern world view (*e.g.* the critique of Jurgen Habermas). Not offered 1993-94.
*Wolin, R*

**381(F) HISTORY OF THE ISLAMIC NEAR EAST, 600-1258** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 281. Students may not receive credit for both Hist 281 and 381.
*Sanders, P*

**382(S) HISTORY OF THE ISLAMIC NEAR EAST, 1258-1805** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 282. Students may not receive credit for both Hist 282 and 382. Not offered 1993-94.
*Sanders, P*

**383(F) THE ENLIGHTENMENT** (3-0-3)
A study of the transformation of the European intellect during the eighteenth century, with special emphasis on the Enlightenment as the intellectual harbinger of the French Revolution. Among the authors: Locke, Hume, Voltaire, Diderot, Rousseau, and Kant. Not offered 1993-94.
*Wolin, R*

**384(S) THE CRUSADES: HOLY WAR IN MEDIEVAL CHRISTENDOM AND ISLAM** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 284. Students may not receive credit for both Hist 284 and 384.
*Sanders, P., Nirenberg, D*

**385(F) CHRISTIANS AND JEWS IN THE ISLAMIC WORLD** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course examines the history of Christian and Jewish communities in the Islamic world from the rise of Islam to the end of the Ottoman Empire. We will discuss the legal status of *dhimmis* (protected peoples), social and economic life, communal organization, interplay of Jewish and Muslim laws, and the constitution of political authority in these communities. The course will also include discussion of the modern historiography of these communities, comparative study of Jewish communities in Christendom and Islam, and discussion of Muslim communities living under Christian rule in the middle ages. Not offered 1993-94.
*Sanders, P*

**386(F) INTRODUCTION TO ISLAM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An introduction to Islam, emphasizing the historical development of classical Islamic religious thought, forms of Quranic exegesis, the development of Shi'i Doctrine, Islamic Law and theology, mysticism, and varieties of religious practice in different parts of the Islamic world. We will also discuss the imperialism and the emergence of modern Islamist movements. The primary emphasis in the class will be on the ways in which Muslims have historically understood themselves and their own history. Not offered 1993-94.
*Sanders, P.*

**387(F) EASTERN EUROPE IN THE TWENTIETH CENTURY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course focuses on the historical background and interpretation of the recent events in Eastern Europe. It introduces and analyzes the concepts of central and southeastern Europe and studies their political, economic and cultural rationale, both in the period between the two world wars and during the cold war era. Finally, it takes a close look at the events of 1989, "the fall that shook the world," in the specific context of each country involved. Not offered 1993-94.
*Staff*

**389(F) EASTERN EUROPE TO 1945** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A lecture and discussion course covering the historical development of the countries of East Central Europe (Poland, Czechoslovakia, and Hungary) and of Southeast Europe (Romania, Bulgaria, Albania, and Yugoslavia) through the end of World War II.
*Stokes, G.*

**390(S) EASTERN EUROPE SINCE 1945** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A discussion and writing seminar covering the development of Eastern Europe since 1945, with special emphasis on the causes and results of the revolutions of 1989. Completion of Hist 389 is desirable but not required.
*Stokes, G.*

**391(F) CAPITALISM AND CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
What are the cultural consequences (ethical, aesthetic, and religious) of capitalism as a social formation? This question will be adressed through an examination of the work of several major social theorists, classical and contemporary. Among the authors treated will be Marx, Weber, Parsons, Habermas, and Bell. Not offered 1993-94.
*Wolin, R.*

**392(S) FRENCH SOCIAL THOUGHT: FROM DURKHEIM TO DERRIDA** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
Modern French intellectual life has often been superficially viewed as inspired by Cartesian rationalism—an empire of triumphant enlightenment twentieth-century French thinkers have, more often than not, striven to free themselves from the limitations of that Cartesian tradition. By taking a close look at the work of leading French intellectuals from the domains of anthropology (Durkheim, Mauss, Levi-Strauss), philosophy (Sartre, Foucault, Derrida), and letters (the surrealists and George Bataille), we will attempt to reevaluate the predominant orientations of modern French thought.
*Wolin, R.*

**393(F) THE ART OF WAR FROM MACHIAVELLI TO NAPOLEON** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 293. Students may not receive credit for both Hist 293 and Hist 393.
*Gruber, I.*

**394(S) WAR IN THE MODERN WORLD** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 294. Students may not receive credit for both Hist 294 and Hist 394.
*Gruber, I.*

**395(F) THE OLD SOUTH** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of the economic, cultural, political, religious, and social history of the South from 1607 to 1860 with particular attention to race.

*Boles, J.*

**396(S) THE NEW SOUTH** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Continuation of Hist 395 to the present.

*Boles, J.*

**397(F) CONSTITUTIONAL AND LEGAL HISTORY OF U.S. I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 297. Students may not receive credit for both Hist 297 and Hist 397. Not offered 1993-94.

*Hyman, H.*

**398(S) CONSTITUTIONAL AND LEGAL HISTORY OF U.S. II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 298. Students may not receive credit for both Hist 298 and 398. Not offered 1993-94.

*Hyman, H.*

**399(F) AMERICAN CIVIL WAR AND RECONSTRUCTION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 299. Students may not receive credit for both Hist 299 and Hist 399. Not offered 1993-94.

*Hyman, H.*

**402(S) HONORS THESIS** (3-0-3)
Open to well-qualified students with special permission. Students must take both Hist 402 and 403, or both 403 and 404, to gain credit.

*Staff*

**403(F) HONORS THESIS** (3-0-3)
Open to well-qualified students with special permission. Students must take both Hist 402 and Hist 403, or both 403 and 404 to gain credit.

*Staff*

**404(S) HONORS THESIS** (3-0-3)
See Hist 402 and 403.

*Staff*

**409(F) HISTORY OF EAST AFRICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of East African cultures, societies, economies, and politics from the earliest times to the present: the peopling 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.

*Odhiambo, A.*

**410(S) KENYA IN MODERN HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course will trace the path of the transformation of Kenya from tribal societies to a modern state. A background survey of the migrations, settlement, and emergence of precolonial societies will be provided. The underlying cultural unities of the precolonial societies will be sketched, as will the precapitalist socioeconomic formations. The course will then cover Kenya in the nineteenth century; the British conquest of Kenya; the colonial state and its contradictions; the colonial economy; educational and religious changes; social and cultural changes; the traditions of resistance and collaboration; the invention of tribes; clan, district, and territorial politics; Mau Mau, decolonization and constitutional changes; the postcolonial state; Kenyan societies towards the end of the twentieth century.

*Odhiambo, A.*

**413(S) SLAVERY IN NORTH AMERICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 213. Students may not receive credit for both Hist 213 and Hist 413. Not offered 1993-94.

*Boles, J.*

**421(F) TOPICS IN CHINESE HISTORY DIVINATION IN CHINESE HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This seminar will explore the role of divination in the political and social life of China from neolithic times to modern era, focusing on fortune-telling as a reflection of traditional Chinese attitudes, values, worldview, and cosmology. Prerequisite: any course in Chinese history or the consent of the instructor; limited to 15 students. Not offered 1993-94.

*Smith, R.J.*

**423(F) WOMEN IN EARLY MODERN EUROPE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The course develops a critical feminist perspective on the historical issues of the early modern era. Topics covered include the coming of capitalism, the Reformation, the expansion of literacy, the demographic transition, and the development of seventeenth-century science. Not offered 1993-94.

*Seed, P.*

**424(S) AMERICAN EMANCIPATION IN COMPARATIVE PERSPECTIVE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A discussion-seminar course examining the comparative history of emancipation in the New World. Not offered 1993-94.

*Scott, J.*

**425(F) COLONIAL/POSTCOLONIAL DISCOURSE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The course will cover one of the most important emerging theoretical issues in the study of Third World peoples, namely, how Europeans and Americans have created definitions of who these people are, and how they behave, by virtue of not *their* systems of knowledge but *ours*. The constitution of colonized peoples as subjects of knowledge by their colonizers is known as colonial discourse; the reactions of the colonized, postcolonial discourse. The first half of the course will analyze the theories of colonial and postcolonial discourse, the second half will deal with examples from Latin America, Africa, and South Asia. Prerequisite: EITHER one Third World history course (any area) OR a course in literary or anthropological theory.

*Seed, P.*

**426(F) COMPARATIVE SLAVERY AND RACE RELATIONS IN THE AMERICAS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A comparative analysis of slavery and race relations in the U.S., the Caribbean, and Latin America, chiefly to the late nineteenth century. It addresses issues like the relative harshness or mildness of the institution of slavery in various systems, opportunities for advancement for the former slaves, and the resultant nature of race relations.

*Cox, E.*

**427(S) HISTORY OF THE CIVIL RIGHTS MOVEMENT, 1954-1984** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An examination of the modern civil rights movement, focusing on the goals and strategies of the major spokespersons and leaders, as well as the achievements of the campaign. To what extent was there success? To what extent was there failure? Is there an "unfinished" agenda that needs to be completed?

*Cox, E.*

**430(S) SOCIAL PROBLEMS AND POLICY IN NINETEENTH-CENTURY BRITAIN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course will focus on sexual relations and the family as sites of social problems. The discovery and construction of problems such as prostitution, illegitimacy, child abuse, abortion and divorce will be explored. Discussion and a research paper. Not offered 1993-94.

*Wiener, M.*

**431(F) VICTORIAN MORALITY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The rise and decline of a set of attitudes and values about human nature and behavior that flourished widely in the nineteenth century. Social sources and functions of this morality will be stressed, in particular its role in structuring class, gender, and generational relations in an age of rapid change. Britain will be the geographical focus, with glances at the United States and Western Europe. Material examined will include literature and art. Lectures, discussions, and a research paper. Not offered 1993-94.

*Wiener, M.*

**436(S) WARFARE IN THE ROMAN EMPIRE (31 B.C.—A.D. 476)** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course discusses the military practices of the Roman empire and its enemies until the fall of the empire. Core themes are the military effectiveness of the Roman army and its adaptability to face regional problems. Other issues examined include leadership, communication, civil wars, and naval operations. Not offered 1993-94.

*Elton, H.*

**437(F) LIFE ON THE NILE: EGYPTIAN POLITICS, CULTURE, AND SOCIETY FROM MEDIEVAL TO MODERN TIMES** (3-0-3)
An examination of Egyptian history from the Arab conquest in 641 until the twentieth century, focusing on major themes in Egypt's political, social, and cultural life, on historical continuities and discontinuities, and on problems of historical interpretation. Lecture/discussion. Not offered 1993-94.

*Sanders, P.*

**438(S) GENDER AND SOCIETY IN ISLAM** (3-0-3)
This course will examine some features of the legal position and social realities of men and women in the Islamic world. We will discuss 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) in order to understand how the boundaries of gender have traditionally been drawn.
*Sanders, P.*

**439(F) CHRISTIANITY AND THE WEST: FROM THE BARBARIANS TO BEOWULF** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This course begins with the invasion of the Roman Empire by pagan Barbarians and ends with a Christian's meditations upon his people's pagan past. In between, we will study the Christianization of England, France, and Ireland, the relationship between saints and sinners, and the creation of an expansionist European Christianity. Not offered 1993-94.
*Nirenberg, D.*

**440(S) SOCIAL AND ECONOMIC HISTORY OF EUROPE IN THE MIDDLE AGES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Seminar covering selected problems in the social and economic history of medieval Europe.
*Drew, K.*

**442(S) HISTORY OF ASTRONOMY AND COSMOLOGY** (3-0-3)
A lecture and discussion course dealing with topics in the history of astronomy and cosmology from antiquity to the twentieth century.
*Van Helden, A.*

**445(F) RELIGIOUS RADICALISM AND ITS PERSECUTION IN THE AGE OF THE REFORMATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This seminar examines instances of religious radicalism and its persecution in order to explore the relationship between religious and political authority in Europe from 1400 to 1700. Topics of study include Christian treatment of the Jews, the Anabaptist Movement, Quakerism, the Inquisition, the German Peasants' War, and the "witch craze." Enrollment is limited. Prerequisite: permission of instructor. Not offered 1993-94.
*Quillen, C.*

**447(F) JEWISH PHILOSOPHY AND MYSTICISM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
In their quest for a life of greater spiritual intensity, Jews throughout the ages have sought means of enhancing and supplementing ritual observance. Course explores pietistic attitudes and practices, meditational techniques, theosophical speculation and strategies for effecting redemption, both personal and collective. Readings in translation include selections from ethical wills, manuals for self-improvement, philosophical and mystical treatises composed from the rabbinic period through modern times. Instructor's permission required. Not offered 1993-94.
*Fishman, T.*

**448(S) PERCEPTION OF THE JEWS: TACITUS TO MARX** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Exploration of social and cultural developments in West European life and thought resulting from the dominant society's interaction with Jews and Judaism. Readings include selections from the Pauline Epistles, Eusebius, Pico della Mirandola, Reuchlin, Luther, Spinoza, Rabelais, Grimmelshausen, Voltaire, Hegel, Herder, Marx, and Freud. Frequent short papers and student presentations. Instructor's permission required. Not offered 1993-94.
*Fishman, T.*

**450(S) CHINESE CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Hist 250. Students may not receive credit for both Hist 250 and Hist 450.
*Smith, R.J.*

**451(F) PHILOSOPHIES AND THEOLOGIES OF HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Modern thought on the meaning and ultimate direction of history, roots in eschatology, Augustine, flowering in progress and historicism—*e.g.*, Vico, Lessing, Hegel, Ranke, Burckhardt, Nietzsche, Harnack, Troeltsch, Meinecke, Spengler, Heidegger, Butterfield, Dawson, Schweitzer, Jaspers, and Toynbee. Also offered as Reli 451.
*Stroup, J.*

**452(F) ART, POLITICS, AND SOCIETY IN NINETEENTH-CENTURY FRANCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This seminar will cover such topics as realism, impressionism, and "official" and institutional culture. Cross-listed with Fren 452. Not offered 1993-94.
*Sherman, D.*

**453(F) HISTORY AS TEXT IN MODERN FRANCE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
Major nineteenth- and twentieth-century historical texts examined both as narratives about the French past and as discourses embodying particular attitudes toward contemporary society and politics. Topics include the emergence of a "scientific" history of the Revolution (Michelet, Tocqueville, Taine) and its relation to the historical novel, the Annales school and the question of French identity (Bloch, Braudel), and the politics of theory in recent French history (Foucault, Chartier). Taught in English; readings in French or English according to students' abilities. Cross-listed with Fren 453. Not offered 1993-94.
*Sherman, D.*

**454(S) REPORTING FROM THE UNFREE WORLD** (3-0-3)
How Western journalists have viewed authoritarian and totalitarian regimes in the twentieth century, from the Russian Revolutions of 1917 to the present, the background and impact of their accounts on public opinion and official policy. Not offered 1993-94.
*Staff*

**455(F) FROM BISMARCK TO THE FIRST WORLD WAR** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The revolutions of 1848, the unification of Italy and Germany, Bismarck and Gladstone, the new nationalism and imperialism, the political and cultural upheavals of the turn of the century, and the road to war. Not offered 1993-94.
*Staff*

**456(F) FROM SARAJEVO TO DANZIG: DECLINE OF THE EUROPEAN WORLD** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Europe from 1914 to 1939: the First World War and its consequences, with special attention to the historic role of the United States in world affairs. Not offered 1993-94.
*Staff*

**457(S) FROM DANZIG TO SUEZ: THE END OF THE EUROPEAN WORLD, 1939-1956** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Europe from 1939 to 1956: the Second World War and its consequences, with special attention to the role of the United States in world affairs. Not offered 1993-94.
*Staff*

**458(S) EUROPE AND WORLD POLITICS FROM SUEZ TO THE PRESENT** (3-0-3)
The world in 1956, the cold war, the era of Vietnam, and after, with special attention to role of the United States in world affairs. Not offered 1993-94.

*Staff*

**459(F) THE MUNICH CRISIS** (3-0-3)
The historical origins, inner history, and significance of a world historical crisis, with special emphasis on contemporary records and the role of the United States. Not offered 1993-94.

*Loewenheim, F.*

**460(S) ADVANCED SEMINAR IN ANCIENT HISTORY** (3-0-3)
Limited enrollment. Prerequisites: Hist 307, 308, or 309 or consent of the instructor. Not offered 1993-94.

*Maas, M.*

**462(F) VICTORIAN MARRIAGE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
This seminar will look at the institution and experience of marriage in nineteenth-century England from a variety of disciplinary perspectives. Using sources ranging from novels to political debates to conduct and medical manuals, we will explore the literary, psychological, and political power of matrimonial ideology and how it affected the self-understanding of Victorian men and women.

*Wiener, M., Michie, H.*

**465(F) COLONIAL AMERICA TO 1754** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The growth of society, thought, and politics in the English colonies of North America. Lectures, discussions, and papers.

*Gruber, I.*

**466(S) AMERICAN REVOLUTION, 1754-1789** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The origins and implications of the American Revolution, emphasizing constitutional, social, and political developments.

*Gruber, I.*

**469(S) U.S.-LATIN AMERICAN RELATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Enriched version of Hist 269. Students may not receive credit for both Hist 269 and Hist 469.

*Seed, P.*

**470(S) EUROPEAN FAMILY HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This is an introductory course to family history as a discipline and to the history of the modern European family. Topics will include some of the following: kinship and the patterns, reproduction and sexuality, the family life course, interaction of the family and other social institutions, social discussion of major writings on these topics, based mostly on the West European experience. Not offered 1993-94.

*Staff*

**471(S) SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3
Taught in English. Cross-listed as Fren 471. For description see Hist 571.

*Sherman, D., Harter, D.*

**474(F) TOPICS IN EUROPEAN SOCIAL HISTORY, 1500-1950** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An exploration of the dramatic changes in the lives of ordinary (and not so ordinary) Europeans from the early modern period, through the upheaveals of industrialization, to our own turbulent century. Among the areas of society in which change will be examined: women's lives, the family, sexuality, popular culture, childhood, schooling, and work. Not offered 1993-94.
*Staff*

**475(S) RADICAL THOUGHT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of the theories of some of the most important thinkers in the Marxist and Neo-Marxist tradition. Although we begin with an introductory treatment of Marx, we will focus primarily on the Hegelian Marxism of Georg Lukács and the "critical theory" of the Frankfurt School: Max Horkheimer, Theodor Adorno, Walter Benjamin, and Herbert Marcuse. Among the themes we will be emphasizing will be the critique of "instrumental reason," the Neo-Marxist theory of culture, and the attempt at a Freud-Marx synthesis. Not offered 1993-94.
*Wolin, R.*

**476(S) TRADITION, IDENTITY, AND HISTORICAL WRITING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Individuals and societies define themselves partly by establishing a relationship with the past. How does this happen? And what role do historical writing and interpretation play in this process? This course explores the intersection of cultural tradition, collective identity, and historical writing in the modern West. Topics include the uses made of the classical past in movements from Renaissance humanism to contemporary Afrocentrism; the development of nationalist traditions; and the creation of European identities through juxtapositions with other cultures. Enrollment limited. Cross-listed with Fren 476. Not offered 1993-94.
*Quillen, C., Sherman, D.*

**480(S) PRISONS IN AMERICAN CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A historical investigation of the changing cultural significance of imprisonment, from the early Quaker reforms to the uprisings of the contemporary period. The emphasis is not on criminology or ethics but on what prisons have meant, how and why they have been viewed or kept from sight, in American literary expression, politics, and society. Not offered 1993-94.
*Staff*

**492(F) MICHEL FOUCAULT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A seminar devoted to a critical reading of Foucault's work from *Madness and Civilization* to *The History of Sexuality*. Not offered 1993-94.
*Wolin, R.*

**494(S) PROBLEMS IN NINETEENTH- AND TWENTIETH-CENTURY EUROPEAN HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A discussion and pro-seminar on various problems of nineteenth- and twentieth-century European history. Different topics are covered in different years. Enrollment limited to 15 students. Not offered 1993-94.
*Stokes, G.*

**501(F) MASTER'S HISTORICAL RESEARCH** (Variable)
Master's thesis. Students must take both Hist 501 and 502 in order to gain credit.
*Staff*

**502(S) MASTER'S HISTORICAL RESEARCH** (Variable)
See Hist 501.
*Staff*

**503(F) GRADUATE TOPICS** (Variable)

*Staff*

**504(S) GRADUATE TOPICS** (Variable)

*Staff*

**511(F) DIRECTED READINGS IN AMERICAN HISTORY I** (4-0-4)
For graduate students only.

*Staff*

**512(S) DIRECTED READINGS IN AMERICAN HISTORY I** (4-0-4)
For graduate students only.

*Staff*

**513(F) DIRECTED READINGS IN AMERICAN HISTORY II** (4-0-4)
For graduate students only.

*Staff*

**514(S) DIRECTED READINGS IN AMERICAN HISTORY II** (4-0-4)
For graduate students only.

*Staff*

**517(F) DIRECTED READINGS IN SCIENCE AND TECHNOLOGY** (4-0-4)
For graduate students only.

*Staff*

**518(S) DIRECTED READINGS IN SCIENCE AND TECHNOLOGY** (4-0-4)
For graduate students only.

*Staff*

**521(F) DIRECTED READINGS IN MEDIEVAL HISTORY** (4-0-4)
For graduate students only.

*Staff*

**522(S) DIRECTED READINGS IN MEDIEVAL HISTORY** (4-0-4)
For graduate students only.

*Staff*

**525(F) DIRECTED READINGS IN AFRICAN HISTORY** (4-0-4)
For graduate students only.

*Odhiambo, A.*

**526(S) DIRECTED READINGS IN AFRICAN HISTORY** (4-0-4)
For graduate students only.

*Odhiambo, A.*

**527(F) DIRECTED READINGS IN NONWESTERN HISTORY** (4-0-4)
For graduate students only.

*Staff*

**528(S) DIRECTED READINGS IN NONWESTERN HISTORY** (4-0-4)
For graduate students only.

*Staff*

**529(F) DIRECTED READINGS IN MODERN EUROPEAN HISTORY I** (4-0-4)
For graduate students only.

*Staff*

**530(S) DIRECTED READINGS IN MODERN EUROPEAN HISTORY I** (4-0-4)
For graduate students only.

*Staff*

**531(F) DIRECTED READINGS IN MODERN EUROPEAN HISTORY II** (4-0-4)
For graduate students only.

*Staff*

**532(S) DIRECTED READINGS IN MODERN EUROPEAN HISTORY II** (4-0-4)
For graduate students only.

*Staff*

**533(F) GRADUATE COLLOQUIUM IN EUROPEAN HISTORY** (4-0-4)
For graduate students only.

*Wolin, R.*

**535(F) GRADUATE COLLOQUIUM IN AMERICAN HISTORY** (4-0-4)
For graduate students only. Not offered 1993-94.

*Boles, J.*

**540(F) REVISIONISM IN AFRICAN HISTORY** (4-0-4)
The course is concerned with the impact of theoretical constructs and debates on African historiography. It takes note of the intellectual debates that have been organized around modernization, underdevelopment, dependency, world systems and the Marxist/Neo-Marxist theories. These postulations, originally derived from historical studies in Europe, Asia, and Latin America, have simultaneously opened up African history to a wider comparative discourse while at the same time imposing hegemony on the nature of that discourse. This course is concerned in part with the histories of these theories. In the second part it will discuss the histories of certain specific concepts, including feudalism, Oriental despotism, modes of production, capitalism, social classes, nationalism, race, ethnicity, peasantries, class consciousness, the state—in their home contexts—and the ways they have been applied to the study of African history. Third, the course will discuss in what ways these theories and concepts have influenced the evolution of specific historiographies in Africa: "Africanist," "nationalist" and "radical." Not offered 1993-94.

*Odhiambo, A.*

**550(F) MAIN ISSUES IN CARIBBEAN HISTORY** (4-0-4)
This course will focus on some of the major local and international forces and ideas that have shaped the course of the history of the Caribbean. Not offered 1993-94.

*Cox, E.*

**552(F) GRADUATE SEMINAR IN HISTORICAL INTERPRETATION** (4-0-4)
For graduate students only. Not offered 1993-94.

*Haskell, T.*

**553(F) HISTORY AS TEXT IN MODERN FRANCE** (4-0-4)
Graduate seminar. Cross-listed with Fren 553. Not offered 1993-94.

*Sherman, D.*

**570(S) THEORY AND PRACTICE IN FRENCH CULTURAL HISTORY** (4-0-4)
Graduate seminar. Cross-listed with Fren 570. Not offered 1993-94.

*Sherman, D.*

**571(S) SOCIETY, CULTURE, AND THE BODY IN MODERN FRANCE** (4-0-4)
This seminar will consider the body as a central text, metaphor, and contested site in French culture and society since the eighteenth century. Readings, taken from a variety of literary genres as well as from history, art history, and theory, will cover such topics as sexuality and sexual difference, science, discipline and regulation, domination and submission, and the construction of the body in such fields as pornography, lyric poetry, political imagery, and painting. Taught in English. Cross-listed as Fren 571.

*Sherman, D., Harter, D.*

**581(S) GRADUATE SEMINAR IN MEDIEVAL HISTORY** (4-0-4)
Offered when demand justifies. For graduate students only.

*Drew, K.*

**582(S) GRADUATE SEMINAR IN MODERN BRITISH HISTORY** (4-0-4)
For graduate students only. The topic in 1994 will be law and gender. Specialization in British history not necessary.

*Wiener, M.*

**583(F) GRADUATE SEMINAR IN SOUTHERN HISTORY** (4-0-4)
Religion and slavery in the Old South. Not offered 1993-94.

*Boles, J.*

**584(S) GRADUATE SEMINAR IN SOUTHERN HISTORY** (4-0-4)
Religion and slavery in the Old South. Not offered 1993-94.

*Boles, J.*

**585(F) U.S. CONSTITUTIONAL AND LEGAL HISTORY** (4-0-4)
Significant constitutional and legal questions stressing civil liberties, criminal law, civil-military relations, race relations, and urban problems.

*Hyman, H.*

**586(S) U.S. CONSTITUTIONAL AND LEGAL HISTORY** (4-0-4)
Significant constitutional and legal questions stressing civil liberties, criminal law, civil-military relations, race relations, and urban problems.

*Hyman, H.*

**591 GRADUATE READING** (1-0-1)
Graduate reading in conjunction with another course.

*Staff*

**592 GRADUATE READING** (1-0-1)
See Hist 591.

*Staff*

**593 GRADUATE READING** (1-0-1)
See Hist 591.

*Staff*

**800(F) PH.D. RESEARCH** (Variable)
Doctoral dissertation.

*Staff*

**800(S) PH.D. RESEARCH** (Variable)
Doctoral dissertation.

*Staff*

# Human Performance and Health Sciences

## The School of Humanities

**Professor Poindexter,** *Chair*
**Professors Bearden, Iammarino, Lee, and Spence**
**Adjunct Professors Bryan, Butler, Fred, Risser, Skaggs, and Weinberg**
**Associate Professors Disch and Etnyre**
**Assistant Professors Long, Wilde, and Thomas**
**Instructor Phenix**
**Lecturers Bordelon, Eggert, Kincher, Lidvall, Lindley, Miller, Pyung-Soo, and Vandenberg**

*Degrees Offered:* B.A. with major in Human Performance; health education as teaching field only.

A minimum of 120 semester hours is required for the Bachelor of Arts with a major in Human Performance. The university distribution requirements described on pages 68-90 must be satisfied. Students majoring in Human Performance must complete 38 semester hours of physical education courses and laboratories in accordance with one of the specified Human Performance tracks. Human Performance 105, 120, and 250, and six activity laboratories are required in all tracks. For additional information about the tracks, consult with a departmental faculty adviser.

Both physical education and health education are offered as fields for teacher certification. Students wishing to qualify for teacher certification by the Texas Education Agency must complete 12 semester hours of English, 6 semester hours of American history, 6 semester hours of federal and state government, 18 semester hours of education, 24 semester hours in another teaching field, and 24 semester hours of health education courses or physical education courses, according to which is selected for the teaching field. Requirements are subject to change based on Texas Education Agency regulations.

Health education courses cannot be used to fulfill the requirements for a major in physical education but may be taken as electives by all students.

### *Human Performance Courses*

**101(F/S) BASIC PHYSICAL EDUCATION** (0-2-0)
Skill development, knowledge of rules and strategy, concepts of conditioning, and participation in two physical activities. Required for baccalaureate degree. Normally, it is expected that the requirement for Phed 101-102 be completed during the freshman year. Prerequisite: Health Data Form must be submitted to the Health Service prior to class registration.
*Spence, D.*

**102(F/S) BASIC PHYSICAL EDUCATION** (0-2-0)
Skill development, knowledge of rules and strategy, concepts of conditioning, and participation in two physical activities. Required for baccalaureate degree.
*Spence, D.*

**105(F) CONTEMPORARY SPORT** (3-0-3)
Interactions of history, philosophy, economics, politics, education, and contemporary social issues in the evolution of sport. For first- and second-year students.

*Poindexter, H.*

**120(S) SCIENTIFIC FOUNDATIONS** (3-0-3)
An introduction to the scientific areas of human movement: anatomy and physiology, physiology of exercise, motor learning, and kinesiology.

*Thomas, D.*

**122(F) BASIC AQUATICS** (0-3-1)
Instruction in basic aquatic activities, including mechanics of the various strokes and basic lifesaving.

*Bearden, F.*

**124(S) CONDITIONING** (0-3-1)
Concepts and experience in health-related fitness and conditioning for improved performance. Prerequisite: concurrent or previous enrollment in Phed 120 or previous enrollment in Phed 101 and 102.

*Long, K.*

**125 LIFEGUARD TRAINING** (0-3-1)
Aquatic instruction leading to Lifeguard Training Certificate.

*Bearden, F.*

**126(S) WATER SAFETY** (0-3-1)
Focus on skills, theory, teaching progressions, and practice teaching of swimming, lifesaving, and beginning swimming. Completion of requirements leads to certification as Water Safety Instructor. Prerequisite: currently valid Lifeguard Training Certificate.

*Vandenberg, K.*

**128 RACQUET SPORTS** (0-3-1)
Skill development, knowledge of rules and strategy, concepts of conditioning, and participation in badminton, racquetball, and squash. Prerequisite: concurrent or previous enrollment in Phed 105 or 120 or previous enrollment in Phed 101 and 102.

*Spence, D.*

**204(S) PSYCHOLOGICAL FOUNDATIONS** (3-0-3)
Investigation of the theoretical and empirical psychological foundations of sport and physical activity.

*Poindexter, H.*

**205(F) SPORT AND SOCIETY** (3-0-3)
A study of the development of contemporary sport and its interrelationships with existing social institutions.

*Lee, E.*

**223(S) INDIVIDUAL SPORTS** (0-3-1)
Skill development, knowledge of rules strategy, concepts of conditioning, and participation in fencing, golf, and archery. Prerequisite: concurrent or previous enrollment in Phed 105 or previous enrollment in Phed 101 and 102. Prerequisite: permission of instructor.

*Bearden, F.*

**228(F) TENNIS** (0-3-1)
Skill development, knowledge of rules and strategy, concepts of conditioning, and participation in tennis. Prerequisite: Concurrent or previous enrollment in Phed 105 or previous enrollment in Phed 101 and 102.

*Etnyre, B.*

**250(S) ANATOMY AND PHYSIOLOGY** (3-0-3)
Introduction to human anatomy and physiology, with emphasis on gross structure and basic concepts of function.

*Spence, D.*

**260(F) INTRODUCTION TO SPORT MANAGEMENT** (3-0-3)
Management theory and practice related to the administration of sports organizations.

*Wilde, J.*

**300 SPORT MANAGEMENT INTERNSHIP** (Credit variable)
Internship experience for senior students in sports management track. Prerequisite: permission of instructor.

*Wilde, J.*

**302(S) KINESIOLOGY** (3-0-3)
Anatomical and mechanical bases of human movement with emphasis on the analysis of sport and exercise skills. Prerequisite: Phed 120, 250, or permission of instructor.

*Thomas, D.*

**304(S) FIRST AID/EMERGENCY CARE/CPR** (2-1-2)
The American Red Cross certification program for emergency care procedures for illness, traumatic injuries, and cardiopulmonary resuscitation. Limited enrollment: 25. Also offered as Heal 308.

*Vandenberg, K.*

**305(F) EXCEPTIONAL CHILDREN** (3-0-3)
Areas of exceptionality displayed by children within the school or institution relative to the physical educator's role.

*Bearden, F.*

**308(S) PROGRAM DEVELOPMENT IN PHYSICAL EDUCATION** (3-0-3)
Teaching methodology, program development, and implementation of teaching techniques and class management. For junior and senior students.

*Lee, E.*

**311(F) MOTOR LEARNING** (3-0-3)
Physiological, neurological, and psychological factors affecting voluntary skill acquisition and development.

*Poindexter, H., Etnyre, B.*

**314(F/S) METHODS PRACTICUM** (0-3-1)
Practicum in the application of teaching methods in physical education activities. Prerequisite: concurrent or previous enrollment in Phed 308.

*Lee, E.*

**319(F) TESTS AND MEASUREMENTS** (3-0-3)
Introduction to basic statistics, test construction and evaluation, and elementary measurement theory in physical education.

*Disch, J.*

**321(F) PHYSIOLOGY OF EXERCISE** (3-0-3)
Physiologic response of the circulatory, respiratory, and muscular systems to exercise stress. Prerequisite: Phed 120 or permission of instructor.

*Long, K., Thomas, D.*

**323(F) PHYSIOLOGY OF EXERCISE** (0-3-1)
Measuring physiologic response to exercise stress. Prerequisite: concurrent enrollment in Phed 321.

*Long, K., Thomas, D.*

**326(F) TRAINING ROOM PROCEDURES** (0-3-1)
Field application in prevention, management, and rehabilitation of athletic injuries. Limited enrollment: 24. For junior and senior students.

*Eggert, A.*

**334(S) TEAM SPORTS** (0-3-1)
Selected team sports including volleyball and soccer. Prerequisite: Phed 124 and two of: Phed 122, 126, 128, 135, 223, 228, and 337.

*Disch, J.*

**337(F) BASIC MOVEMENT—DANCE** (0-3-1)
An introduction to modern dance techniques and improvisation.

*Phenix, L.*

**338(S) DANCE TECHNIQUE AND IMPROVISATION** (0-3-1)
Modern dance techniques and improvisation.

*Phenix, L.*

**350 COACHING INTERNSHIP** (Credit variable)
Internship experience for senior students in coaching track. Prerequisite: permission of instructor prior to the semester in which the internship will be taken.

*Disch, J.*

**362(S) SPORT MARKETING AND PROMOTION** (3-0-3)
An examination of marketing and promotion strategies in sport. For junior and senior students only.

*Lee, E.J.*

**375 SPORTS SCIENCE INTERNSHIP** (Credit variable)
Internship experience for senior students in sports medicine and sports science tracks. Prerequisite: permission of instructor.

*Spence, D.*

**412(F) MOTOR CONTROL**
Exploration of neurophysiological, behavioral, and biomechanical aspects of motor control.

*Etnyre, B.*

**431(S) COACHING OF BASKETBALL** (2-0-2)
Study of coaching methods and strategies for developing high level athletic performance.

*Disch, J.*

**432(S) COACHING OF BASEBALL** (2-0-2)

*Disch, J.*

**433(F) COACHING OF FOOTBALL** (2-0-2)

*Etnyre, B.*

**434(S) COACHING—TRACK AND FIELD** (2-0-2)

*Spence, D.*

**436(F) COACHING OF VOLLEYBALL** (2-0-2)

*Disch, J.*

**464(S) SPORT AND THE LAW** (3-0-3)
Legal aspects of sport and recreation. For junior and senior students only.
*Wilde, J.*

**490(S) SEMINAR IN SPORTS MEDICINE**
Case study approach is used to present sports related injuries, management, and rehabilitation. Prerequisite: Hper 341.
*Spence, D.*

**495(F) INDEPENDENT STUDY** (Credit variable)
For junior and senior students only.
*Lee, E.*

**496(S) INDEPENDENT STUDY** (Credit variable)
See Phed 495.
*Lee, E.*

**498 SPECIAL TOPICS** (Credit variable)
*Poindexter, H.*

*Health Courses*

**103(F) NUTRITION** (3-0-3)
Concepts underlying the science of nutrition: food composition, calories and needs for energy, special nutrients, and nutritional deficiencies.
*Long, K.*

**107(F) CONCEPTS IN HEALTH SCIENCE** (3-0-3)
Designed to acquaint prospective health educators with the structure and function of health in our society.
*Miller, M.*

**201(F) INTRO-ENVIRONMENTAL SYSTEMS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
The chemical, physical, and biological components of the environment as natural resources and the effect of pollution on their maintenance and utilization. Also offered as Envi 201.
*Ward, C.*

**208(S) CHEMICAL ALTERATIONS OF BEHAVIOR** (3-0-3)
Investigates the use, abuse, and misuse of alcohol, tobacco, and psychoactive drugs.
*Miller, M.*

**306(S) HUMAN SEXUALITY** (3-0-3)
Designed to explore the physiological, psychological, and sociological parameters of human sexuality, to provide accurate sex information, and to develop healthy attitudes toward sexuality.
*Iammarino, N.*

**308(S) FIRST AID/EMERGENCY CARE/CPR** (3-0-3)
American Red Cross certification program for emergency care procedures for illness, traumatic injuries, and cardiopulmonary resuscitation. Enrollment limited to 25. Also offered as Phed 304.
*Vandenberg, K.*

**407(F) DISEASES OF THE HUMAN ORGANISM** (3-0-3)
Study of communicable, noncommunicable, and behavioral diseases with emphasis on the disease process and basic epidemiologic methods.
*Iammarino, N.*

**410(S) PROGRAM DEVELOPMENT IN HEALTH EDUCATION** (3-0-3)
Content and methods in teaching health education; program materials and curriculum construction in secondary school health education programs. Required for Teaching Certification in Health.

*Iammarino, N.*

**495(F) INDEPENDENT STUDIES** (Credit variable)

*Iammarino, N.*

**496(S) INDEPENDENT STUDIES** (Credit variable)

*Iammarino, N.*

**498(F) TOPICS IN HEALTH EDUCATION** (Credit variable)

*Iammarino, N.*

**498(S) UNDERSTANDING CANCER** (2-0-2)
Examination of cancer from a biological, psychological, and sociological perspective with emphasis on cancer epidemiology, prevention, and early detection.

*Iammarino, N.*

# Humanities

**Humanities Foundation Courses.** These courses are designed to provide a wide-ranging, critical, and integrated introduction to the humanities. In small group discussions, occasional lectures, and their own essays, students will encounter enduring issues in Western civilization. For students planning a humanities major, Humanities 101-102 will provide an excellent foundation for advanced study; for other students these courses offer valuable contributions to general education. For this reason they are required of all science-engineering, architecture, and music majors.

**101(F) INTRODUCTION TO HUMANITIES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1 OR I.2
A study of representative works in the Western tradition in literature, philosophy, and history, from Homer to Chaucer. Discussion sections.
A FOUNDATION COURSE.

*Staff*

**102(S) INTRODUCTION TO HUMANITIES** (3-0-3).
*DISTRIBUTION COURSE: CATEGORY I.1 OR I.2
Continued study, in discussion and occasional lectures, of representative works in the Western tradition, from Michelangelo to Martin Luther King.
A FOUNDATION COURSE.

*Staff*

**Joint Venture (Business and the Humanities).** The Rice Joint Venture Program, sponsored by the Career Services Center, is designed to provide liberal arts majors the opportunity to explore their interests in a possible business career. Students accepted for the program will register for Humanities 301, which will be offered in the fall and spring. The course is an introduction to business with emphasis on basic business concepts. As a part of the curriculum, each student will also do an internship with a Houston-area business organization during the semester. Students will gain an understanding of the business community while gaining valuable experience and contacts in the business world.

**301 INTRODUCTION TO BUSINESS** (3-0-3).
Prerequisite: prior acceptance to Joint Venture Internship program or permission of instructor. Preference given to humanities majors.

*Sanborn, R., Matherly, C.*

*Major in* **Ancient Mediterranean Civilizations**
See page 162 for full description.

*Major in* **Asian Studies**
See page 211 for full description.

*Major in* **Medieval Studies**
See page 422 for full description.

*Major in* **The Study of Women and Gender**
See page 514 for full description.

*Other Humanities Listings*

**201(S) PUBLIC SPEAKING** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.2
Prerquisite: permission of instructor.

*Huston, D.*

**206 LIBRARY RESEARCH SOURCES AND STRATEGIES**
Students will make use of print and computerized library resources to locate and evaluate information on topics of their choice. This class is especially useful when taken the same semester as a course where a research project is required.

*Segal, J.*

**211(F) INTRODUCTION TO ASIAN CIVILIZATIONS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.2
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 social change. Also offered as Hist 206 and Reli 211.

*Klein, A., Smith, R.*

**230(S) RETHINKING THE WESTERN TRADITION** (3-0-3)
This course seeks to provide a critical introduction to the major themes of modern European intellectual history from the eighteenth century to the historical present. We will concentrate on major intellectual movements, such as the Enlightenment and romanticism, examining the way in which these currents influenced developments in philosophy, literature, the arts, and political theory. Significant attention will also be paid to the ways in which these movements emerge from and respond to the historical circumstances of the day. The course will begin by reviewing Nietzsche' provocative assessment of "European nihilism" in order to pose the question: can the Western tradition truly withstand such a withering critique? Also offered as Hist 230.

*Wolin, R.*

**270(F) INTRODUCTION TO WOMEN'S STUDIES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.2
An introductory survey of issues in the study of women, including women's social, political, and legal status in the U.S. and around the world; feminist perspectives on sexuality, gender, family, and reproduction; and the implications of these perspectives for social and critical theory.

*Staff*

**305(F) ADVANCED PUBLIC SPEAKING** (3-0-3)
Designed for students with at least two prior years of instruction of 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. Permission of instructor.

*Fain, M.*

**307(S) ORAL INTERPRETATION/LITERATURE** (3-0-3)
Comprehensive study of oral interpretation theory and techniques applied to performance of dramatic, poetry, and prose literature.

*Fain, M.*

**315(F) WRITERS' GROUPS** (1-0-1).
Students meet weekly for one hour in groups of five or six to read aloud and comment on papers in progress. Students form groups and choose meeting times at the beginning of the semester. Writers may write on any academic subject (no movie or TV scripts, advertising, etc.) using assignments from other classes or projects of their own choice. A writing consultant attends meetings and keeps records of each group's progress. Not offered 1993-94.

*Driskill, L.*

**316(S) WRITERS' GROUPS** (1-0-1).
Same as Huma 315. Not offered 1993-94.

*Driskill, L.*

**317(F) CONSULTING WITH STUDENT WRITERS** (1-0-1)
Excellent student writers prepare for working with other student writers by studying writing processes, writing problems, texts, and exercises and by role-playing. Lasts eight weeks. Not offered 1993-94.

*Driskill, L.*

**318(S) CONSULTING WITH STUDENT WRITERS** (1-0-1)
Same as 317.

*Driskill, L.*

**320(F) INTRODUCTION TO MEDIEVAL CULTURE** (3-0-3).
*DISTRIBUTION COURSE: CATEGORY I.1
An interdisciplinary course providing insights into the literature, art, philosophy, history, music, science, and cuisine of the Middle Ages, with guest lectures by specialists in various fields, slide lectures, and full-length films. Along the way we will also examine medieval Judaism, varying perspectives of chivalry and feudalism, forgery, the rights of the poor, and the role of medieval women. Not offered 1993-94.

*Chance, J.*

**330(F) INTRODUCTION TO TRADITIONAL CHINESE POETRY** (3-0-3)
A critical survey of traditional Chinese poetry and poetics focusing on important literary texts and some theoretical essays. Topics will include "words and meanings," the formation and transformation of poetic genres, the rhetorical function of figurative language, allegory, poetic allusions and intertextuality, poems by women (and poems in women's voices), etc. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required. Cross-listed as Ling 330.

*Qian, N.*

**332(S) CHINESE FILMS AND MODERN CHINESE LITERATURE** (3-0-3)
This course is designed to approach modern Chinese literature through visual images (Chinese films, subtitled in English). All films shown for this course will be adaptations from modern Chinese fiction; therefore, our analysis of the films will be connected to the original texts. The discussion will be conducted on the basis of literary history and narrative structure, with explicit attention given to narratology and movie theory. Films will be shown outside of class; in-class time will be devoted to lectures and discussions on the films. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required. Cross-listed as Ling 332.

*Qian, N.*

**334 INTRODUCTION TO TRADITIONAL CHINESE NARRATIVE** (3-0-3)
This course will introduce the basic features of traditional Chinese narrative, including historical records, biographies, novels, and short stories. Our attention will focus primarily upon narrative structure and characterization. We will analyze the texts using Western as well as Chinese literary theories. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required. Cross-listed as Ling 334.

*Qian, N.*

**376(S) GENDER AND SCIENCE** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY I.1
A review of contemporary scholarship on the experiences of women in the natural sciences, the role of gender in the sciences, women and technology, and feminist critiques of traditional approaches to scientific methodology. Not offered 1993-94.

*Longino, H.*

**401(S) INTERDISCIPLINARY SEMINAR IN ANCIENT MEDITERRANEAN CIVILIZATIONS**
Not offered 1993-94.

**420(S) INTEGRATIVE INTERDISCIPLINARY SEMINAR** (3-0-3)
Senior seminar for students majoring in the study of women and gender. Topic varies yearly. Prerequisites: Huma 270 and four additional courses in the study of women and gender major. Also offered as Soci 395.

*Long, E.*

# Linguistics

## The School of Humanities

**Professor Copeland,** *Chair*
**Professors P.W. Davis, Lamb, and Tyler**
**Associate Professors Polanyi and Urrutibéheity**
**Visiting Assistant Professor Barlow**
**Adjunct Professors Hockett, Mitchell and Wallace**
**Assistant Professors Gildea, Kemmer and Qian**
**Instructor Chen**
**Adjunct Lecturer Baker**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** As language plays an important role throughout human life, linguistics is by its nature an interdisciplinary field. The undergraduate major thus includes at least two non-linguistics courses, chosen in accordance with an area of concentration. The major may be undertaken with any of three areas of concentration: Cognitive Science, Language, Textual Semiotics. All majors are required to take at least eight courses (24 semester hours) in linguistics, including at least the three core courses: 300 (Linguistic Analysis), 301 (Phonology), and 402 (Syntax and Semantics). The remaining requirements depend on the student's area of concentration, as follows:

**Cognitive Science Concentration.** Besides the three core courses, the eight required courses in linguistics must include at least two of the following: 306 (Cognitive Linguistics), 315 (Information Structures), 317 (Computation for Linguists), 411 (Neurolinguistics) and 412 (Language and Intelligence). In addition, the major must include at least two courses (six semester hours) in cognitive studies in other departments, chosen in consultation with the undergraduate major adviser. Appropriate courses in other departments include relevant courses in anthropology, psychology, and computer science.

**Language Concentration.** In addition to the eight required courses in linguistics, at least two semesters in a foreign language at the level of 300 or higher and two semesters in another language at the level of 200 or higher. Chinese and Sanskrit are especially recommended.

**Discourse Concentration.** At least two semesters in a foreign language at the level of 300 or higher and at least two courses in textual semiotics. The latter, which may be counted among the eight required courses in linguistics, may be any two of the following: English 396 (Language and Philosophy in Literature), Linguistics 414 (Hermeneutics and Linguistic Anthropology), 420 (Literary Semiotics), 422 (Text and Context), and 490 (Discourse Analysis).

In addition to the departmental requirements for the major, students must satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**Honors Program.** The primary purpose of the Honors Program is to provide selected undergraduate majors with an opportunity to receive advanced training, particularly in the planning and execution of independent research within their chosen areas of specialization in linguistics. A secondary purpose of the program is to establish an administrative framework for the formal recognition of outstanding students. Majors considering a career in linguistics are strongly encouraged to apply, as are all others who desire the experience of an intensive, individual research project as part of their undergraduate education.

Application to the Honors Program should be made in person to the undergraduate adviser no later than the tenth week of the second semester of a student's junior year. In support of the application, the student must prepare a brief description of the proposed research project signed by the faculty member who is to supervise the work. Acceptance into the program is at the discretion of the linguistics faculty. A statement of eligibility requirements and program requirements is available in the departmental office.

**Graduate Program.** The graduate program admits students planning to study for the Ph.D. degree on a full-time basis. It is structured to ensure for each student a thorough grounding in general linguistics and a sound introduction to advanced research in some field of special interest. Linguistics at Rice is treated as an inherently interdisciplinary field, with connections not only to language and literature studies but also to psychology, anthropology, computer science, and philosophy. Study of computer science enhances a student's career opportunities as well as his or her research skills. Linguistics, as practiced at Rice, extends the concepts and analytical tools of the field to the broader class of language-like systems in general, including literary and artistic works and other products of human culture as well as information systems occurring in nature.

Undergraduate preparation need not include linguistics courses as such but should include courses in at least two of the following areas: anthropology, cognitive science, computer science, electrical engineering, foreign languages, logic, discrete mathematics, philosophy, and psychology. Fellowships are available for especially well-qualified students.

During the first year of residence, each entering graduate student will work closely with the linguistics graduate adviser to choose a plan of study congruent with the demands of the program and with his or her individual interests. Subsequent training is by course work, seminars, independent field study, and guided research. Students are encouraged to select areas of specialization that fit the research interests and activities of the faculty.

All students are expected to acquire a command of general linguistics and to select one or two areas of concentration. Recommended areas of concentration are:

| | |
|---|---|
| Anthropological Linguistics | English Linguistics |
| Cognitive Linguistics | Germanic Linguistics |
| Computational Linguistics | Romance Linguistics |

At the end of the second semester of residence, each student is required to undergo an oral qualifying examination. The purpose of this examination is to assess the student's progress and potential as well as to identify areas of strengths and weaknesses. Continuation to the second year requires satisfactory performance on this examination. Students who pass with distinction are urged to go on directly to the Ph.D. degree. Others are eligible for a master's degree upon completion of an appropriate thesis.

Following successful completion of the qualifying examination, each student, on the basis of discussions with faculty members, and in accordance with his or her proposed area of concentration, selects a committee of advisers from among the faculty, typically a major adviser and two or three minor advisers. The major adviser will act as chairman of the committee. During the student's tenure in the program, the committee members serve as mentors and assist the student in designing an individually tailored program of advanced studies and research. The composition of the committee can be changed at any time upon agreement between the student and the advisers. Emphasis is placed on a close working relationship between the student and the members of this special committee.

On completion of the required course work and by agreement of the special committee, the student presents himself or herself to the faculty for a public comprehensive examination. This examination consists of written and oral parts and covers general linguistics and the area(s) of concentration. Responsibility for administering the examination and the determination of the results rest with the student's special committee. The linguistics graduate adviser is an *ex officio* member of each examining committee.

For the Ph.D. degree, competence in two foreign research languages is required. In addition, a structural knowledge of a non-Indo-European language is expected. The appropriateness of the languages is determined in consultation with the graduate adviser, and in some cases specific research languages may be required because of the student's research area.

As a supplement to formal instruction, graduate students are given the opportunity to gain teaching experience by participating with the faculty in the design of courses and instruction of undergraduate students.

Each student is expected to present a dissertation research proposal to his or her special committee, normally by the time of the comprehensive examination. Such a proposal is required for admission to candidacy, and it must be approved by the student's special committee. At this time a dissertation adviser is selected. Normally, this is the chairman of the special committee, but with the agreement of the student and the committee members, a different dissertation adviser may be selected from within or from outside the special committee. Each student presents himself or herself for a public examination in defense of the completed dissertation. Responsibility for accepting the dissertation rests with the special committee.

## Linguistics

*Linguistics Courses*

**200 LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An introduction of the scientific study of language, the methods of linguistic prehistory, the language families of the world, and the interrelationships of language and thought. Also offered as Anth 200.

*Staff*

**300(S) LINGUISTIC ANALYSIS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
English and other languages as objects of scientific analysis; phonological structure, morphology and syntax, semantic structure, techniques of linquistic analysis. Also offered as Anth 300.

*Copeland, J.*

**301(F) PHONOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Articulatory phonetics, the analysis of speech; structural patterns that underlie speech sounds. Types of phonological structure found in the world's languages. Also offered as Anth 301.
*Barlow, M.*

**305(S) HISTORICAL LINGUISTICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The proccesses of linguistic change and their relationships to social and geographical contexts. Emphasis on Indo-European. Also offered as Anth 305. Prerequisite: Ling 200 or Ling 300 or Ling 301.
*Staff*

**306 COGNITIVE LINGUISTICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Language as a cognitive system.The study of linguistic data and of thought patterns expressed in language as evidence for the cognitive structures and processes that enable people to learn and use language. Prerequisite: Ling 200 or Ling 300 or permission of instructor. Not offered every year.
*Lamb, S.*

**309 PSYCHOLOGY OF LANGUAGE** (3-0-3)
Human and other animal communication, structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, language errors and disorders. Also offered as Psyc 309.
*Staff*

**313(F) LANGUAGE AND CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Investigation of the systematic relations between linguistic form and expression and culture. Also offered as Anth 313.
*Tyler, S.*

**315 INFORMATION STRUCTURES** (3-0-3)
Properties of selected semiotic systems. Relational networks, laws of form, digital logic networks. Computer data structures, human cognitive structures.
*Lamb, S.*

**316(F) THE LANGUAGE OF SONG** (3-0-3)
A linguistic approach to the study of songs, including folk songs and German Lieder. The relationship of words to music, the contribution of the music of a song to its interpretations, kinds of meaning expressed by music as opposed to words. Data include recorded songs and live performances.
*Lamb, S., Mitchell, D.*

**317(F) COMPUTATION FOR LINGUISTS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Computer programming for the processing of natural language data.
*Barlow, M.*

**330(F) INTRODUCTION TO TRADITIONAL CHINESE POETRY** (3-0-3)
A critical survey of traditional Chinese poetry and poetics, focusing on important literary texts and some theoretical essays. Topics will include "words and meanings," the formation and transformation of poetic genres, the rhetorical function of figurative language, allegory, poetic allusions and intertextuality, poems by women (and poems in women's voices), etc. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required. Also offered as Huma 330.
*Qian, N.*

**332(S) CHINESE FILMS AND MODERN CHINESE LITERATURE** (3-0-3)
This course is designed to approach modern Chinese literature through visual images (Chinese films, subtitled in English). All films shown for this course will be adaptations from modern Chinese fiction; therefore, our analysis of the films will be connected to the original texts. The discussion will be conducted on the basis of literary history and narrative structure, with explicit attention given to narratology and movie theory. Films will be shown outside of class; in-class time will be devoted to lectures and discussions on the films. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required. Cross-listed as Huma 332.

*Qian, N.*

**334 INTRODUCTION TO TRADITIONAL CHINESE NARRATIVE** (3-0-3)
This course will introduce the basic features of traditional Chinese narrative, including historical records, biographies, novels, and short stories. Our attention will focus primarily upon narrative structure and characterization. We will analyze the texts using Western as well as Chinese literary theories. All readings are in English translation. No previous knowledge of Chinese literature or the Chinese language is required. Cross-listed as Huma 334.

*Qian, N.*

**353(F) THE PHILOSOPHY OF LANGUAGE** (3-0-3)
Philosophical investigation of relations among language, thought, and reality. Specific topics include such notions as analyticity, meaning, reference, and speech act. Prerequisite: two courses in Ling or Phil. Also offered as Phil 353. Not offered every year.

*Grandy, R.*

**393(S) THE STRUCTURE OF ENGLISH WORDS** (3-0-3)

*Staff*

**394(S) STRUCTURE OF ENGLISH LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Introduction to modern English grammar, phonology, and semantics. Also offered as Engl 394.

*Staff*

**395(F) HISTORY OF THE ENGLISH LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Also offered as Engl 395. Not offered every year.

*Mitchell, E.*

**402(F) SYNTAX AND SEMANTICS** (3-0-3)
Study of semantic categories and their formal expression in morphological, syntactic, and lexical units and patterns. Also offered as Anth 402.

*Davis, P.*

**403(S) MODERN LINGUISTIC THEORY** (3-0-3)
Selected theories of language from de Saussure to the present.

*Staff*

**406(S) COGNITIVE STUDIES IN LINGUISTICS AND ANTHROPOLOGY** (3-0-3)
Relations between thought, language, and culture. Special emphasis given to natural systems of classification and the logical principles underlying them. Not offered every year. Also offered as Anth 406.

*Tyler, S.*

**407(F) FIELD TECHNIQUES AND ANALYSIS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Techniques and practice in the observation, analysis, and recording of a human language. Also offered as Anth 407.

*Davis, P.*

**408(S) FIELD TECHNIQUES AND ANALYSIS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Continuation of Ling 407.

*Davis, P.*

**409(F) SPECIAL TOPICS** (3-0-3)
Topic changes from year to year. May be repeated for credit. Prerequisite: Ling 300 or permission of instructor. Topic: Seminar in grammaticalization.

*Kemmer, S.*

**410(S) RHETORIC** (3-0-3)
Overview of classical series of rhetoric and followed by more intensive discussions both of contemporary theories and applications in a wide variety of disciplines. Also offered as Anth 412.

*Tyler, S.*

**411 NEUROLINGUISTICS** (3-0-3)
Language and the brain. Organization of the brain, localization of speech, language, and memory function; hemispheric dominance; pathologies of speech and language associated with brain damage.

*Lamb, S.*

**412 LANGUAGE AND INTELLIGENCE** (3-0-3)
The primary basis of language in human intelligence. Conclusions from ethology, comparative psychology, and the study of learning and memory are explored.

*Davis, P.*

**413 FORMAL THEORIES OF SYNTAX** (3-0-3)
A survey of current formal theories of syntax: government and binding theory, lexical functional grammar, generalized phrase structure grammar, and categorial grammar.

*Polanyi, L.*

**414 HERMENEUTICS AND LINGUISTIC ANTHROPOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Application of lingustic theory and method in the analysis of cultural materials. Discourse analysis; the structure and interpretation of texts and conversation. Also offered as Anth 414.

*Tyler, S.*

**415 SOCIOLINGUISTICS** (3-0-3)
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.

*Polanyi, L.*

**416(S) LINGUISTIC TYPOLOGY** (3-0-3)
Grammars and sound systems of languages are not endlessly different. Close study shows them to fall into a restricted number of types. A sample of languages will be examined to demonstrate the typological variety. Hypotheses concerning historical origins and limitations will be discussed.

*Kemmer, S.*

**417 COMPUTATIONAL LINGUISTICS** (3-0-3)
Prerequisite: Ling 317 or programming experience. Not offered every year.

*Staff*

**420 LITERARY SEMIOTICS** (3-0-3)
Studies in application of semiotic models to the study of literature. Also offered as Span 420.

*Kauffmann, R.*

**422 TEXT AND CONTEXT** (3-0-3)
Perspectives on literary and nonliterary language. Not offered every year.
*Polanyi, L.*

**423 THE SPANISH LANGUAGE** (3-0-3)
Synchronic study of modern Spanish phonology and syntax, including peninsular and Hispanic-American variants. Also offered as Span 423.
*Urrutibéheity, H.*

**424(S) STUDIES—HISPANIC LINGUISTICS** (3-0-3)
Topic changes from year to year. Also offered as Span 515.
*Urrutibéheity, H.*

**433 LINGUISTIC STRUCTURE OF GERMAN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Synchronic study of modern German phonology, syntax, and semantics, including aspects of discourse structure. Also offered as Germ 403.
*Copeland, J.*

**434 HISTORY OF THE GERMAN LANGUAGE** (3-0-3)
Aspects of the history of German phonology, syntax,and semantics (with related systems) from its Proto-Indo-European origins to the present. Also offered as Germ 434.
*Copeland, J.*

**435 TOPICS IN GERMANIC LINGUISTICS** (3-0-3)
Topic: Early biblical texts in Germanic. Not offered every year.
*Mitchell, E.*

**436 TOPICS IN SLAVIC LINGUISTICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
The Old Church Slavic language in its Indo-European, Balto-Slavic and Slavic contexts with emphasis on translation and analysis of representative Glagolitic and Cyrillic texts. Also offered as Slav 436.
*Jones, R.*

**437 A HISTORY OF LINGUISTICS** (3-0-3)
Linguistic theories from the book of "Genesis," the Pre-Socratics, Plato, Aristotle, the Alexandrians, the Stoics, the Modistae, the German Romantics, the Neo-Grammarians down to de Saussure. Readings will be from original sources only.
*Mitchell, E.*

**443(F) CHINESE LINGUISTICS** (3-0-3)
Mandarin syntax and semantics.
*Chen, L.*

**443(S) CHINESE LINGUISTICS: HISTORY OF CHINESE WRITING AND CALLIGRAPHIC ART** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The historical development, communicative function, and aesthetic aspects of the Chinese writing system. Some calligraphy is also included.
*Chen, L.*

**455(F) ANCIENT LANGUAGES/NEAR EAST** (3-0-3)
A survey of the languages of the ancient Near East, with emphasis on the Cuneiform system of writing and on Sumerian, Akkadian, and Hittite. Particular attention will be devoted to Hittite and its relationship to the Indo-European family of languages. Not offered every year.
*Baker, J.*

**456 ANCIENT LANGUAGES/NEAR EAST** (3-0-3)
Continuation of Ling 455, a survey of the languages of the ancient Near East, with emphasis on the Cuneiform system of writing and on Sumerian, Akkadian, and Hittite. Particular attention will be devoted to Hittite and its relationship to the Indo-European family of languages. Not offered every year.

*Baker, J.*

**457 ANCIENT LANGUAGES/NEAR EAST** (3-0-3)
A survey of the languages of the ancient Near East, with emphasis on the Cuneiform system of writing and on Sumerian and Akkadian. Particular attention will be devoted to Akkadian and its relationship to the Semitic family of languages. Not offered every year.

*Baker, J.*

**467 COMPUTATIONAL PROJECTS** (3-0-3)
Prerequisite: Ling 417 or permission of instructor.

*Lamb, S., Polanyi, L.*

**470 LANGUAGE DESCRIPTION** (3-0-3)
Theory and practice of describing linguistic systems, including various notation systems and their relative advantages and disadvantages, the types of information that should be included in a language description and ways of organizing it, computational techniques for testing descriptions, and devices to allow the modification and expansion of the linguistic system in the course of its use. Prerequisite: Ling 306 or permission of instructor.

*Lamb, S.*

**481 INDEPENDENT STUDY** (3-0-3)

*Staff*

**482 INDEPENDENT STUDY** (3-0-3)

*Staff*

**490 DISCOURSE ANALYSIS** (3-0-3)
Linguistic, social, and cultural constraints on the structure and interpretation of discourse. Formal modeling of discourse structure as a prerequisite for computational implementation of discourse theory.

*Polanyi, L.*

**500(S) LINGUISTIC ANALYIS** (3-0-3)
Techniques of linguistic analysis and description.

*Copeland, J.*

**501(F) PHONOLOGY** (3-0-3)
See Ling 301.

*Barlow, M.*

**502(F) SYNTAX AND SEMANTICS** (3-0-3)
See Ling 402.

*Davis, P.*

**503(S) MODERN LINGUISTIC THEORY** (3-0-3)
See Ling 403.

*Staff*

**505(S) HISTORICAL LINGUISTICS** (3-0-3)
See Ling 305.

*Staff*

**506 COGNITIVE LINGUISTICS** (3-0-3)
See Ling 306.

*Lamb, S.*

**507(F) FIELD TECHNIQUES AND ANALYSIS** (Credit variable)
See Ling 407.

*Davis, P.*

**508(S) FIELD TECHNIQUES AND ANALYSIS** (Credit variable)
Continuation of Ling 507.

*Davis, P.*

**516(S) HISTORY OF THE SPANISH LANGUAGE** (3-0-3)
May be repeated for credit when the topics vary. Also offered as Span 516.

*Urrutibéheity, H.*

**550 DEPARTMENTAL COLLOQUIUM** (1-0-1)
Faculty, graduate students, and invited guests meet weekly to present reports on current research or to discuss current issues in linguistics and semiotics.

*Kemmer, S.*

**551 SEMINAR IN LINGUISTIC THEORY** (3-0-3)
Current Theories of Syntax (F); Phonological Theory (S).

*Staff*

**552(F) SEMINAR IN SYNTAX AND SEMANTICS** (3-0-3)

*Kemmer, S.*

**553 SEMINAR IN LINGUISTIC STRUCTURE** (3-0-3)

*Staff*

**555(S) SEMINAR IN HISTORICAL LINGUISTICS** (3-0-3)
Languages of the World.

*Staff*

**570 LANGUAGE DESCRIPTION** (3-0-3)
See Ling 470.

*Lamb, S.*

**581(F) GRADUATE RESEARCH** (Credit variable)

*Staff*

**582(S) GRADUATE RESEARCH** (Credit variable)

*Staff*

**583(F) GRADUATE RESEARCH** (Credit variable)

*Staff*

**584(S) GRADUATE RESEARCH** (Credit variable)

*Staff*

**585 GRADUATE RESEARCH** (Credit variable)

*Staff*

**586 GRADUATE RESEARCH** (Credit variable)

*Staff*

**587 GRADUATE RESEARCH** (Credit variable)

*Staff*

**588 GRADUATE RESEARCH** (Credit variable)

*Staff*

**590(F) TEACHING LINGUISTICS** (Credit variable)

*Kemmer, S.*

**591(S) TEACHING LINGUISTICS** (Credit variable)

*Copeland, J.*

**636(S) ENGLISH AS A SECOND LANGUAGE** (1-0-1)

*Staff*

**800 GRADUATE RESEARCH** (Credit variable)

*Staff*

## Languages

*Chinese Courses*

**201(F) ELEMENTARY CHINESE I** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1
Note: 202 must be completed to receive distribution credit for 201.

*Chen, L.*

**202(S) ELEMENTARY CHINESE II** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1

*Chen, L.*

**301(F) INTERMEDIATE CHINESE I** (3-0-4)
* DISTRIBUTION COURSE: CATEGORY I.1

*Chen, L.*

**302(S) INTERMEDIATE CHINESE II** (3-0-4)
* DISTRIBUTION COURSE: CATEGORY I.1

*Chen, L.*

**401(F) CHINESE READING AND WRITING** (3-0-3)

*Staff*

**402(S) CHINESE READING AND WRITING** (3-0-3)

*Staff*

**440(F) THE CHINESE NOVEL: STUCTURE AND SYMBOLISM** (3-0-3)
An exploration via translation into the symbolic and structural world of the traditional Chinese novel. The structural principles, symbolism, and aesthetic assumptions in China's rich literary tradition, with special attention given to the greatest of all Chinese novels, *Dream of the Red Chamber*. Not offered every year.

*Chen, L.*

*Hebrew Courses*

**351(F) ELEMENTARY BIBLICAL HEBREW** (3-0-3)
No prior knowledge of Hebrew is assumed. The course covers all grammar and vocabulary needed for reading simple prose texts. The grammar will be approached through historical linguistics and through comparison of Hebrew with other Northwest Semitic languages whenever helpful. Also offered as Reli 351.

*Baker, J.*

**352(S) INTERMEDIATE BIBLICAL HEBREW** (3-0-3)
This course is a continuation of Ling 351 and aims to develop vocabulary and grammatical skills through reading biblical prose and poetic texts. Also offered as Reli 352. Prerequisite: Hebr 351.

*Katz, A.*

*Japanese Courses*

**101(F) ELEMENTARY JAPANESE I** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1

*Sato, H.*

**102(S) ELEMENTARY JAPANESE II** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1

*Sato, H.*

**201(F) INTERMEDIATE JAPANESE I** (3-1-3)
* DISTRIBUTION COURSE: CATEGORY I.1

*Sato, H.*

**202(S) INTERMEDIATE JAPANESE II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1

*Sato, H.*

**301(F) ADVANCED JAPANESE READING** (3-0-3)

*Sato, H.*

**302(S) ADVANCED JAPANESE READING** (3-0-3)

*Sato, H.*

*Korean Courses*

**101(F) ELEMENTARY KOREAN I** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1

*Yang, I.*

**102(S) ELEMENTARY KOREAN II** (3-1-4)
* DISTRIBUTION COURSE: CATEGORY I.1

*Yang, I.*

*Sanskrit Courses*

**301(F) INTRODUCTION TO SANSKRIT I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Not offered every year.

*Mitchell, E.*

**302(S) INTRODUCTION TO SANSKRIT II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.1
Not offered every year.

*Mitchell, E.*

# Managerial Studies

*Degree Offered:* B.A.

**NOTE: A new Managerial Studies Program will apply to freshmen entering Rice University beginning in 1993-94. A description of the new program is given at the end of this section.**

The managerial studies major is a preprofessional program for students planning management careers in either the private or public sector. The program is interdepartmental and leads to the degree of Bachelor of Arts, either as a terminal degree or as preparation for graduate professional studies in accounting, law, business, or public management. Courses are drawn from the departments of economics, computer science, computational and applied mathematics, statistics, political science, and psychology and include accounting courses offered as a service by the Jesse H. Jones Graduate School of Administration.

The program is designed to provide students with an understanding both of the environment in which business firms operate and of the tools employed by management in making decisions. To major in managerial studies, students must complete 45 semester hours of approved coursework in the following subject areas: (1) accounting, (2) economics, (3) finance, (4) statistics, (5) quantitative methods, (6) computing, (7) business law, and (8) psychology. A list of approved courses is available from the program director, Professor Stephen A. Zeff, 352 Herring Hall, or from the managerial studies program advisors in each of the participating departments.

An honors program is available in managerial studies. This program is designed (1) to provide students with the opportunity to enrich and to expand their knowledge of the managerial studies discipline by means of specified advanced coursework and/or independent research and writing and (2) to provide recognition for students who have demonstrated unusual competency in managerial studies. Students admitted to the honors program may elect certain graduate courses in accounting and administration as part of their major requirements.

The managerial studies program is administered by a committee consisting of faculty from the departments of computer science, economics, computational and applied mathematics, statistics, political science, and psychology and the Jones Graduate School of Administration as well as student representatives. The program director chairs this committee. Student records for all managerial studies majors are maintained in the office of the program director. The managerial studies program director assigns students an advisor closely related to the area in which they intend to specialize. Students should consult with their advisor as early as possible to ensure establishment of an appropriate plan of study.

While Rice does not offer an undergraduate degree in accounting, Rice seniors may apply to enter the degree program for the Master of Accounting (see Accounting and Administrative Science). Students may complete the Master of Accounting program in one year of graduate study if they have taken a prescribed set of prerequisite courses by the end of their senior year. For details, contact the Jesse H. Jones Graduate School of Administration in Herring Hall.

**Undergraduate Program.** Students majoring in managerial studies are required to take the following ten courses: Accounting 305, Computer Science 100, Economics 211 and 448, Computational and Applied Mathematics 376 or 378, Statistics 280, Political Science 309 and 310, and Psychology 101 and 231. Students may satisfy the

computer science, computational and applied mathematics, and statistics required courses by alternatives. In addition, students must take five electives from a list of approved courses in accounting, computer science, economics, computational and applied mathematics, statistics, political science, and psychology. All prospective majors should obtain the program information sheets and advising notes from the program director, Dr. Stephen A. Zeff, 352 Herring Hall, for full particulars about the major. A new Managerial Studies Program will apply to freshmen entering Rice University in 1993-94.

**New Managerial Studies Major**

Managerial Studies will become a 10-course major that requires a second major for freshmen who enter Rice University in 1993-94 and subsequent years. The student's first major may be any of the established departmental or interdepartmental majors, other than an area major. The ten courses constituting the Managerial Studies major will be the following:

Accounting 305-Introduction to Accounting
Economics 211-Principles of Economics I (microeconomics)
Economics 212-Principles of Economics II (macroeconomics)
Economics 448-Corporation Finance
Statistics 280-Elementary Applied Statistics
Computational and Applied Mathematics 376-Introduction to Management Science
Psychology 231-Industrial and Organizational Psychology
A course in the legal environment of business.
A course in business writing.
One elective to be chosen from the following three courses:
    Accounting 406-Management Accounting
    Accounting 411-Asset Accounting
    Econonics 370-Microeconomic Theory

As is the case with the major as it now stands, students having stronger mathematical backgrounds will be encouraged to take optional courses that cover the equivalent subject matter.

It is expected that the new courses in the legal environment of business and in business writing will be offered beginning in 1995-96.

Under the new Managerial Studies major, Psychology 101 will no longer be one of the required courses. Nonetheless, it is understood that the Department of Psychology will continue its policy that Psychology 101 is a prerequisite for Psychology 231.

Beginning in 1994-95, students who entered Rice University prior to 1993-94 may opt for the new Managerial Studies major so long as they will be completing a second major as indicated above. Those students will be expected to conform to the new curriculum as defined above. There is a possibility, however, that the two new courses will not be offered as soon as 1994-95. A student's ability to opt for the new major depends on when the two new courses are introduced into the curriculum. If it becomes evident by the end of the student's penultimate year at Rice that the two new courses will not be introduced during the following year, he or she should revert to completing the 15-course (*i.e.*, the current) Managerial Studies major. To be safe, students should not opt for the new major until the introduction of the new courses actually occurs. Interested students should consult the director of the Managerial Studies Program on such matters.

*Managerial Studies Courses*

**495(F) SENIOR HONORS THESIS** (3-0-3)
Completion of senior honors thesis. Open only to seniors in the managerial studies honors program.

*Zeff, S*

**496(S) SENIOR HONORS THESIS** (3-0-3)
See Mana 495.

*Zeff, S*

**497(F) INDEPENDENT STUDY** (3-0-3)
Independent study on an approved project under faculty supervision. Enrollment by special permission.

*Zeff, S*

**498(S) INDEPENDENT STUDY** (3-0-3)
See Mana 497.

*Zeff, S*

# Mathematics

## The Wiess School of Natural Sciences

**Professor Hardt,** *Chair*
**Professors Boshernitzan, Harvey, Hempel, Jones, Polking, Ryan, Semmes, Veech, and Wells**
**Associate Professors Cochran, Forman, Gao, and Wolf**
**Assistant Professor Stong**
**Instructors Anderson, Lohrenz, Radunskaya, Tonegawa, and Zulli**
**Lecturer Zweck**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** There are two programs for students majoring in mathematics.

1. *Regular major.* Mathematics 101, 102, 211, 212; or 221, 222; and at least 24 semester hours (eight courses) in courses numbered 300 or above in the Department of Mathematics. Students can receive advanced placement credit for Mathematics 101 by achieving a score of 4 or 5 on the AP AB level test or for Mathematics 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 of Mathematics for a waiver of the calculus requirements for a major in mathematics. Entering students are encouraged to enroll in the most advanced course commensurate with their background, and thorough advice is available from the mathematics faculty during Freshman Week.
2. *Double major.* The requirements for the double major are the same as above with the exception that up to nine of the 24 semester hours numbered 300 or above can be replaced by approved mathematics-related courses.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-88.

**Graduate Program.** Admission to graduate study in mathematics will be granted to a limited number of students who have indicated ability for advanced and original work. Normally, one or two years are required after the bachelor's degree to obtain an M.A. degree and three or four years to obtain a Ph.D. An M.A. is not a prerequisite for the Ph.D.

A number of graduate scholarships and fellowships are available and will be awarded on the basis of merit. As part of the graduate education in mathematics, each graduate student is normally expected to engage in teaching or other instructional duties. Generally, fewer than six hours a week are devoted to such duties.

**Qualifying Examinations.** The qualifying examinations in mathematics consist of two parts: the general examination and the advanced examination.

1. *General examinations:* It consists of three examinations covering algebra, analysis, and topology. The examinations will be given two times a year, at the start of each semester. A student must take at least one examination after the third semester of graduate study. At least one examination must be passed

by the beginning of the fourth semester and all three examinations must be passed by the start of the fifth semester. A student may take an examination several times and is encouraged to begin taking the general examinations as soon as possible.

2. *Advanced oral examination.* After completing the general examination, the student should prepare for an advanced oral examination by selecting some special field (e.g., homotopy theory, several complex variables, group theory, etc.) and submitting the topic to the departmental graduate committee for approval. The time of the advanced examination will be scheduled by the graduate committee and will normally be within six to nine months after the general examination. A student who fails the advanced examination may, with the approval of the graduate committee, be allowed to retake it (on the same or possibly a different topic) generally not be allowed to take the advanced examination more than twice.

**Requirements for the Degree of Master of Arts:**

1. Satisfactory completion (grade of "B" or better) of a course of study approved by the department and fulfillment of the general rules of the university (described on pages 137-139). Transfer of credits from another university will be allowed only when approved by both the department and the University Graduate Council.
2. Satisfactory performance on an examination in at least one approved foreign language (French, German, or Russian).

Other requirements for the master's degree may be satisfied in either of the following ways:

1. Completion of all the requirements for qualification as a candidate for the doctoral degree as given below.
2. Presentation and oral defense of an original thesis acceptable to the department.

**Requirements for the Degree of Doctor of Philosophy:**

1. Satisfactory completion (grade of "B" or better) of a course of study approved by the department. Transfer of credits from another university will be allowed only when approved by both the department and the University Graduate Council.
2. Satisfactory performance on both the general and advanced qualifying examinations described above.
3. Satisfactory performance on examinations in two approved foreign languages (French, German, or Russian).
4. The writing of an original thesis acceptable to the department.
5. Satisfactory performance on a final oral examination on the thesis.
6. Any other conditions required by the general rules of the university (described on pages 143-139).

*Mathematics Courses*

**101 SINGLE VARIABLE CALCULUS I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Differentiation, extrema, Newton's method, integration, fundamental theorem of calculus, area, volume, natural logarithm, exponential, basic techniques of integration.

**102 SINGLE VARIABLE CALCULUS II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Further techniques of integration, arc length, surface area, Simpson's rule, L'Hopital's rule. Infinite sequences and series, tests for convergence, power series, radius of convergence. Polar coordinates, parametric equations, arc length.

**111(F) FUNDAMENTAL THEOREM OF CALCULUS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
This course and Math 112 form a slower paced course than 101-102 and do not go into great detail in their coverage of infinite series. A student may take Math 111,112, and then Math 102.

**112(S) CALCULUS AND ITS APPLICATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
See Math 111.

**211 ORDINARY DIFFERENTIAL EQUATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Separable equations, first order linear equations, nth order linear equations with constant coefficients, Laplace transforms. Vector spaces, dimension, eigenvalues and eigenvectors of matrices. Systems of linear first order differential equations, exponential of a matrix. Qualitative theory of nonlinear systems, and phase portraits. Prerequisite: Math 102.

**212 MULTIVARIABLE CALCULUS** (3-0-3)
Gradient, divergence, and curl. Lagrange multipliers. Multiple intergrals. Spherical coordinates. Line integrals, conservative vector fields, Green's theorem, Stokes' theorem, Gauss' theorem.

**221(F) HONORS CALCULUS III** (3-0-3)
This course and Math 222 include the material of Math 212 and more. Topology of $R^n$, calculus for functions of several variables, linear and multilinear algebra, theory of determinants, inner product spaces, exterior differential calculus, integration on manifolds. Enrollment by permission of department. A student may not receive credit for Math 212 and 222.

**222(S) HONORS CALCULUS IV** (3-0-3)
See Math 221.

**321(F) INTRODUCTION TO MODERN ANALYSIS I** (3-0-3)
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. Prerequisite: Math 212 or 222.

**322(S) INTRODUCTION TO MODERN ANALYSIS II** (3-0-3)
See Math 321.

**355(F) LINEAR ALGEBRA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Linear transformations and matrices, solution of linear equations, eigenvalues and eigenvectors, quadratic forms, rational canonical form, Jordan canonical form. A student may not receive credit for this course and Caam 310.

**356(S) ABSTRACT ALGEBRA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Groups: normal subgroups, factor groups, Abelian groups. Rings: ideals, Euclidean rings, and unique factorization. Fields: algebraic extensions, finite fields. Students may not receive credit for this course and Math 463.

**365(S) NUMBER THEORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Properties of numbers depending mainly on the notion of divisibility. Continued fractions. Offered alternate years. Offered 1994-95.

**366(S) PROJECTIVE GEOMETRY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Basic elements of classical projective geometry: projective spaces, subspaces, incidence relations, comparison with other geometries. Offered alternate years. Offered 1993-94.

**381(F) INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS** (3-0-3)
Emphasis on equations from science and engineering. The methods used are elementary. Separaton of variables is used to study various boundary value problems, requiring that Fourier series and various special functions (Bessel functions, Legendre polynomials, etc.) be covered in depth.

**382(S) COMPLEX ANALYSIS** (3-0-3)
Cauchy integral theorem, Taylor series, residues, evaluation of integrals by means of residues, conformal mapping, application to two-dimensional fluid flow. A student may not receive credit for this course and Math 427.

**401(F) DIFFERENTIAL GEOMETRY** (3-0-3)
Differentiable manifolds, Stokes' theorem and deRham's theorem, fundamental theorem of local Riemannian geometry, Lie groups, vector bundles, affine connections.

**402(S) DIFFERENTIAL GEOMETRY** (3-0-3)
See Math 401.

**423(F) PARTIAL DIFFERENTIAL EQUATIONS** (3-0-3)
Theory of distributions. 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.

**424(S) PARTIAL DIFFERENTIAL EQUATIONS** (3-0-3)
See Math 423.

**425(F) REAL ANALYSIS** (3-0-3)
Lebesgue theory of measure and integration.

**426(S) TOPICS IN REAL ANALYSIS** (3-0-3)
Topics vary. Past topics include: Fourier series, harmonic analysis, probability theory, advanced topics in measure theory, ergodic theory, elliptic integrals.

**427(S) COMPLEX ANALYSIS** (3-0-3)
Cauchy-Riemann equations, power series, Cauchy's integral formula, residue calculus, conformal mappings, special topics such as the Riemann mapping theorem, elliptic function theory.

**428(F) TOPICS IN COMPLEX ANALYSIS** (3-0-3)
Special topics include Riemann mapping theorem, Runge's theorem, elliptic function theory, prime number theorem, Riemann surfaces.

**443(S) GENERAL TOPOLOGY** (3-0-3)
Basic point set topology. Includes set theory, well ordering. Metrization.

**444(F) GEOMETRICAL TOPOLOGY** (3-0-3)
Introduction to algebraic methods in topology and differential topology. Elementary homotopy theory. Covering spaces.

**445(S) ALGEBRAIC TOPOLOGY** (3-0-3)
Introduction to the theory of homology. Simplicial complexes, cell complexes, and cellular homology, cohomology, manifolds, Poincaré duality. Prerequisite: Math 443 and 356 or 463 or permission of instructor.

**463(F) ALGEBRA I** (3-0-3)
Groups, rings, fields, vector spaces. Matrices, determinants, eigenvalues, canonical forms, multilinear algebra. Structure theorem for finitely generated abelian groups. Galois theory.

**464(S) ALGEBRA II** (3-0-3)
See Math 463.

**490 SUPERVISED READING** (Variable)

**501(F) TOPICS IN DIFFERENTIAL GEOMETRY** (3-0-3 each semester)
Topic to be announced.

**502(S) TOPICS IN DIFFERENTIAL GEOMETRY** (3-0-3 each semester)
The Atiyah-Singer theorem, secondary invariants, and related topics.

**517 MATHEMATICAL PHYSICS** (3-0-3 each semester)

**518(S) MATHEMATICAL PHYSICS** (3-0-3 each semester)

**521(F) ADVANCED TOPICS IN REAL ANALYSIS** (3-0-3 each semesters)
Possible topics include singular integral operators, maximal functions, Hardy spaces, Lipschitz spaces, and Sobolev spaces. Prerequisite: Math 425 or permission of instructor.

**522(S) ADVANCED TOPICS IN REAL ANALYSIS** (3-0-3 each semesters)
See Math 521.

**523(F) FUNCTIONAL ANALYSIS** (3-0-3)
Locally convex spaces. Banach spaces. Hilbert spaces. Special topics.

**526(S) TOPICS IN COMPLEX ANALYSIS** (3-0-3 each semester)

**527(F) ERGODIC THEORY AND TOPOLOGICAL DYNAMICS** (3-0-3)

**541 TOPICS IN ADVANCED TOPOLOGY** (3-0-3 each semester)

**542 TOPICS IN ADVANCED TOPOLOGY** (3-0-3)

**590 CURRENT MATHEMATICS SEMINAR** (1-0-1)
Expository lectures on topics of recent research in mathematics. These lectures are to be delivered by mathematics graduate students and faculty. Prerequisite: Graduate student status or permission of department.

**800 THESIS AND RESEARCH** (Variable)

# Mechanical Engineering and Materials Science

## The George R. Brown School of Engineering

**Professor C. C. Wang,** *Chair*
**Professors Akin, Bayazitoglu, Carroll, Chapman, Cheatham**
**McLellan, Miele, Nordgren, Pharr, and Spanos**
**Adjunct Professors Krouskop, Rodarte and Paslay**
**Associate Professors Angel and Cohen**
**Adjunct Associate Professor Reuben**
**Assistant Professors Barrera, Callahan, Meade, and Ramaswamy**
**Adjunct Assistant Professor Massimino**
**Lecturers Cunningham and Kelly**

*Degrees Offered:* B.A., B.S.M.E., B.S.M.S., M.M.E., M.M.S., M.S., Ph.D.

**Undergraduate Program.** Undergraduate programs offered by this department lead to the degrees of Bachelor of Arts (with a major in mechanical engineering or materials science and engineering), Bachelor of Science in Mechanical Engineering, and Bachelor of Science in Materials Science and Engineering.

The programs in mechanical engineering may, by proper choice of electives, lead to specialization in one of several options: thermal sciences and energy conversion, gas dynamics, hydrodynamics, stress analysis and mechanical behavior of materials, aerospace engineering, and materials engineering. The programs in materials science and engineering provide the student with knowledge of the fabrication, structure, and properties of materials used by engineers. The B.A. programs are highly flexible, involve less technical content, and allow the student to pursue more deeply areas of interest outside of engineering. The B.S. programs, both accredited by the Accreditation Board for Engineering and Technology, have higher content of technical courses and prepare the student for the professional practice of engineering.

The senior year of the B.S. programs in mechanical engineering and materials science and engineering provide a capstone design experience. Senior mechanical engineering students are required to complete a major design project in addition to course work in computer-aided design and design applications. Senior materials science and engineering students work on a design problem in an industrial setting.

The basic university requirements for the B.A. and B.S. programs are summarized under Degree Requirements and Majors (pages 65-85). The detailed requirements are summarized below. Lists of representative courses and their normal sequence during the students' undergraduate years are available from the department for either the B.A. or B.S. programs in both mechanical engineering or materials science and engineering.

Students seeking the B.A. degree with a major in mechanical engineering must satisfy the university distribution requirements while completing not less than 75 semester hours in courses specified by the department and not less than 60 additional semester hours. Those seeking the B.A. degree with a major in materials science and engineering must satisfy the university distribution requirements while completing not less than 52 semester hours in courses specified by the department and not less than 68 additional semester hours.

Students seeking the accredited B.S. in Mechanical Engineering must satisfy the university distribution requirements while completing not less than 42 semester hours in courses unspecified by the department and not less than the 92 semester hours comprised by the following courses.

Mathematics 101, 102, 211, 212
Computational and Applied Mathematics 223, 335, 336
Physics 101, 102, and 132
Chemistry 101, 102, 105
Electrical Engineering 241
Materials Science 301, 304
Mechanical Engineering 200, 211, 311, 331, 332, 340, 371, 372, 401, 403, 404 or 408, 411, 412, 431, 471, 481
Civil Engineering 400
Approved major design elective of three semester hours.

Students seeking the accredited B.S. in Materials Science and Engineering must satisfy the university distribution requirements while completing not less than 43 semester hours in courses unspecified by the department and not less than the 91 semester hours comprised by the following courses:

Mathematics 101, 102, 211, 212
Physics 101, 102, and 132
Chemistry 101, 102, and 105
Mechanical Engineering 211
Electrical Engineering 241
Materials Science 301, 303, 311, 401, 402, 404, 406, 411, 415, 500, 501, 535, 537, and 594
One of the following: Computational and Applied Mathematics 223 (minimum of 3 hours), Computer Science 210
Computational and Applied Mathematics 335
Civil Engineering 300
One approved science elective (200 level or higher)
One approved engineering science elective (not MSCI)
One of the following: Physics 201, Chemistry 211, Chemistry 311
One approved technical elective

A suggested sequence in which courses should be taken is available from the department.

**Professional and Graduate Programs.** Advanced level programs offered by this department lead to the professional degrees of Master of Mechanical Engineering and Master of Materials Science and to the research degrees of Master of Science and Doctor of Philosophy in either mechanical engineering or materials science.

The professional degrees involve a fifth year of specialized study, integrated with the four prior years leading to either the B.A. or B.S. degrees in the same areas of interest described in the foregoing discussion of the undergraduate programs. The professional programs are open to students who have shown academic excellence in their undergraduate studies. Detailed university requirements for professional degrees are described under Professional Degrees (pages 130-134) and involve the successful completion of 30 semester hours of course work. Suggested lists of courses are available from the department; however, specific programs are developed for each student according to interest.

The programs leading to the research degrees of M.S. and Ph.D. are open to students who have demonstrated outstanding performance in their undergraduate studies. The general university requirements for these degrees are outlined under Requirements for Research Degrees (page 129). Specific course requirements are variable, depending on preparation and performance in courses and on qualifying examinations, etc. The granting of a graduate degree presupposes superior quality academic work and a demonstrated ability to do original research. For both the M.S. and Ph.D. degrees, a thesis must be presented that comprises an original contribution to knowledge, and it must be defended in a public oral examination.

The research interests of the faculty and the laboratory equipment available provide the following areas of specialization: (1) engineering mechanics; (2) materials science; (3) fluid dynamics, gas dynamics, heat transfer; (4) aeroastronautics; (5) computer-aided design; and (6) computational mechanics.

*Mechanical Engineering Courses*

**200(S) CLASSICAL THERMODYNAMICS** (3-0-3)
Fundamental exposition of the laws of classical thermodynamics and deductions therefrom. Applications illustrations with particular attention to pure substances. Prerequisite: Phys 101, 102.
*Chapman, A.*

**211(F) ENGINEERING MECHANICS** (3-0-3)
Equilibrium of static systems, dynamics of a particle, dynamics of particle systems, and rigid-body dynamics. Elements of vibrational analysis. Prerequisite: Phys 101, 102, Math 101, 102. Also offered as Civi 211.
*Wang, C., Angel, Y.*

**311(S) MECHANICS OF DEFORMABLE SOLIDS** (3-0-3)
Analysis of stress and deformation of solids with applications to beams, circular shafts, and columns. Prerequisite: Mech 211.
*Wang, C.*

**314(S) INTRODUCTION TO MECHANICAL DESIGN** (3-0-3)
An introductory design course covering the design process, materials selection, and design methods. Prerequisite: Mech 311, or Civi 300. Not offered every year.
*Staff*

**321(S) COMPUTATIONAL MECHANICS IN DESIGN** (3-0-3)
Fundamental theory of computational mechanics for thermal, fluid, and solid systems. Hands-on experience with commercial software. Applications to open-ended design problems. Prerequisites: Mech 200, Mech 311 or Civi 300, Mech 371.
*Ramaswamy, B.*

**331 JUNIOR LABORATORY I** (0-3-1)
Static and impact testing of engineering materials. Beam deflection and shear center experiments are included. Strain gauges are applied and tested.
*Angel, Y.*

**332 JUNIOR LABORATORY II** (0-3-1)
Instruction in fluid mechanics and thermodynamics.
*Kelly, J.*

**340 INDUSTRIAL PROCESS LAB** (0-3-1)
Practical experience in and observation of selected industrial processes. Sign-up in mechanical engineering office. Prerequisite: Mech major
*Gesenhues, J.*

**371(F) FLUID MECHANICS I** (3-0-3)
Introduction to fluid statics and dynamics; the development of the fundamental equations of fluid mechanics and their application to problems of engineering interest. Prerequisite: Mech 200, 211, Math 212.

*Bayazitoglu, Y.*

**372(S) FLUID MECHANICS II** (3-0-3)
Continuation of Mech 371 devoted to airfoil theory, lubrication, boundary layers, and turbulence. Prerequisite: Mech 371.

*Meade, A.*

**401(F) MECHANICAL DESIGN APPLICATIONS** (3-0-3)
Applications of the principles of mechanical design to the analysis and design of machine elements. Prerequisite: Mech 311 or Civi 300.

*Cunningham, R.*

**403(F) COMPUTER-AIDED DESIGN** (3-0-3)
Integration of the computer into the area of design. Optimization, simulation, finite elements, expert systems, etc. Prerequisite: Caam 223.

*Akin, J.*

**404(S) SENIOR DESIGN PROJECT** (0-12-4)

*Kelly, J.*

**406(F) MEASUREMENT AND CONTROL** (3-3-4)
Instrumentation methods, analogs, analysis of experimental results, applications in controls. Also offered as Civi 406.

*Bourland, H.*

**407(F) MECHANICAL DESIGN PROJECT I** (0-9-3)
Group projects aimed at preliminary design of complex mechanical devices.

*Cheatham, J., Cunningham, R., Kelly, J.*

**408(S) MECHANICAL DESIGN PROJECT II** (0-12-4)
Design for production and actual fabrication of complex mechanical devices. Prerequisite: Mech 407.

*Cheatham, J., Cunningham, R., Kelly, J.*

**411(F) ANALYTICAL DYNAMICS** (3-0-3)
Application of energy methods in the study of particle and rigid-body dynamics, electric circuits, electromechanical systems, and continuous dynamic systems. Prerequisite: Mech 211.

*Spanos, P.*

**412(S) VIBRATIONS** (3-0-3)
Analysis of discrete and continuous linear, mechanical, vibrating systems with particular emphasis upon multi-degree-of-freedom systems. Approximate methods are included. Prerequisite: Mech 411.

*Spanos, P.*

**420(S) FEEDBACK CONTROL OF DYNAMIC SYSTEMS** (3-0-3)
Introduction to feedback control, system modeling in frequency domain, introduction to space analysis and design.

*Staff*

**431 SENIOR LABORATORY I** (0-3-1)
Instruction in gasdynamics, heat transfer, applied thermodynamics, and engine cycles.

*Kelly, J.*

**471(F) APPLICATIONS OF THERMODYNAMICS** (3-0-3)
Applications of thermodynamics to various systems of interest in mechanical engineering with particular attention to energy conversion, refrigeration, and psychrometrics. Prerequisite: Mech 200.
*Chapman, A.*

**472(F) THERMAL SYSTEMS DESIGN** (3-0-3)
Design and synthesis of systems based on applications of thermodynamics, fluid mechanics, heat transfer, economics, and optimization theories. Prerequisite: Engi 200, Mech 371, Mech 372, Mech 471, Mech 481.
*Meade, A.*

**476 FLUID MACHINERY** (3-0-3)
Continuous-flow machinery analysis and design problems. Prerequisite: Mech 371.
*Cohen, R.*

**481(S) HEAT TRANSFER** (4-0-4)
General study of the principles of heat transfer by conduction, convection, and radiation and their application to problems of engineering practice.
*Chapman, A.*

**482(S) INTERMEDIATE HEAT TRANSFER** (3-0-3)
Further study of heat transfer by conduction, convection, and radiation. Applications to various problems in Mechanical Engineering. Prerequisite: Mech 481.
*Bayazitoglu, Y.*

**496(F) ROBOTICS LABORATORY** (0-3-1)
Laboratory exercises involving robot manipulators, computer vision system and CNC (Computer Numerical Control) Lathe and Mill. Prerequisite: enrollment in Mech 498. Also offered as Elec 496.
*Cheatham, J.*

**498(F) INTRODUCTION TO ROBOTICS** (3-0-3)
An introduction to kinematics, dynamics, and control of robotic manipulators. Also offered as Elec 498.
*Cheatham, J.*

**501(F) ANALYTICAL DYNAMICS** (3-0-3)
Graduate level version of Mech 411. Offered concurrently with Mech 411. Term project required for the course.
*Spanos, P.*

**502(S) VIBRATIONS** (3-0-3)
Graduate level version of Mech 412. Offered concurrently with Mech 412. Term project required for the course.
*Spanos, P.*

**509(S) DYNAMIC ANALYSIS OF OFFSHORE STRUCTURES** (3-0-3)
Loads on offshore structures are described on deterministic and probabilistic basis. Methods are examined for calculating the structural response. Specific examples involving drill strings, marine risers, fixed and compliant structures are given. Also listed as Civi 509.
*Spanos, P.*

**510(F) ELASTODYNAMICS** (3-0-3)
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.
*Angel, Y.*

**511(S) CONTINUUM MECHANICS I** (3-0-3)
Concepts and general principles common to all branches of solid and fluid mechanics. Applications include non-Newtonian fluid mechanics and nonlinear elasticity.

*Angel, Y.*

**515(S) STRUCTURAL PLASTICITY** (3-0-3)
Problems in limit analysis and design; plastic behavior of structures; flexure and torsion of prismatic members. Also offered as Civi 515.

*Merwin, J.*

**517(S) FINITE ELEMENT METHODS** (3-0-3)
Introduction to the finite element analysis with applications to problems in fluid and solid mechanics.

*Akin, J.*

**521(S) FLIGHT MECHANICS I** (3-0-3)
Introduction to the performance, stability, and control of flight vehicles. Not offered every year.

*Staff*

**523(S) PROBABILISTIC STRUCTURAL DYNAMICS** (3-0-3)
Dynamic response of structural systems to excitations characterized as stochastic processes. Prerequisite: Mech 412 and Civi 521. Also offered as Civi 523.

*Conte, J.*

**530 HEAT EXCHANGER DESIGN** (3-0-3)
Introduction to the fundamentals of the thermal design of heat exchangers; the design of a heat exchanger for a specified application.

*Bayazitoglu, Y.*

**537(F) INTRODUCTION TO ARTIFICIAL INTELLIGENCE** (3-0-3)
See Elec 537. Also offered as Elec 537.

*Staff*

**538(F) EXPERT SYSTEMS APPLIED TO ROBOTICS** (2-3-3)
Engineering applications of artificial intelligence including expert systems and artificial neural systems with applications to robotics and automation. Laboratory includes programming neural networks.

*Cheatham, J.*

**563(F) ENGINEERING APPROACH TO MATHEMATICAL PROGRAMMING** (3-0-3)
Minimization of functions of variables that are (1) unconstrained, or (2) subject to equality constraints, or (3) subject to inequality constraints, or (4) subject to both equality and inequality constraints. Analytical and numerical methods. Also offered as Masc 563.

*Miele, A.*

**564(S) OPTIMAL CONTROL** (3-0-3)
Optimal control theory and calculus of variations. Minimization of functionals depending on variables subject to differential constraints, nondifferential constraints, initial constraints, and final constraints. Analytical and numerical methods. Also offered as Masc 564.

*Miele, A.*

**591 GAS DYNAMICS** (3-0-3)
Fundamentals of compressible, one-dimensional gas flows with area change, normal shocks, friction, and heat addition; oblique shocks, Prandtl-Meyer flows expansions and numerical techniques. Prerequisite: Mech 371.

*Meade, A.*

**593 MECHANICAL ENGINEERING PROBLEMS** (Variable)
With approval, mechanical engineering students may elect an investigation or design project under the direction of a member of the staff.

*Staff*

**594(F) AN INTRODUCTION TO AERODYNAMICS** (3-0-3)
Development of theories for the prediction of aerodynamic forces and moments acting on airfoils, wings, and bodies and their design applications.

*Ramaswamy, B.*

**601 SPECIAL TOPICS** (Variable)

*Miele, A.*

**602 SPECIAL TOPICS** (Variable)

*Cheatham, J.*

**603 SPECIAL TOPICS** (Variable)

*Bayazitoglu, Y.*

**604 SPECIAL TOPICS** (Variable)

*Staff*

**605 SPECIAL TOPICS** (Variable)

*Staff*

**606 GRADUATE SEMINAR** (0)

*Wang, C.*

**673(F) ADVANCED FLUID MECHANICS I** (3-0-3)
Conservation equations for viscous compressible fluids. Applications to viscous and inviscid flows. Simple flows of non-Newtonian fluids.

*Cohen, R.*

**674(S) ADVANCED FLUID MECHANICS II** (3-0-3)
Conservation equations for viscous compressible fluids. Applications to viscous and inviscid flows. Simple flows of non-Newtonian fluids. Not offered every year.

*Cohen, R.*

**676(F) COMPUTATIONAL FLUID MECHANICS** (3-0-3)
Numerical methods for the solutions of the equations of fluid mechanics. Finite element and difference schemes, accuracy, stability considerations. Prerequisite: Mech 673.

*Ramaswamy, B.*

**682(S) CONVECTIVE HEAT TRANSFER** (3-0-3)
Rigorous study of the transfer of heat by free and forced convection.

*Bayazitoglu, Y.*

**683(F) RADIATIVE HEAT TRANSFER I** (3-0-3)
Rigorous study of the transfer of heat by radiant exchange in the absence of absorbing media. Not offered every year.

*Bayazitoglu, Y.*

**684(S) RADIATIVE HEAT TRANSFER II** (3-0-3)
Radiative transfer in the presence of absorbing, emitting, and scattering media; combined radiation, conduction, and convection. Heat transfer in furnaces, fire propagation, and air pollution problems. Not offered every year.

*Bayazitoglu, Y.*

**698(S) ADVANCED TOPICS IN ROBOTICS** (3-0-3)
Overview of topics aimed at improving apparent intelligence of machines: sensors, force control of manipulators, concepts of AI, speech synthesis and recognition, computer vision, laser imaging, range finding and navigation. Also offered as Elec 698.

*Cheatham, J.*

**699(S) ADVANCED ROBOTICS LABORATORY** (0-3-1)
Laboratory exercises on robotic sensing, compliant motion control, speech, vision and laser imaging, navigation and path planning. Prerequisite: Mech 698.

*Cheatham, J.*

**800 RESEARCH AND THESIS** (Variable)

*Wang, C.*

*Materials Science Courses*

**301 MATERIALS SCIENCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
Introduction to the science of solid materials covering metals, ceramics, plastics, and semiconductors. The properties of solid materials from atomic and macroscopic points of view. Prerequisite: Math 101.

*Pharr, G., Callahan, D.*

**303(S) MATERIALS SCIENCE JUNIOR LAB** (0-3-1)
Selected laboratory experiments in materials science. Open to materials science majors.

*Pharr, G., Cunningham, R.*

**304(F) APPLIED MATERIALS ENGINEERING** (0-3-1)
Practical application of the basic principles of materials science, covering case studies of failures under a variety of conditions and topics in the fabrication selection and heat treatment of materials. Prerequisite (or corequisite): Msci 301.

*Cunningham, R.*

**311(F) INTRODUCTION TO DESIGN** (1-9-4)
Fundamental aspects of design are introduced by means of semester-long group projects.

*Barrera, E., Cunningham, R.*

**401(F) THERMODYNAMICS AND TRANSPORT PHENOMENA IN MATERIALS SCIENCE** (4-0-4)
The kinetics and thermodynamics of mass and energy transport are presented in a unified manner. Topics include heterogeneous equilibrium, diffusion in solids, heat transfer, and the application of these concepts to engineering design.

*McLellan, R.*

**402(F) MECHANICAL PROPERTIES OF MATERIALS** (3-0-3)
Survey of the mechanical properties of solid materials. Topics include basic mechanics, elasticity, plasticity, fracture, fatique, creep, hardening mechanisms, mechanical testing, and structure-property relationships. Prerequisite: Msci 301.

*Barrera, E.*

**404(S) MATERIALS ENGINEERING AND DESIGN** (2-6-4)
Technological aspects of materials selection, design, failure, and analysis. Laboratory time is spent in an industrial setting. Prerequisite: Msci 301.

*Cunningham, R.*

**406(S) PHYSICAL PROPERTIES OF SOLIDS** (3-0-3)
Survey of electrical, magnetic, and optical properties of metals, semiconductors, and dielectrics based upon elementary band theory concepts. Not offered every year. Prerequisite: Math 211.

*Callahan, D.*

**411(S) METALLOGRAPHY AND PHASE RELATIONS** (3-0-3)
Microstructures that may be observed in metals and alloys; optical metallography in addition to more sophisticated techniques; relationships between structural properties, and failures. Prerequisite: Msci 301.

*McLellan, R.*

**415(S) CERAMICS AND GLASSES** (3-0-3)
Fundamentals of ceramic and glassy materials, including phase relations, structure, bonding, processing, and mechanical properties. The use of ceramics and glasses in engineering design. Not offered every year. Prerequisite: Msci 301.

*Pharr, G., Callahan, D.*

**500 MATERIALS SCIENCE SEMINAR** (0)
A series of biweekly seminars on selected topics in Materials Science.

*Barrera, E.*

**501 MATERIALS SCIENCE SEMINAR** (1-0-1)
A series of biweekly seminars on selected topics in Materials Science.

*Barrera, E.*

**523(S) PROPERTIES, SYNTHESIS, AND DESIGN OF COMPOSITE MATERIALS** (3-0-3)
The science of interfaces and the properties that govern their use in composite materials. Not offered every year.

*Barrera, E.*

**535(F) CRYSTALLOGRAPHY AND DIFFRACTION** (3-0-3)
Study of crystals by x-ray and electron diffraction and electron microscopy. Basic diffraction theory and methods for characterization of structure and constitution of materials. Prerequisite: Msci 301.

*Callahan, D.*

**537(F) MATERIALS SCIENCE SENIOR LAB** (0-3-1)
Selected laboratory experiments in materials science. Prerequisite: Msci 303.

*Callahan, D., Pharr, G.*

**541(S) PHYSICAL METALLURGY** (3-0-3)
Fundamentals of solidification, alloying, and heat treatment. The mechanical and nonmechanical properties of metallic systems from atomic and electronic theory. Prerequisite: Msci 301. Not offered every year.

*Staff*

**550(S) TIME DEPENDENT PLASTICITY** (3-0-3)
Fundamental concepts in creep and creep rupture in solids. A phenomenological overview and mechanistic theories are presented. Prerequisite: Materials Science 402 or permission of instructor. Not offered every year.

*Staff*

**561(F) ADVANCED LAB I** (0-4-1)
Students whose interest lies primarily in the field of materials and metallurgy are given the opportunity for research and design in these fields. Prerequisite: permission of instructor.

*Staff*

**562(S) ADVANCED LAB II** (0-4-1)
Students whose interest lies primarily in the field of materials and metallurgy are given the opportunity for research and design in these fields. Prerequisite: permission of instructor.

*Staff*

**569(F) CORROSION SCIENCE AND ENGINEERING** (3-0-3)
Survey of principals and theories of corrosion, corrosion testing, and selection of materials for corrosion prevention. Prerequisite: Msci 301. Not offered every year.

*Armeniades, C.*

**593(F) POLYMER SCIENCE AND ENGINEERING** (3-0-3)
Basic concepts in macromolecular chemistry and their application in the synthesis and chemical modification of polymers. Prerequisite: Chemistry 211, 212. Also offered as Ceng 593.

*Armeniades, C.*

**594(S) PROPERTIES OF POLYMERS** (3-0-3)
Molecular organization and physical properties of polymeric materials; elastomeric, semicrystalline, and glassy polymers; processing and technology of polymeric systems. Also offered as Ceng 594.

*Armeniades, C.*

**609(S) FRACTURE MECHANICS** (3-0-3)
Theory of elasticity andplasticity pertinent to fracture. Practical aspects of fracture toughness testing. Not offered every year.

*Staff*

**610(F) CRYSTAL THERMODYNAMICS** (3-0-3)
Potentials and third-order elastic constants will be discussed. The lattice dynamics of harmonic phonons and anharmonic perturbation expansion are included as well as the contribution of electrons to the thermodynamic quantities. Not offered every year.

*Staff*

**614 SPECIAL TOPICS** (Variable)

*Staff*

**615 SPECIAL TOPICS** (Variable)

*Staff*

**627(S) MICROSTRUCTURAL CHARACTERIZATION** (3-0-3)
Methods for the characterization of phases and lattice imperfections in engineering materials. Common electron-beam techniques such as SEM, Auger, TEM, AEM, and HREM are covered in detail as well as important diffraction and spectral methods. Prerequisite: Msci 535. Not offered every year.

*Callahan, D.*

**634(F) THERMODYNAMICS OF ALLOYS** (3-0-3)
Relations between classical thermodynamics and statistical mechanics applied to understanding solid and liquid alloys. Solid-solid, liquid-solid, and gas-solid equilibriums in metallurgy. Not offered every year.

*McLellan, R.*

**635(S) TRANSFORMATION IN ALLOYS** (3-0-3)
Diffusion in metals and alloys. Mechanism and phenomenology of diffusion-controlled transformations. Precipitation from saturated alloys and liquid solutions. Transformations in heat-treated alloys. Not offered every year.

*McLellan, R.*

**666(S) CONDUCTION PHENOMENA IN SOLIDS** (3-0-3)
Fundamental aspects of electron and energy transport in conductors, semiconductors, and insulators. Prerequisite: Msci 406 or equivalent.

*Brotzen, F.*

# Medieval Studies

**Professors Chance, Cuthbertson, Drew, Hammond, Leal, Nelson, Stroup, Van Helden, and Wilson**
**Adjunct Professor E. Mitchell**
**Associate Professors Maas, Meconi, Morrison, Polanyi, Sanders** *(Director)*, **Urrutibeheity, Wallace, and Widrig**
**Assistant Professors Fishman, Mersereau, Neagley, Nirenberg, and Quillen**
**Lecturers Daichman and Dunne**

*Degree Offered:* B.A.

The interdisciplinary major in Medieval Studies allows students to compare different medieval cultures and their common traditions in the period between 500 and 1500 A.D. This major accordingly combines a broad background in the various aspects of medieval culture with more specialized study in a chosen field of emphasis. The available fields of emphasis are: Art History, History, Medieval Literature in one or more departments (English, French, German, Spanish, Classics), Music (for Music majors or by permission), or Philosophy and Religion.

**Requirements:** A student majoring in Medieval Studies must complete a minimum of 36 semester hours (12 semester courses), of which at least six courses must be at the 300/400 level. There are six courses required of all majors: History 202 (Early Medieval Civilization), Humanities 320 (Introduction to Medieval Culture), one course in medieval art or music (*either* History of Art 205, Ancient and Medieval Art and Architecture, *or* Music 222, Medieval and Renaissance Music, *or* Music 429, Medieval Music), one course in medieval philosophy or religion (Philosophy 201, History of Philosophy, Ancient and Medieval; Religion 312, History of Religion: The Western Tradition [Judaism, Christianity, Islam]; Religion 381, Introduction to the History of Western Christianity I; History 273/373, History of the Jewish People I: 70-1492; or History 386, Introduction to Islam), and one year of Latin (101 and 102). Students contemplating graduate work in Medieval Studies should study at least one foreign language in some depth. (Most graduate schools require a reading knowledge of French and German for the Ph.D.) All prospective programs for majors in Medieval Studies must be created in consultation with the director of Medieval Studies.

## Courses:

*Core Courses*

**HISTORY 202(F) EARLY MEDIEVAL CIVILIZATION** (3-0-3)
*Nirenberg, D.*

**HUMANITIES 320(F) INTRODUCTION TO MEDIEVAL CULTURE** (3-0-3)
Not offered 1993-94.
*Chance, J.*

## I. Language, Literature, and Culture

*Classics*

**101(F) FIRST-YEAR LATIN** (3-0-3)

*Wallace, K.*

**102(S) FIRST-YEAR LATIN** (3-0-3)

*Wallace, K.*

*English*

**320(F) INTRODUCTION TO MEDIEVAL CULTURE** (3-0-3)
Not offered 1993-94.

*Chance, J.*

**321(S) GENDER AND POWER IN OLD ENGLISH (In Translation)** (3-0-3)

*Chance, J.*

**322 *BEOWULF*** (3-0-3)
Not offered 1993-94.

*Chance, J.*

**323(F) CHAUCER** (3-0-3)

*Chance, J.*

**328 MIDDLE ENGLISH LITERATURE** (3-0-3)
Not offered 1993-94.

*Chance, J.*

**395(F) HISTORY OF THE ENGLISH LANGUAGE** (3-0-3)

*Mitchell, E.*

**401, 402 TOPICS IN LITERATURE** (3-0-3)
Variable topics; may be repeated for credit.

*Chance, J.*

**403, 404 STUDIES IN A MAJOR BRITISH AUTHOR: TOLKIEN AND HIS WORLD** (3-0-3)

*Chance, J.*

**407,408 STUDIES IN LITERARY TYPES** (3-0-3)
Topics vary; may be repeated for credit.

*Chance, J.*

**502(S) NEW APPROACHES TO CHAUCER AND THE FOURTEENTH CENTURY** (3-0-3)
Not offered 1993-94.

*Chance, J.*

**503(S) GRADUATE SEMINAR IN OLD ENGLISH**

*Chance, J.*

**510 READING LIKE/AS A WOMAN: CHRISTINE DE PIZAN IN FIFTEENTH-CENTURY ENGLAND**
Not offered 1993-94.

*Chance, J.*

*French*

**403 HISTORY AND STYLISTICS OF FRENCH LANGUAGE** (3-0-3)
Not offered 1993-94.

*Nelson, D.*

**410(F) LITERATURE AND CULTURE OF THE [FRENCH] MIDDLE AGES** (3-0-3)

*Nelson, D.*

**510 SEMINAR ON MEDIEVAL LITERATURE—IMAGE OF THE WOMAN IN MEDIEVAL FRENCH LITERATURE** (3-0-3)
Not offered 1993-94.

*Nelson, D.*

*German*

**321 VIKING LITERATURE IN TRANSLATION** (3-0-3)
Not offered 1993-94.

*Wilson, J.*

**401 VARIABLE TOPICS: May be Medieval** (3-0-3)
Not offered 1993-94.

**405 INTRODUCTION TO GOTHIC GERMAN** (3-0-3)
Not offered 1993-94.

*Wilson, J.*

**407(F) GERMAN LITERATURE OF THE MIDDLE AGES IN TRANSLATION** (3-0-3)
Not offered 1993-94.

**411 INTRODUCTION TO MIDDLE HIGH GERMAN LANGUAGE AND LITERATURE** (3-0-3)
Not offered 1993-94.

**412 MIDDLE HIGH GERMAN EPIC POETRY** (3-0-3)

*Wilson, J.*

**424 OLD ICELANDIC** (3-0-3)
Not offered 1993-94.

*Wilson, J.*

**512 GOTHIC** (3-0-3)
Not offered 1993-94.

*Wilson, J.*

**522 OLD HIGH GERMAN** (3-0-3)
Not offered 1993-94.

*Wilson, J.*

**523 OLD SAXON** (3-0-3)
Not offered 1993-94.

*Wilson, J.*

**524 OLD ICELANDIC** (3-0-3)
Not offered 1993-94.

*Wilson, J.*

*Linguistics*

**395(F) HISTORY OF THE ENGLISH LANGUAGE** (3-0-3)
Also listed under English.

*Mitchell, E.*

*Spanish*

**418(S) STUDIES IN MEDIEVAL SPANISH LITERATURE** (3-0-3)

*Leal, M.*

**515(F) HISPANIC LINGUISTICS: HISTORY OF SPANISH LANGUAGE** (3-0-3)

*Urrutibéheity, H.*

**516 HISPANIC LINGUISTICS: OLD SPANISH** (3-0-3)
Not offered 1993-94.

*Urrutibéheity, H.*

**518(S) MEDIEVAL SPANISH LITERATURE GRADUATE TRAILER**

*Leal, M.*

## II. Art History, Music, Philosophy, Religion

*History of Art*

**205(F) INTRODUCTION: HISTORY OF ART (ANCIENT AND MEDIEVAL)** (3-0-3)

*Mersereau, R., Widrig, W.*

**309(S) LATE ANTIQUE AND EARLY CHRISTIAN ART** (3-0-3)

*Widrig, W.*

**310 BYZANTINE ART** (3-0-3)
Not offered 1993-94.

*Widrig, W.*

**312 GREEK AND ROMAN ARCHITECTURE** (3-0-3)

*Mersereau, R.*

**319(F) GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1140-1300** (3-0-3)

*Neagley, L.*

**370(S) LATE GOTHIC ART AND ARCHITECTURE IN NORTHERN EUROPE, 1300-1500** (3-0-3)

*Neagley, L.*

**494(S) THE GOTHIC PORTAL** (3-0-3)

*Neagley, L.*

*Music*

**222(S) INTRODUCTION TO MUSIC OF THE MIDDLE AGES AND RENAISSANCE** (3-0-3)

By permission of instructor.

*Meconi, H.*

**429(F) MUSIC OF THE MIDDLE AGES** (3-0-3)

By permission of instructor.

*Meconi, H.*

*Philosophy*

**201(S) HISTORY OF PHILOSOPHY I: ANCIENT & MEDIEVAL** (3-0-3)

*Morrison, D.*

**301(F) ANCIENT AND MEDIEVAL PHILOSOPHY** (3-0-3)

*Morrison, D.*

*Religious Studies*

**312(S) HISTORY OF RELIGION: THE WESTERN TRADITION (JUDAISM, CHRISTIANITY, ISLAM)** (3-0-3)

*Dunne, C.*

**381 INTRODUCTION TO HISTORY OF WESTERN CHRISTIANITY I** (3-0-3)

Not offered 1993-94.

*Stroup, J.*

## III. History

*History*

**145 LIFE OF MUHAMMAD** (3-0-3)

Not offered 1993-94.

*Sanders, P.*

**202(F) EARLY MEDIEVAL CIVILIZATION** (3-0-3)

*Nirenberg, D.*

**203(S) CIVILIZATION OF THE HIGH MIDDLE AGES** (3-0-3)

*Nirenberg, D.*

**223 HISTORY OF SCIENCE FROM GREEKS TO NEWTON** (3-0-3)
Not offered 1993-94.

*Van Helden, A.*

**273(F) HISTORY OF THE JEWISH PEOPLE: EZRA TO 1492** (3-0-3)
Also offered as Hist 373.

*Fishman, T.*

**281(F) HISTORY OF THE ISLAMIC NEAR EAST: 600-1258** (3-0-3)
Also offered as Hist 381.

*Sanders, P.*

**282(S) HISTORY OF THE ISLAMIC NEAR EAST: 1258-1805** (3-0-3)
Also offered as Hist 382. Not offered 1993-94.

*Sanders, P.*

**284(S) THE CRUSADES: HOLY WAR IN MEDIEVAL CHRISTENDOM AND ISLAM** (3-0-3)
Also offered as Hist 384.

*Nirenberg, D., Sanders, P.*

**303(F) UNDERGRADUATE INDEPENDENT READING**

*Staff*

**304(S) UNDERGRADUATE INDEPENDENT READING**

*Staff*

**308 THE WORLD OF LATE ANTIQUITY** (3-0-3)
Not offered 1993-94.

*Maas, M.*

**309 DECLINE AND FALL OF THE ROMAN EMPIRE IN THE WEST** (3-0-3)

*Elton, H.*

**320(S) SCIENCE IN ANTIQUITY AND THE MIDDLE AGES** (3-0-3)

*Van Helden, A.*

**337(S) HISTORY OF ANCIENT AND MEDIEVAL LAW** (3-0-3)
Not offered 1993-94.

*Drew, K.*

**345 RENAISSANCE EUROPE** (3-0-3)
Not offered 1993-94.

*Quillen, C.*

**359(S) ROMAN BRITAIN AND MEDIEVAL ENGLAND** (3-0-3)

*Drew, K.*

**386 INTRODUCTION TO ISLAM** (3-0-3)
Not offered 1993-94.

*Sanders, P.*

**438(S) GENDER AND SOCIETY IN ISLAM** (3-0-3)
Not offered 1993-94.

*Sanders, P.*

**439(F) CHRISTIANITY AND THE WEST** (3-0-3)
Not offered 1993-94.

*Nirenberg, D.*

**440(S) SOCIAL AND ECONOMIC HISTORY OF EUROPE IN THE MIDDLE AGES** (3-0-3)

*Drew, K.*

**521(F) DIRECTED READINGS IN MEDIEVAL HISTORY**

*Staff*

**581(S) GRADUATE SEMINAR IN MEDIEVAL HISTORY**

*Drew, K.*

*Political Science*

**340 ANCIENT AND MEDIEVAL POLITICAL THEORY** (3-0-3)
Not offered 1993-94.

*Cuthbertson, G.*

# Military Science

**Department Chair LTC Arthur T. Stemmermann, Jr.**

Students may participate in a Military Science program (Army ROTC) through cross-enrollment with the University of Houston. Academic transfer credit is given for Army ROTC. Classes emphasize leadership and management with instruction given that is common to all branches of the U.S. Army. Eligible students have the option of completing Reserve Officers' Training Corps courses in either a four-year or a two-year program. Graduates of the Army ROTC program are commissioned in the Active, the Army Reserve, or the Army National Guard.

**Four-Year Program.** The four-year program consists of the Basic Course (Military Science I and II), taken during the first and second years, and the Advanced Course (Military Science III and IV), taken during the third and fourth years. Students enrolled in the first two years of ROTC participate with no military obligation. Veterans receive credit for the Basic Course and may enter the Advanced Course once they have a minimum of 60 credit hours.

**Two-Year Program.** Students with two years of study remaining are eligible to enter the Advanced Course following successful completion of a six-week Basic Camp. **There is no military obligation for attending Basic Camp.** This camp is held during the summer at Fort Knox, Kentucky. Each student is paid approximately $600 for the six-week period. Veterans are exempt from this requirement and may enter directly into the Advanced Course.

**Advanced Camp.** All students attend a six-week Advanced Camp at Fort Riley, Kansas, between their junior and senior years. Each student is paid approximately $600 for this camp.

**Scholarships.** Two- and three-year scholarships are available for students participating in the ROTC program. Students with a GPA above 2.7 and students in technical majors have an excellent chance for selection. The application deadline for four-year scholarships is in December. The deadline for three-year scholarships is in February. Scholarship students receive annual tuition assistance of up to $8,000 or 80% of tuition, whichever is greater. The Army also pays scholarship students for books and educational fees (health, athletic, lab fees, etc.) up to a maximum amount set annually by the U.S. Army Cadet Command.

**Stipend.** All contracted students, both scholarship and nonscholarship, receive a $100 monthly stipend.

**More information.** For more information, contact the Military Science Department at the University of Houston at (713) 743-3875.

*Military Science Courses*

**111 INTRODUCTION TO THE ARMY** (1-2-1)
Open to all students. Introduction to the role, function, and purpose of the United States Army, the National Guard, and the Army Reserve. There is no military obligation for attending this course.

**112 LEADERSHIP AND MANAGEMENT** (1-2-1)
Open to all students. Leadership and management in the Armed Forces and in society. Emphasis on improving student's leadership and management techniques. There is no military obligation for this course.

**105(S) BASIC MOUNTAINEERING** (0-3-1)
Knot tying, basic first aid, and basics of technical rock climbing and rappelling. Includes rappelling from a 60-foot wall and at least one weekend excursion for rock climbing and rappelling.

**106 RANGER CHALLENGE TRAINING** (0-3-1)
Enrollment restricted to Army ROTC cadets. Physically demanding. Develops skills through team competition. Land navigation, rifle marksmanship, tactics, assembly of one-rope bridge. Students are required to attend physical training M-F. Selected cadets compete against teams from other universities.

**108(F) PHYSICAL FITNESS TRAINING** (0-3-1)
Utilizes Army fitness techniques; develops strength, flexibility and endurance; develops self-confidence through leadership training and physical activities.

**109(S) PHYSICAL FITNESS TRAINING** (0-3-1)
Continuation of Mili108.

**201(F) MILITARY LEADERSHIP DEVELOPMENT** (2-2-2)
Characteristics of leadership, problem analysis, decision making, oral presentations, first aid, small unit tactics, land navigation, basic radio communication, marksmanship, and rappelling. In addition to class, students must attend lab (Mili 203). No military obligation incurred.

**202(S) MILITARY LEADERSHIP DEVELOPMENT** (2-2-2)
Continuation of Mili 201. No military obligation incurred.

**203 LEADERSHIP LAB** (0-2-0)
Must be taken in conjunction with Mili 201 and 202. Repeatable.

**204(F) BASIC CAMP-SUMMER CR.4**
Designed for students with 50 or more college credits who have no ROTC or military experience. Six-week off-campus field training practicum. Introduces students to the military. Roles of the officer and noncommissioned officer, drill and ceremonies, map reading, marksmanship, leadership, confidence courses, rappelling. May be taken in lieu of the first two years of ROTC. There is no military obligation for attending this course.

**302(S) LEADERSHIP DEVELOPMENT** (3-2-2)
The study of individual and group behavior and the principles and techniques of applied leadership. Prerequisite: Mili 301 or consent of chairman. Military skills leadership laboratory is required each Wednesday afternoon.

*Bogart, M.*

**401(F) ADVANCED MILITARY SCIENCE** (3-2-2)
A study of the military justice system, aspects of military law, the Geneva Convention, and military professionalism and ethics. Prerequisite: Mili 301 and 302 or consent of chairman. Military leadership laboratory is required each Wednesday afternoon.

*Shaffer, R.*

**301(F) ADVANCED MILITARY SCIENCE** (3-2-3)
Leadership, preparing combat orders, military instruction principles, small unit tactics, and tactical communications. Course is designed to prepare students for Advanced Camp. In addition to class, students must attend lab (Mili 304) and physical fitness training. Prerequisite: Mili 202 or consent of chair.

**302(S) ADVANCED MILITARY SCIENCE** (3-2-3)
Continuation of Mili 301. Prerequisite: Mili 301.

**303(F) SUMMER FIELD TRAINING CR. 4**
Off-campus field training practicum stressing the application of leadership management with emphasis on tactical and special military field skills. Places the student in demanding and stressful leadership situations. Prerequisite: Mili 302 or consent of the chair.

**304 LEADERSHIP LAB** (0-2-0)
Must be taken in conjunction with 301 and 302. Repeatable.

**401(F) ADVANCED MILITARY SCIENCE** (3-2-3)
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 (Mili 403) and physical fitness training. Prerequisite: Mili 302 or consent of the chair.

**402(S) ADVANCED MILITARY SCIENCE** (3-2-3)
Continuation of Mili 401. Prerequisite: Mili 302 or consent of the chair.

**403 LEADERSHIP LAB** (0-2-0)
Must be taken in conjunction with Mili 401 and 402. Repeatable.

# The Shepherd School of Music

**Professor Hammond,** *Dean*
**Professors Babikian, Citron, Cooper, Ellison, Erdélyi, N. Fischer, Fliegel, Holloway, S. Jones, Milburn, Luca, Schnoebelen, Trepel, and Wincenc**
**Associate Professors Bailey, R. Brown, Burt, Goldsmith, Gottschalk, Jaber, Lavenda, Meconi, Rachleff, Roux, and Winkler**
**Assistant Professors Arbiter and Murray**
**Lecturers Dye, Kirk, and Malone**
**Artist Teachers Atherholt, Bado, Brooks, Connelly, Dorough, J.K. Fischer, Hoebig, Kamins, Lanier, Lombard, Page, Peck, Perry, Pitts, Rarick, Shank, Ver Meulen, Waters, and Wilt**
**Artist-in-Residence Eschenbach**
**Adjunct Lecturer Visser**

*Degrees Offered:* B.A.; B.Mus.; B.Mus./M.Mus. (simultaneously); M.Mus.; D.M.A.

The Shepherd School of Music is committed to the highest quality education of musicians and offers both professional training and a broad liberal arts curriculum at the undergraduate level. At the graduate level, it offers professional music training for qualified students in programs of performance, creativity, and scholarship.

**Degrees Offered.** The Shepherd School of Music offers four degrees: Bachelor of Arts degree in music; the Bachelor of Music degree in performance, composition, music history, and music theory; the Master of Music degree in performance, composition, choral and instrumental conducting, musicology, and music theory; and the Doctor of Musical Arts degree in composition and selected areas of performance. Normally, four years are required for the bachelor's degrees and two years for the master's. Qualified students may elect an honors program that leads to the simultaneous awarding of the Bachelor of Music and Master of Music degrees after five years of study.

**Admission.** An audition, either in person or on tape, is required of each undergraduate applicant. Undergraduate admission is determined jointly by the Shepherd School faculty and by the Admission Committee of Rice University, which bases its evaluation upon successful academic achievement and standard college admission indices.

Transfer students from other colleges, conservatories, and universities are evaluated in terms of prior preparation, which may reduce the required period of study at Rice. An audition, personal or taped, and placement exams in both music history and music theory are required of transfer applicants.

An audition or personal interview and placement exams in music history and music theory are required of graduate applicants. The Graduate Record Examination, including the advanced music tests, is required of graduate applicants in musicology, theory, and composition.

**Curriculum Design.** Undergraduate curricula consist of core music courses, applied music, other required music courses, chamber music and large ensembles, non-music courses as specified by the university, and electives. Music majors are entitled to one hour of private lessons each week each semester they are enrolled as a

music major. Private or group lessons beyond this may result in additional fees. After the required four semesters of instrumental or vocal study, students in the B.A. in music program who wish to continue taking private lessons must secure permission from the Dean's Office. All undergraduate majors are required to take the following core courses:

Music Theory: 211, 212, 311, 312, 411
Music History: 221, 222, 321, 322, 421
Aural Skills: 231, 232, 331, 332, 431

Students in the B.A. in music program take all of the above, with the exception of Aural Skills 331, 332, and 431. A minimum of 120 semester hours is required for either bachelor's degree. The precise number of hourly requirements varies according to major area. Further information on curricular requirements for all majors and degree programs may be obtained from The Shepherd School of Music.

Information on University Distribution Requirements and Foundation courses may be found elsewhere in this catalogue. For music majors, Musi 221 and Musi 222 may be counted as humanities (Group I, 2).

The B.Mus./M.Mus. program includes the core curriculum and an advanced curriculum. The first five semesters parallel the core curriculum of the four-year degrees. The sixth semester is a transitional semester in which the student must qualify for formal admission to candidacy for the master's degree as well as begin work in the advanced curriculum. If qualifying does not take place by the end of the sixth semester, the student is not allowed to register for the advanced curriculum without special permission. At least five distribution courses (preferably six) must be completed by the end of the sixth semester before the student is considered for formal admission to candidacy for the master's degree.

The final two years are devoted to the advanced curriculum, in which the student concentrates on creativity, performance, or research supported by laboratory or performing ensembles, theory and history seminars, and professional apprenticeships. Apprenticeships may involve a diversity of professional activities as appropriate for the individual. These may include participation with major or civic orchestras, choirs, or opera theaters; off-campus solo and small ensemble performances; conducting apprenticeships with professional orchestras, operas, or ballet companies; composition for films, television, public schools, and for ensembles in residence; and research in major national and international libraries. It is the responsibility of students to arrange their apprenticeships. Whenever possible, faculty members assist students in making arrangements for apprenticeships. These and any other specialized studies must be engaged by the individual student with the approval of the faculty. A minimum of 150 semester hours is required for the combined B.Mus./M.Mus. degree. The precise number of hourly requirements varies according to major area.

**Special Examinations:**

1. At the end of each semester, a jury examination is given in applied music over the material studied during the semester.
2. Keyboard proficiency is required of all degree candidates except B.A. students and must be satisfied by examination. If the student has little or no knowledge of the keyboard, enrollment in secondary piano beginning in the student's first semester is encouraged until the examination requirements are met.

3. Students on the five-year program must take a qualifying examination no later than the sixth semester to determine admissibility to the student's preferred major area in the advanced curriculum. For performance majors, this examination consists of the qualifying recital and an oral examination in music history and music theory based on the compositions to be performed on the qualifying recital. The Graduate Record Examination is required by the conclusion of the sixth semester for music history, theory, and composition majors.

**Performance and Large Ensembles.** Students are expected to perform frequently during their residence at Rice. Performance majors must present at least two full recitals. Composition and conducting students are expected to present recitals as specified by their degree programs. Students are expected to attend both faculty and student recitals. In addition, all music majors are required to participate in the school's conducted ensembles as assigned.

**Thesis.** The master's degree for composition, conducting, music history, and theory majors assumes a high level of scholarship. A thesis is required of music history and theory majors. An original work of extended scope is required of composition majors. Conducting majors must present either an extended composition or project.

**Warning, Music School Probation, Discontinuation.** A student performing unsatisfactorily in one or more courses at the midterm period may be placed on warning. If at the end of the semester significant improvement has not been shown, the student may be placed on music probation. A student may be placed directly on probation without warning. Probation is a more serious status than warning, and it signifies that the student's work has been sufficiently unsatisfactory to preclude graduation unless significant improvement is achieved promptly. A student on music probation may be absent from class only for extraordinary reasons and may not represent the school in any public function not directly a part of a degree program.

If at the conclusion of the probationary period the student has not shown marked improvement, the student may be discontinued from the school as a music major. Any student discontinued as a music major but not on academic suspension may elect a major elsewhere in the university, subject to the requirements of the major department or school.

A minimum grade of B- is expected of all music students in their major applied area. A grade of C will be evaluated in the following manner. If in the first five semesters of an undergraduate degree program a student receives a grade of C in his or her applied area, he or she will be placed on music warning. If the student receives a second C, he or she will be placed on music probation. With a third C in his or her major applied area, the student will be discontinued as a music major.

**Leaves of Absence and Voluntary Withdrawal.** Music majors must secure permission in writing from the Dean of the Shepherd School prior to requesting a leave of absence from the university. Requests must be submitted before the first day of classes of the semester for which the leave is to be applicable.

Music majors taking voluntary withdrawal from the university are not guaranteed readmission into the Shepherd School and may be asked to reapply/reaudition. [Such students are encouraged to explain the circumstances of their withdrawal to the Dean of the Shepherd School before leaving campus.]

**Courses for Nonmajors.** Non majors will find the following courses designed for the general student: Music 117, 118; 307, 308; 317, 318; 327, 328; 334, 335; individual instruction in all instruments: Music 141-197.

In addition, other music courses may be taken by the non-major with the permission of the instructor and approval of the Dean of the Shepherd School.

**Musical Opportunities.** Musical and educational opportunities are afforded the student both on campus and in the greater Houston area. A visiting lecturer series, a professional concert series, and numerous visiting distinguished musicians contribute to the Shepherd School environment. The Houston Symphony Orchestra, Symphony Chorus, Houston Grand Opera, Texas Opera Theater, Houston Ballet, Houston Oratorio Society, and Da Camera, as well as the activities of other institutions of higher learning in the area, provide exceptional opportunities for musical experiences.

## Composition

*Music Courses*

**303 UNDERGRADUATE COMPOSITION SEMINAR** (Credit variable)
*Burt, G., Cooper, P., Gottschalk, A., Jones, S., Lavenda, R., Milburn, E.*

**305 COMPOSITION ELECTIVE** (3-0-3 each semester)

**307 COMPOSITION FOR NONMAJORS I, II** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.2

**401 COMPOSITION FOR MAJORS** (3-0-3 each semester)
Creative composition employing mid-century vocabularies supported by extensive performance, listening, and analysis of related scores. Prerequisite: permission of the instructor.
*Burt, G., Cooper, P., Gottschalk, A., Jones, S., Lavenda, R., Milburn, E.*

**405 COMPOSITION ELECTIVE** (3-0-3 each semester)

**444(S) PRACTICUM IN CONTEMPORARY MUSIC PERFORMANCE** (1 credit)
Music majors only. Each enrolled composer will write a piece for an ensemble formed from some of the enrolled performers. The piece will be rehearsed and coached as it is being written and will be performed on various recitals.
*Lavenda, R.*

**503(F) ELECTRONIC MUSIC COMPOSITION** (1-6-3 each semester)
An introduction to analog synthesizers, VC programming, and basic tape manipulation and recording techniques.
*Gottschalk, A.*

**504(S) COMPUTER-ASSISTED MUSIC COMPOSITION** (1-6-3 each semester)
An introduction to computer-controlled M.I.D.I. sound synthesis systems, sequencing, multitrack tape recording, and outboard sound and signal processing. Musi 503 required.
*Gottschalk, A.*

**505 ADVANCED ELECTRONIC AND COMPUTER MUSIC COMPOSITION** (1-6-3 each semester)
A continuation of Musi 504, more individual project-oriented, with an emphasis on music generation computer programming. Musi 504 required.

**601 COMPOSITION FOR MAJORS, ADVANCED AND GRADUATES** (3-0-3 each semester)
*Burt, G., Cooper, P., Gottschalk, A., Jones, S., Lavenda, R., Milburn, E.*

**603 GRADUATE COMPOSITION SEMINAR** (Credit variable)
*Burt, G., Cooper, P., Gottschalk, A., Jones, S., Lavenda, R., Milburn, E.*

**605 ADVANCED ELECTRONIC AND COMPUTER MUSIC COMPOSITION II** (3 credits)
*Gottschalk, A.*

**707 DOCTORAL INDEPENDENT STUDY IN COMPOSITION** (3 credits)
Major symphonic or symphonic/choral work of professional level.
*Staff*

## Theory

*Music Courses*

**117F/S FUNDAMENTALS OF MUSIC I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
For nonmusic majors with minimal music preparation. Rudiments of pitch and duration. Study of scales, chord structure tonality, and forms. Permission of instructor.
*Staff*

**118(S) FUNDAMENTALS OF MUSIC II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Application of Music 117 materials. Creative work utilizing twentieth-century art and popular vocabulary. Permission of instructor.
*Staff*

**211(F) THEORETICAL STUDIES I** (3-0-3)
For music majors. Preliminary study of harmony, melody, rhythm, and form. Section determined by exam.
*Gottschalk, A.*

**212(S) THEORETICAL STUDIES II** (3-0-3)
For music majors. Discussion, analysis, and creative application of theoretical concepts and vocabulary from 1800 to present.
*Gottschalk, A.*

**311(F) THEORETICAL STUDIES III** (3-0-3)
For music majors. Baroque and early classical music. Study of species counterpoint and of two-three-four voice tonal counterpoint. Analysis of representative compositions of diverse genre and medium.
*Jones, S.*

**312(S) THEORETICAL STUDIES IV** (3-0-3)
For music majors. Late Classical and Romantic music. Chromatic harmony. Analysis of selected major works. Introduction to linear reductive analysis.
*Lavenda, R.*

**317(F) THEORY FOR NONMAJORS I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
For nonmusic majors with appreciable instrumental and/or high school theory background. Discussion, analysis, and application of the parameters of music: melody, rhythm, harmony, counterpoint, instrumentation, and form. Application to literature to 1700. Permission of instructor. Not offered 1993-94.
*Staff*

**318(S) THEORY FOR NONMAJORS II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
For nonmusic majors with appreciable instrumental and/or high school theory background. Prerequisite: Music 317 or permission of instructor. Stylistic harmony, melody, and form from 1700 to the present. Not offered 1993-94.

*Staff*

**411(F) THEORETICAL STUDIES V** (3-0-3)
Music of the twentieth century. Compositional devices from 1900-present. Analysis of selected major works.

*Burt, G., Milburn, E.*

**412(S) THEORETICAL STUDIES VI** (3-0-3)
Advanced analytical techniques. Practical applications of principal analytical systems from the Middle Ages to the present.

*Burt, G., Jones, S.*

**417 MUSIC FOR FILM** (2 credits)
Lectures focusing on instances where music has made a decisive impact on the meaning and vitality of various films. Generalized functions of film music (pacing, characterization, psychological extension, structural delineation) are examined with reference to dramatic intent. No prior technical knowledge of either medium is assumed. Explanation or definition is offered where needed. Some background in film or music is preferred.

*Burt, G.*

**418 FILM MUSIC LAB** (1 credit)
Discussions centering on detailed analysis of specific "cues" with the goal towards a collaboration with a filmmaker on the composition of a sound track for a short film. Lab is open to composers and is to be taken concurrently with Music 417. Offered irregularly.

*Burt, G.*

**511(F) GRADUATE THEORY REVIEW** (2-0-2)

*Burt, G.*

**513(F) MODAL COUNTERPOINT** (2-0-3)
An in-depth examination of the vocal polyphony of the sixteenth century, with practical applications of contrapuntal techniques. Not offered 1993-94.

*Gottschalk, A.*

**515(F)/**
**516(S) ADVANCED ORCHESTRATION I, II** (3 credits)

*Jones, S., Milburn, E.*

**517(F) SPECIAL STUDIES—MUSIC THEORY ANALYTICAL SYSTEMS** (3-0-3)

*Staff*

**611(F)/**
**612(S) PEDAGOGY OF THEORY I, II** (3-0-3 each semester)
Principal learning theories and philosophies of learning and teaching. Examination and critique of college-level materials.

*Lavenda, R.*

**613(S) CANON AND FUGUE** (2-0-3)
Specialized study of imitative counterpoint. Examples from the fifteenth to twentieth centuries. Emphasis on the Baroque fugue.

*Milburn, E.*

**614 SELECTED STUDIES IN MUSIC THEORY** (3-0-3)
Advanced study of the music of a single composer.

*Staff*

**711(F) ANALYTICAL APPROACHES** (3 credits)
An examination of critical passages from chosen works and with specific reference to central points of view in the writings of Schenker, Forte, Babbitt, Cone.

*Burt, G.*

**715(F) HISTORY OF THEORY** (3-0-3)

*Staff*

## History and Literature

*Music Courses*

**221(F)222(S) HISTORICAL STUDIES I, II** (3-0-3 each semester)
Historical study of musical style. Introduction, first semester; Medieval and Renaissance, second semester.

*Citron, M., Meconi, H.*

**321(F)322(S) HISTORICAL STUDIES III, IV** (3-0-3 each semester)
Historical studies in music of the seventeenth, eighteenth, and nineteenth centuries. Baroque, Preclassical, first semester; Classical and Romantic, second semester. Correlated with Music 311, 312 and 331, 332.

*Schnoebelen, A., Citron, M.*

**325 BAROQUE STRING/CONTINUO PERFORMANCE** (credit variable)
This course combines the theoretical and pragmatic approaches to Baroque music performance problems for string and continuo players. Research from treatises on various topics will be discussed in weekly classes and then applied to the instruments in extensive performance workshops. Prerequisite: audition. Offered irregularly.

*Luca, S., Schnoebelen, A.*

**327(F)328(S) MUSIC LITERATURE FOR NONMAJORS I, II** (3-0-3 each semester)
* DISTRIBUTION COURSE: CATEGORY I.2
Historical survey of music from the Middle Ages to 1750, first semester; from 1750 to the present, second semester.

*Bailey, W.*

**329 SPECIAL STUDIES—MUSIC HISTORY** (3-0-3)
Special studies in music history. Offered irregularly.

*Staff*

**414 PIANO CHAMBER MUSIC LITERATURE** (2 credits)
Offered irregularly.

*Connelly, B.*

**421(F) HISTORICAL STUDIES V** (3-0-3)
Twentieth century and contemporary. Historical studies in music of the twentieth century. Correlated with Musi 411 and 431.

*Bailey, W.*

**422 RENAISSANCE MUSIC** (3-0-3)

*Meconi, H.*

**423(F) CHAMBER MUSIC LITERATURE** (3-0-3)
Offered irregularly.

*Staff*

**424(F)/**
**425(S) ORGAN LITERATURE I, II** (3-0-3 each semester)

*Holloway, C.*

**426(F) PIANO LITERATURE** (3-0-3)
Offered irregularly.

*Fischer, J.K.*

**427(F)/**
**428(S) ORGAN LITERATURE III, IV** (3-0-3)
Offered irregularly.

*Holloway, C.*

**429 MUSIC OF THE MIDDLE AGES** (3-0-3)

*Meconi, H.*

**521 GRADUATE REVIEW OF EARLY MUSIC** (0 credit)

*Schnoebelen, A.*

**523(F) BIBLIOGRAPHY AND RESEARCH METHODS I** (3-0-3)
Studies in bibliography, techniques in research methodology.

*Citron, M.*

**524 SURVEY OF OPERA** (3-0-3)
Historical, musical, and literary aspects of selected operas. Prerequisite: permission of instructor. Offered irregularly.

*Schnoebelen, A.*

**525 PERFORMANCE PRACTICES SEMINAR** (3-0-3)
Study of performance practices from treatises and music, problems in editing music. Offered irregularly.

*Meconi, H., Schnoebelen, A.*

**621 SELECTED STUDIES IN MUSIC HISTORY** (3-0-3)
Seminar on individual topics in music history to be announced each year. Prerequisite: Music 411, 421.

*Staff*

**624 SEMINAR ON A SELECTED COMPOSER** (3-0-3 each semester)
Advanced study of the music of a single composer.
Prerequisite: Music 411, 421.

*Staff*

**723 AESTHETICS OF MUSIC** (3-0-3)
This is an introduction to music aesthetics, focusing on contemporary theories and writings. Offered irregularly.

*Staff*

**725 NOTATION** (3-0-3 each semester)
Prerequisite: permission of instructor. Offered irregularly.

*Staff*

## Aural Skills

**231(F)/**
**232(S) AURAL SKILLS AND PERFORMANCE TECHNIQUES I, II** (3-0-2 each semester)
Ear-training and sight-singing: solfege, rhythmic studies, intervals, chords. Emphasis on diatonic music. Placement test required prior to enrollment. Aural skills classes must be taken in sequence.

*Staff*

**331(F)/**

**332(S) AURAL SKILLS AND PERFORMANCE TECHNIQUES III, IV** (3-0-2 each semester)
Continuation of Music 232. Emphasis on chromatic music.

*Gottschalk, A.*

**431(F) AURAL SKILLS AND PERFORMANCE TECHNIQUES V** (3-0-2)
Continuation of performance techniques. Literature of the twentieth century.

*Jones, S.*

**432(S) AURAL SKILLS AND PERFORMANCE TECHNIQUES VI (SCORE READING)** (3 credits)

*Jones, S.*

**437(F) GRADUATE EAR TRAINING REVIEW** (3-0-2)
Offered irregularly.

## Conducting

**433(S) SCORE READING** (2-2-2)

*Staff*

**434(F) ELEMENTS OF CONDUCTING** (2-0-2)
Offered irregularly.

*Staff*

**439(F) CHORAL CONDUCTING I** (3-0-3)
The fundamental skills of choral conducting, including baton techniques, score reading, and rehearsal procedures. Conducting materials will be selected from representative choral works. Offered irregularly.

*Jaber, T.*

**440(S) CHORAL CONDUCTING II** (3-0-3)
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. Offered irregularly.

*Jaber, T.*

**533 GRADUATE CONDUCTING SEMINAR** (4-0-1)

*Rachleff, L.*

**537(F)/**
**538(S) ADVANCED CONDUCTING I, II** (3-9-3)
Graduate orchestral conducting majors only.

*Rachleff, L.*

**539(F) PSYCHOLOGY OF CONDUCTING** (1-0-1)
Offered irregularly.

*Staff*

**630 GRADUATE CHORAL CONDUCTING SEMINAR** (3-0-3)

*Jaber, T.*

**637(F)/**
**638(S) ADVANCED CONDUCTING III, IV** (3-9-3 each semester)
Graduate orchestral conducting majors only.

*Rachleff, L.*

## Individual Instruction

Course numbers for individual instruction are constituted as follows:

1. The first digit indicates function within the student's curriculum: 1=nonmusic major; 2=secondary, i.e., study by a music major on an instrument other than his or her principal instrument; 3=concentration, i.e., the principal instrument of students majoring in composition, music history, theory, or conducting; 4=music performance major for four-year undergraduates and five-year students prior to qualifying exams; 6=music performance major for two-year graduate students and five-year students after qualifying exams.
2. The second digit indicates the instrumental "family."
3. The third digit indicates the particular instrument within the family.

Course numbers for flute are printed in complete format below. The remainder is printed in summary form.

## Woodwind Instruction

*Flute Courses*

**151 FLUTE FOR NONMAJORS** (1-5-2)
* DISTRIBUTION COURSE: CATEGORY I.2

**251 SECONDARY FLUTE** (1-5-2)

**351 CONCENTRATION FLUTE** (1-5-2)

**352 CONCENTRATION FLUTE—INTENSIVE** (1-25-3)

*Wincenc, C.*

**451 FLUTE FOR MAJORS** (1-25-3)

*Wincenc, C.*

**651 FLUTE FOR MAJORS, ADVANCED, AND GRADUATES** (1-25-3)

*Wincenc, C.*

*Oboe Courses*

**153** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **253** (1-5-2); **353** (1-5-2); **354** (1-25-3); **453** (1-25-3); **653** (1-25-3)

*Atherholt, R.*

*Clarinet Courses*

**155** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **255** (1-5-2); **355** (1-5-2); **356** (1-25-3); **455** (1-25-3); **655** (1-25-3)

*Peck, D.*

*Bassoon Courses*

**157** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **257** (1-5-2); **357** (1-5-2); **358(S)** (1-25-3); **457** (1-25-3); **656** (1-25-3)

*Kamins, B.*

**459** **THEORY OF WOODWIND PERFORMANCE TECHNIQUES** (1-3-1 each semester)
For non-woodwind students. Offered irregularly.

*Staff*

**559** **WOODWIND PEDAGOGY** (1-3-2 each semester)
Offered irregularly.

*Staff*

## Brass Instruction

*Horn Courses*

**161** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2; **261** (1-5-2); **361** (1-5-2); **362** (1-25-3); **461** (1-25-3); **661** (1-25-3)

*Ver Meulen, W.*

*Trumpet Courses*

**163** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **263** (1-5-2); **363** (1-5-2); **364** (1-25-3); **463** (1-25-3); **663** (1-25-3)

*Wilt, J.*

*Trombone Courses*

**165** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **265** (1-5-2); **365** (1-5-2); **366** (1-25-3); **465** (1-25-3); **665** (1-25-3)

*Waters, D.*

*Tuba Courses*

**167** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **267** (1-5-2); **367** (1-5-2); **368** (1-25-3); **467** (1-25-3); **667** (1-25-3)

*Kirk, D.*

**469** **THEORY OF BRASS PERFORMANCE TECHNIQUES** (1-3-1 each semester)
For nonbrass students. Offered irregularly.

*Staff*

**569** **BRASS PEDAGOGY** (1-3-2)
Offered irregularly.

*Staff*

## Percussion Instruction

*Percussion Courses*

**171** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **271** (1-5-2); **371** (1-5-2); **372** (1-25-3); **471** (1-25-3); **671** (1-25-3)

*Brown, R.*

**479(S)** **THEORY OF PERCUSSION PERFORMANCE TECHNIQUES** (1-3-1 each semester)
For non-percussion students. Offered irregularly.

*Brown, R.*

**579** **PERCUSSION PEDAGOGY** (1-3-2 each semester)
Offered irregularly.

*Brown, R.*

## Voice Instruction

*Voice Courses*

**173** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **273** (1-5-2); **373** (1-5-2); **374** (1-25-3); **473** (1-25-3); **673** (1-25-3)

*Babikian, V., Lombard, J., Murray, W.*

**474** **OPERA THEATER WORKSHOP** (1 credit)
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.

*Bado, R., Lanier, H.*

**549** **VOICE PEDAGOGY** (1-3-2 each semester)
Offered irregularly.

**571** **VOCAL COACHING** (1 credit)

*Jaber, T.*

**572 OPERATIC ROLE PREPARATION** (3 credits)
An in-depth study of two or more contrasting roles in which the singer might reasonably be cast now or in the future, and performance of scenes therefrom.
Prerequisite: two semesters of Opera Workshop.
*Staff*

**573(F) DICTION I: ITALIAN** (2-1-1)
*Lombard, J.*

**574(F) DICTION II: GERMAN** (2-1-1)
*Murray, W.*

**575(F)/**
**576(S) VOICE REPERTOIRE I, II** (1-3-2 each semester)
*Lanier, H.*

**577(S) DICTION III: ENGLISH** (2-1-1)
*Lombard, J.*

**578(S) DICTION IV: FRENCH** (2-1-1)
*Lanier, H.*

## Keyboard and Harp Instruction

*Piano Courses*

**181 *DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **281** (1-5-2); **381** (1-5-2); **382** (1-25-3); **481** (1-25-3); **681** (1-25-3)
*Roux, R., Perry, J., Connelly, B., Shank, C.D., Fischer, J.K.*

*Organ Courses*

**183 *DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **283** (1-5-2); **383** (1-5-2); **384** (1-25-3); **483** (1-25-3); **683** (1-25-3)
*Holloway, C.*

*Harpsichord Courses*

**185 *DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **285** (1-5-2); **385** (1-5-2); **386** (1-25-3)
Prerequisite: Permission of instructor. Offered irregularly.
*Holloway, C.*

*Harp Courses*

**187 *DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **287** (1-5-2); **387** (1-5-2); **388** (1-25-3); **487** (1-25-3); **687** (1-25-3)
*Page, P.*

**389 COLLABORATIVE PIANO SKILLS** (2 credits)
A practicum exploring the pianist as an ensemble player. Three sessions weekly: 1) performance class for pianists in partnership with instrumentalists and singers—particular techniques discovered in balance, pedaling, articulation, style, etc.; 2) private appointment with instructor on individual repertoire—songs, sonatas, concerto reductions, etc.; 3) supervised sight-reading in the four-hand and other duo literature.
*Fischer, J.K.*

**445(F)/**
**446(S) KEYBOARD PROFICIENCY I, II** (2 credits)
For organists. Offered irregularly.

*Holloway, C., Staff*

**447(F)/**
**448(S) PIANO TECHNOLOGY I, II** (2 credits)
An introduction and practicum in the tuning and maintaining of pianos. Among the topics to be discussed will be the theory and acoustics of tuning, a brief history of the piano, proper repair and replacement of sound-producing mechanisms, and a general exposure to restoration. There will be hands-on experience and opportunities for supervised involvement in tuning and maintenance. The course is designed primarily but not exclusively for piano majors. Not offered 1993-94.

*Shank, C.D.*

**482 SCORE READING AND IMPROVISATION FOR PIANISTS** (3 credits)
An introduction to basics of historical and modern styles of improvisation. Offered irregularly.

*Connelly, B.*

**545(F)/**
**546(S) KEYBOARD PROFICIENCY III, IV** (2 credits)
For organists. Offered irregularly.

*Holloway, C., Kloeckner, P.*

**547(F) ORGAN PEDAGOGY** (1-3-2)

*Holloway, C.*

**583 INSTRUMENTAL ACCOMPANYING TECHNIQUES** (2 credits)
A course for piano majors, emphasizing practical skills of accompanying string and wind instruments in a wide variety of repertoire, including sonatas, transcriptions, and orchestral reductions. Offered irregularly.

*Connelly, B.*

**584 VOCAL COACHING TECHNIQUES FOR PIANISTS** (2 credits)
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 irregularly.

*Jaber, T.*

**588(F)/**
**589(S) PIANO PEDAGOGY I, II** (1-3-2)
Offered irregularly.

*Shank, C.D.*

**645(S) ORGAN CONSTRUCTION** (2 credits)
Offered irregularly.

*Visser, P.*

**689 PIANO FOR CHAMBER MUSIC AND ACCOMPANYING MAJORS, ADVANCED AND GRADUATE** (3 credits)

*Connelly, B.*

## String Instruction

*Violin Courses*

**191** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **291** (1-5-2); **391** (1-5-2); **392** (1-25-3); **491** (1-25-3); **691** (1-25-3)
*Fliegel, R., Luca, S., Goldsmith, K., Winkler, K.*

*Viola Courses*

**193** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **293** (1-5-2); **393** (1-5-2); **394** (1-25-3); **493** (1-25-3); **693** (1-25-3)
*Brooks, W., Erdélyi, C.*

*Violoncello Courses*

**195** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **295** (1-5-2); **395** (1-5-2); **396** (1-25-3); **495** (1-25-3); **695** (1-25-3)
*Fischer, N., Hoebig, D., Trepel, S.*

*Double Bass Courses*

**197** ***DISTRIBUTION COURSE: CATEGORY I.2** (1-5-2); **297** (1-5-2); **397** (1-5-2); **398** (1-25-3); **497** (1-25-3); **697** (1-25-3)
*Ellison, P., Malone, D., Pitts, T.*

**492(S) STRING TECHNOLOGY** (2 credits)
An introduction and practicum in the maintenance and repair of string instruments. Offered irregularly.
*Staff*

**494(F) THE HISTORY OF THE VIOLA AND VIOLA PLAYERS** (2 credits)
This course is both informative and attitude building with immediate benefits to violists on any level to become aware of the rich history of the development of the viola as an instrument, as a medium of musical expression with a special character, its role and meaning in various European countries through history, the composers who wrote for viola, the biography and significance of famous players who make up the viola "family tree."
*Erdélyi, C.*

**499(F) THEORY OF STRING PERFORMANCE TECHNIQUES** (1-3-1)
For nonstring students. Offered irregularly.
*Staff*

**599 STRING PEDAGOGY** (1-3-2 each semester)
Offered irregularly. Section 1, Violin; Section 2, Viola; Section 3, Cello; Section 4, Double Bass.
*Staff*

## Ensembles

**334 CAMPANILE ORCHESTRA** (0-3-1 each semester)
*Staff*

**335 UNDERGRADUATE CHORUS** (0-3-1 each semester)
Section 1, Shepherd Singers (by audition only); Section 2, Rice Chorale; Section 3, Sallyport (by audition only).

*Jaber, T.*

**337 UNDERGRADUATE ORCHESTRA** (0-9-2 each semester)

*Rachleff, L.*

**338 UNDERGRADUATE CHAMBER MUSIC** (0-6-1 each semester)

**435 SINFONIETTA** (1 credit)

*Rachleff, L.*

**436 COLLEGIUM** (1 credit)

*Hammond, M.*

**531 ORCHESTRAL REPERTOIRE** (1-3-1 each semester)
May be repeated. Section 1, Violin; Section 2, Viola; Section 3, Cello; Section 4, Double Bass; Section 5, Woodwinds; Section 6, Brass; Section 7, Percussion Ensemble; Section 8, Harp.

**635 ADVANCED ORCHESTRA** (0-9-2 each semester)

*Rachleff, L.*

**636 ADVANCED CHAMBER MUSIC** (0-6-1 each semester)

**640 ADVANCED CHORUS** (0-3-1 each semester)
Section 1, Shepherd Singers (by audition only); Section 2, Rice Chorale; Section 3, Sallyport (by audition only).

*Jaber, T.*

**736 SOLO, CHAMBER AND CONCERTO REPERTOIRE** (3 credits)
Preparation of a wide range of repertoire as determined by the instructor.

**747 SURVEY OF ORCHESTRAL REPERTOIRE** (2 credits)
A survey of the techniques of orchestral playing with emphasis on preparation of orchestral excerpts for professional auditions.

## Courses Applicable to All Specializations

**141 GUITAR FOR NON-MAJORS** (1-5-2)
* DISTRIBUTION COURSE: CATEGORY I.2

**341 JUNIOR RECITAL** (0-0-0 each semester)

**441 QUALIFYING RECITAL** (0-0-0 each semester)

**442 RECITAL ACCOMPANYING** (0-2-1 each semester)
Accompanying a single student recital, including the preview, dress rehearsal, performance, three lessons with the soloist's teacher, and practice times mutually agreeable to soloist and accompanist. May be repeated for additional credit.

**443 STUDIO ACCOMPANYING** (0-4-1 each semester)
Accompanying private lessons in studios as assigned for a total of four hours per week. May be repeated for additional credit.

**449 UNDERGRADUATE INDEPENDENT STUDY** (Credit variable)

**641 ADVANCED OR SENIOR RECITAL** (0-0-0 each semester)

**642 ACCOMPANYING FOR ENSEMBLE CREDIT** (0-4-1 each semester)
Requires permission of student's major teacher and conductor of ensemble in which student would normally perform. Taken in lieu of Music 635 or 640. Student to fulfill requirements of Music 442 or 443.

**647 MASTER'S THESIS IN COMPOSITION, THEORY, OR HISTORY AND LITERATURE** (1-0-3)

**649 GRADUATE INDEPENDENT STUDY** (Credit variable)

**700 GRADUATE RESEARCH** (Credit variable)

**741 GRADUATE RECITAL** (0-0-0 each semester)

**743 DOCTORAL SEMINAR—INSTRUMENTAL LITERATURE** (3 credits)
Directed analysis of selected works in student's current repertoire; additional works as specified by instructor. Required of DMA instrumental majors except organists, for two semesters.

**745 INSTRUMENTAL TECHNIQUES—WOODWINDS** (1 credit)
A study of the relationships of the various instruments within a family; technical problems to be encountered in the repertoire and resolution of those problems.

**748 DOCTORAL RECITAL RESEARCH** (Credit variable)

**749 APPRENTICESHIP** (Credit variable)

**750 DOCTORAL DOCUMENT** (3 credits)
Supervised research and writing in areas of performance study. Not limited to areas of original research.

**751 DOCTORAL RECITAL** (0 credit)
Section 1, Solo; Section 2, Chamber; Section 3, Concerto; Section 4, Lecture.

**800 DISSERTATION** (3 credits)

## Band

*Band Courses*

**340 CONCERT BAND** (0-4-1)
By audition or with permission of the instructor.

*Dye, K.*

**342 JAZZ ENSEMBLE** (0-3-1)
By audition or with permission of the instructor.

*Dye, K.*

# Natural Sciences

**101(F) INTRODUCTION TO THE PHYSICAL SCIENCES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5 OR III.6
The methods and basic principles of science, with major emphasis on mathematics, physics, and chemistry. A FOUNDATION COURSE

*Staff*

**102(S) INTRODUCTION TO THE PHYSICAL SCIENCES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5 OR III.6
The methods and basic principles of science, with major emphasis on mathematics, physics, and chemistry. A FOUNDATION COURSE

*Staff*

# Naval Science

**Professor Q.S. Masters,** *Chair*
**Assistant Professors Carter, Guess, Guevarra, and Smith**

The Department of Naval Science is administered by a senior U.S. naval officer, assisted by officers and enlisted personnel of the U.S. Navy and Marine Corps.

There are two categories of NROTC students: (1) scholarship, (2) nonscholarship.

**Scholarship Students.** A scholarship NROTC student is appointed a midshipman, U.S. Naval Reserve, on a nationwide competitive basis and receives retainer pay at the rate of $100 per month for a maximum of four academic years, with all tuition, fees, books, and equipment paid for by the government. Midshipmen are required to complete prescribed naval science courses, participate in drills and three summer cruises, and, upon graduation with a baccalaureate or advanced degree, to accept an active duty commission as ensign in the U.S. Navy or second lieutenant in the U.S. Marine Corps.

**Nonscholarship Students.** Nonscholarship students are civilian college students who enter into a mutual contract with the Secretary of the Navy in which they take naval science courses and participate in drills and one summer training cruise. In return, the Navy pays the student $100 per month during the junior and senior years and offers a reserve commission in the Navy or Marine Corps upon graduation. Nonscholarship students may, on a local, competitive basis, be recommended for scholarship status by the professor of naval science.

**Two-Year Program Students.** Interested students may, in their sophomore year (junior year for five-year students at Rice), apply for the two-year NROTC program. A nationwide competition will initially determine their scholarship or nonscholarship status (see above). Following selection, applicants attend a six-week Naval Science Institute (NSI) at Newport, Rhode Island, during July and August, which is designed to provide students with course material and training normally covered during the first two years of the regular NROTC program. Successful completion of NSI qualifies the student for enrollment in the advanced NROTC on an equal footing with the four-year students. About 15 percent of the nonscholarship students finishing NSI may be offered a two-year NROTC scholarship at that time. Additional scholarships may be awarded to the others from time to time upon the recommendation of the professor of naval science at Rice.

**U.S. Marine Corps.** NROTC students, either scholarship or nonscholarship, may apply for the Marine Corps program. Such selectees are referred to as Marine Corps option students and attend separate classes under a Marine Officer Instructor during their junior and senior years.

## Naval Science

*Naval Science Courses*

**101(F) NAVAL ORIENTATION** (4-0-0)
An introduction to naval traditions and customs, seamanship, naval organization and missions, and the fundamental concepts of seapower.

*Carter, A.*

**102(S) NAVAL ENGINEERING-NAVAL SHIP SYSTEMS I** (4-0-3)
A study of ship propulsion systems, auxiliary systems, steering systems, electrical power distribution, ship design, ship stability and damage control measures.

*Guevarra, M.*

**201(F) NAVAL WEAPONS-NAVAL SHIP SYSTEMS II** (3-0-3)
A study of 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.

*Guess, K.*

**202(S) SEAPOWER AND MARITIME AFFAIRS** (3-0-2)
Readings, discussions, and research on selected topics related to the history, importance, and impact of seapower on modern civilization.

*Carter, A.*

**301(F) NAVIGATION** (3-0-3)
A comprehensive study of coastal piloting, celestial and electronic ship navigation; involves nautical astronomy, navigational aids, satellite and inertial systems. Prerequisite: Requires Nava 311 lab.

*Guess, K., Smith, W.*

**302(S) NAVAL OPERATIONS** (3-0-2)
An analysis of ship movements, formations, and fleet operations; includes Rules of the Road, maneuvering board, tactical publications and communications.

*Carter, A.*

**303(F) EVOLUTION OF WARFARE** (3-0-2)
Historical survey of the evolution of the conduct of warfare. Stategy, tactics, weapons, organization, and military leaders/thinkers are studied.

*Smith, G.*

**311(F) NAVIGATION LAB** (0-2-0)

*Smith, W.*

**401(F) LEADERSHIP/MANAGEMENT I** (2-0-2)
An introduction to the principles and concepts of management, organization, leadership, information systems, and decision making.

*Masters, Q.*

**402(S) LEADERSHIP MANAGEMENT II** (2-0-1)
A comprehensive study of leadership and management principles, with particular emphasis on the practical application of interviewing, counseling techniques, human resources management, military law and discipline, and administration.

*Masters, Q.*

**410(F) AMPHIBIOUS WARFARE** (3-0-2)
Study of the history of amphibious warfare. Case studies examine doctrine, tactics, and the factors necessary for successful operations.

*Smith, G.*

*In addition to the courses listed above, NROTC students may be required to complete certain other courses that are offered by the university.*

# Philosophy

## School of Humanities

**Professor G. Sher,** *Chair*
**Professors Brody, Engelhardt, and Grandy**
**Associate Professors Crowell, Kulstad, Longino, Morrison, and Temkin**
**Assistant Professors DeRose, Hitchcock, and Sullivan**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** The philosophy major requires 30 semester hours (ten courses); at least 18 semester hours (six courses) must be in the 300 level or above. Majors must take Philosophy 201, 202, either 306 or 307, one course in logic (either 106 or 305), and two further courses in the history of philosophy (301, 302 or 308). If the student wishes, metaphysics (Philosophy 304), theory of knowledge (Philosophy 303), or philosophy of language (Philosophy 353) may be substituted for one of these additional history courses. A double major requires 27 hours (nine courses) with all other requirements remaining the same.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**Requirements for the Degree of Master of Arts:**

1. Completion with high standing of at least 30 semester hours in advanced courses approved by the department.
2. Completion of a written thesis on a subject approved by the department.
3. Satisfactory performance on a final oral examination not limited to the student's special field of study.

**Requirements for the Degree of Doctor of Philosophy:**

1. Completion with high standing of 48 hours of course work approved by the department (including logic).
2. Satisfactory performance on a qualifying examination.
3. Completion of a written thesis on a subject approved by the department; at least one year of thesis research must be spent in residence.
4. Satisfactory performance on a final oral examination, not limited to the student's special field of study.

*Philosophy Courses*

**100 PROBLEMS OF PHILOSOPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Survey of traditional and contemporary authors on such topics as the nature of scientific knowledge, the theory of justice, and the conflict between determinism and freedom. Offered most years. Not offered 1993-94.

*DeRose, K., Sher, G.*

**101(F) CONTEMPORARY MORAL AND LEGAL ISSUES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Examination of the moral and legal issues surrounding such topics as abortion, euthanasia, war, capital punishment, and equality of opportunity. Enrollment limited to 150.
*Temkin, L.*

**104(S) PHILOSOPHICAL PERSPECTIVES ON SCIENCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Philosophical issues that arise in and about science. Specific theories in science are examined to understand the nature and impact of scientific knowledge.
*Hitchcock, C.*

**106(F) LOGIC** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
A system of natural deduction is used to establish the validity of arguments, the validity of which turns on their truth functional or quantificational form.
*Hitchcock, C.*

**201(F) HISTORY OF PHILOSOPHY I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Survey of major philosophers of the ancient and medieval world from Thales to Ockham.
*Morrison, D.*

**202(S) HISTORY OF PHILOSOPHY II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
A survey of the history of Western philosophy from the seventeenth to the twentieth century, with special emphasis on the seventeenth and eighteenth centuries.
*Kulstad, M.*

**301(F) ANCIENT AND MEDIEVAL PHILOSOPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Topics drawn from major philosophical writings from the fourth century B.C. through the fourteenth century A.D. Content varies from year to year.
*Morrison, D.*

**302(S) MODERN PHILOSOPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Examination of themes or authors in seventeenth- and eighteenth-century philosophy.
*Kulstad, M.*

**303(F) THEORY OF KNOWLEDGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Topics: analysis of knowledge, foundations of knowledge, skepticism, perception, etc. Prerequisite: one course in philosophy.
*Kulstad, M.*

**304(S) METAPHYSICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Examination of some classical and contemporary metaphysical systems. Particular attention is paid to the very possibility of metaphysical analysis. Prerequisite: one course in philosophy.
*Morrison, D.*

**305(F) MATHEMATICAL LOGIC** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Natural deduction and semantical treatments of first order logic, with discussion of the value and limits of logic.
*Grandy, R.*

**306(S) ETHICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Philosophical analysis of traditional and contemporary theories of ethics. Enrollment may be limited.

*Sher, G.*

**307(S) SOCIAL AND POLITICAL PHILOSOPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
What makes a society just? On what grounds may the liberty of individuals be legitimately limited? What social ends may a state legitimately pursue?

*Sher, G.*

**308(S) CONTINENTAL PHILOSOPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Selected readings from Kant, Hegel, Nietzsche, and Heidegger.

*Crowell, S.*

**312(S) PHILOSOPHY OF MIND** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Inquiry into the nature of mind with emphasis on the mind/body problem. Prerequisite: one course in philosophy.

*Sullivan, S.*

**313(S) PHILOSOPHY OF SCIENCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Study of the relationship between scientific theories, experiment, observation, and reality. Prerequisite: one course in philosophy.

*Hitchcock, C.*

**315(S) ETHICS, MEDICINE AND PUBLIC POLICY** (3-0-3)
An examination of some of the ethical and policy questions raised by contempory medical techniques and by contemporary modes for the delivery of medical services.

*Engelhardt, H.T.*

**316 PHILOSOPHY OF LAW** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
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 alternate years. Not offered 1993-94.

*Brody, B.*

**353(F) THE PHILOSOPHY OF LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Why has language mattered to philosophy? Should language matter to philosophy? Why do philosophers look at language differently than linguistics or psychologists? Survey of historical and contemporary philosophical views on the relations among language, mind, and reality. Prerequisite: Two courses in philosophy or linguistics. Also offered as Ling 353. Offered alternate years.

*DeRose, K.*

**357 ADVANCED PHILOSOPHICAL TOPICS IN MATHEMATICAL LOGIC** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Survey of systems alternative to or beyond standard logic to represent concepts in natural languages, including: possibility and necessity, time and change, existence, conditionals, and vagueness. Prerequisite: Phil 305. Not offered 1993-94.

*Grandy, R.*

**390 CONTEMPORARY TOPICS** (3-0-3)
Problems in selected areas of philosophy.

*Brody, B., DeRose, K., Temkin, L.*

**401(F) INDEPENDENT READING I** (Variable)
Prerequisite: permission of the department.

*Sher, G.*

**402(S) INDEPENDENT READING II** (Variable)
See Phil 401.

*Sher, G.*

**501(S) SEMINAR IN ANCIENT PHILOSOPHY** (3-0-3)

*Morrison, D.*

**502(F) SEMINAR IN MODERN PHILOSOPHY** (3-0-3)

*Kulstad, M.*

**504(S) SEMINAR IN METAPHYSICS** (3-0-3)

*DeRose, K.*

**505(F) MATHEMATICAL LOGIC** (3-0-3)
Natural deduction and semantical treatments of first order logic, with discussion of the value and limits of logic. Open to philosophy graduate students only.

*Grandy, R.*

**506(S) SEMINAR IN ETHICS** (3-0-3)

*Temkin, L.*

**507(F) SEMINAR IN SOCIAL AND POLITICAL PHILOSOPHY** (3-0-3)

*Brody, B.*

**508(S) SEMINAR IN CONTINENTAL PHILOSOPHY** (3-0-3)

*Crowell, S.*

**512(S) SEMINAR IN PHILOSOPHY OF MIND** (3-0-3)

*Sullivan, S.*

**513(F) SEMINAR IN PHILOSOPHY OF SCIENCE** (3-0-3)

*Hitchcock, C.*

**521(F) SEMINAR IN KANT AND HEGEL** (3-0-3)

*Engelhardt, H.*

**522 SEMINAR IN PRAGMATISM** (3-0-3)
Offered alternate years. Not offered 1993-94.

*Staff*

**530 FREGE TO LOGICAL POSITIVISM** (3-0-3)
Offered alternate years. Not offered 1993-94.

*Brody, B.*

**553 PHILOSOPHY OF LANGUAGE** (3-0-3)
Not offered 1993-94.

*Grandy, R.*

**601(F) ADVANCED INDEPENDENT READING I** (Variable)

*Sher, G.*

**602(S) ADVANCED INDEPENDENT READING II** (Variable)

*Sher, G.*

**800 RESEARCH AND THESIS** (Variable)

*Sher, G.*

# Physics

## The Wiess School of Natural Sciences

**to be named,** *Chair*
**Professors S.D. Baker, Bonner, Corcoran, Duck, Dunning, Estle, Hannon, Huang, Michel, Mutchler, Rau, Roberts, Smalley, Stebbings, Stevenson, Trammell (*Emeritus*), and Walters**
**Adjunct Professor Hazlewood**
**Associate Professors Dodds, Hulet, Miettinen, and Nordlander**
**Adjunct Associate Professor Kimura**
**Faculty Fellows D. Adams and Ahmad**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** The physics major has several options to accommodate differing interests. In addition there is an interdepartmental major in chemical physics. Detailed major requirements for each option are specified below. Courses are listed by year only as a suggested guideline for scheduling.

Credit for some of these courses may be obtained by Advanced Placement. Moreover, the Physics Department Undergraduate Committee can modify the requirements to meet the needs of students with special backgrounds.

The physics requirements for double majors are the same as given below, except that substitutions may be possible when comparable courses have been taken in other departments.

In addition to the departmental requirements for the major, all students must satisfy the university requirements for the degree, including the completion of at least 60 semester hours outside the courses specified for the major.

### A. Regular Physics Major

**1st year:**
Phys 101, 102, 132
Math 101, 102 (or 121, 122)
Chem 101, 102 (or 111, 112)

**2nd year:**
Phys 201, 202, 231
Phys 331 (in spring)
Math 212, 211 (or 221, 222)

**3rd year:**
Phys 301, 302, 311, 312, 332
Math 381, 382 or Caam 335, 336

**4th year:**
Phys 411, 412 (or approved substitutes)
Phys 425, 431, 432

### B. Physics Major with Option in Space Physics and Astronomy

This option has been modified as of 1991-92. Students who have completed Spac 251, 252 will continue with the OLD program. Students who have not yet taken Spac 251, 252 will follow the NEW program. Spac 251, 252 will not be offered beyond 1990-91.

| OLD<br>(for students who have completed Spac 251, 252) | NEW<br>(for students who have not completed Spac 251, 252) |
|---|---|
| **1st year:** | |
| Phys 101, 102, 132 | Phys 101, 102, 132 |
| Chem 101, 102 (or 111, 112) | Chem 101, 102 (or 111, 112) |
| Math 101, 102 (or 121, 122) | Math 101, 102 (or 121, 122) |
| **2nd year:** | |
| Phys 201, 202, 231, 331 | Phys 201, 202, 231, 331 |
| Math 212, 211 (or 221, 222) | Math 212, 211 (or 221, 222) |
| Spac 251, 252 (thru 90-91) | Spac 250 (starting S92) |
| **3rd year:** | |
| Phys 301, 302, 311, 312 | Phys 301, 302, 311, 312 |
| Phys 332 (thru 91-92) | Spac 300, 330 (starting S93) |
| Math 381, 382 or Caam 335, 336 | Math 381, 382 or Caam 335, 336 |

(Students may wish to defer one of the 300-level Math or Masc courses to the 4th year.)

| | |
|---|---|
| **4th year:** | |
| Phys 425, 431, 432 | Phys 425, 431, 432 |
| One of: Spac 471, 503, 512 | Two Spac courses at |
| 551, 552, 561 | 400 or 500 level |

**C. Physics Major with Option in Applied Physics.**
This option has a slightly more applied emphasis than the regular physics major and facilitates a double major in electrical engineering.

**1st, 2nd and 3rd years:**
Same as regular physics majors, plus Elec 241
Elec 306 may substitute for Phys 302
Elec 326, 342 may substitute for Phys 331, 332

**4th year:**
Phys 425
Phys 431, 432
One of: Phys 411, Phys 412, Elec 461

**D. Physics Major with Option in Biophysics:**

**1st year:**
Phys 101, 102, 132
Math 101, 102, (or 121, 122)
Chem 101, 102, (or 111, 112)
Chem 105

**2nd year:**
Phys 201, 202, 231
Bios. 201, 202
Math 212, 211 (or 221, 222)
Chem 211, 212, 213, 214

**3rd year:**
Phys 311, 312
Bios. 301
Approved Bios. elective

**4th year**
Phys 301, 302

**E. Chemical Physics Major**

This major program is administered jointly by the Physics and Chemistry Departments.

**1st year:**
Phys 101, 102, 132
Chem 101, 102, (or 111, 112)
Chem 105
Math 101, 102 (or 121, 122)

**2nd year:**
Phys 201, 202, 231
Chem 211, 212, 213, 214
Math 212, 211 (or 221, 222)

**3rd and 4th years:**
Chem 311, 312
Phys 331, 332 or Chem 313, 314
Math or Caam (300 level or above), 2 sem.
Phys 301, 302, 311, 312 (or equivalents)

**Graduate Program**. The Department of Physics offers studies and research leading to the degrees of Master of Arts and Doctor of Philosophy. The Department of Physics offers research facilities and thesis supervision in the fields of astrophysics, atomic and molecular physics, quantum electronics, biophysics, nuclear and particle physics, condensed matter physics, surface physics, and theoretical physics.

To be eligible for the Master of Arts degree, a graduate student must complete 30 semester hours of approved graduate level studies, including a research thesis performed under the direction of a physics faculty member. A minimum of one year of graduate study is required for the M.A.

To be eligible for the Doctor of Philosophy degree, a graduate student must first demonstrate to the department the ability to engage in advanced research. This is normally done by successfully completing the work for the Master of Arts in physics. The student must also complete in residence 60 semester hours of approved graduate level study and a research thesis completed under the direction of a physics faculty member. A minimum of two years of graduate study is required for the Ph.D. Further details of research programs in physics and departmental degree requirements are available from the Department of Physics.

## Physics

*Physics Courses*

**101(F) MECHANICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
The first semester of the calculus-based sequence in physics for science and engineering students.

**102(S) ELECTRICITY AND MAGNETISM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
See Phys 101 and 132.

**125(F) GENERAL PHYSICS I** (3-3-4)
* DISTRIBUTION COURSE: CATEGORY III.5
A calculus-based survey of physics primarily intended for bioscience and premedical students. Lecture and laboratory topics will include mechanics, waves, electricity and magnetism, optics and modern physics.

**126(S) GENERAL PHYSICS II** (3-3-4)
* DISTRIBUTION COURSE: CATEGORY III.5
Continuation of Phys 125.

**132(S) ELEMENTARY PHYSICS LAB I** (0-3-1)
Recommended for students enrolled in Phys 102.

**141(F) CONCEPTS IN PHYSICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
Emphasis on the nature of physical phenomena, the conceptual development of physics, and related cultural influences.

**201(F) WAVES AND OPTICS** (3-0-3)
The third semester of the four-semester sequence in physics for science and engineering students. See Phys 231.

**202(S) MODERN PHYSICS** (3-0-3)
The final semester of the four-semester sequence in physics for science and engineering students.

**231(F) ELEMENTARY PHYSICS LAB II** (0-3-1)
Recommended for students enrolled in Phys 201.

**301(F) INTERMEDIATE MECHANICS** (4-0-4)
Classical mechanics and appropriate mathematical methods. Emphasis on problem solving.

**302(S) INTERMEDIATE ELECTRODYNAMICS** (4-0-4)
Classical electrodynamics and appropriate mathematical methods. Emphasis on problem solving.

**311(F) INTRODUCTION TO QUANTUM PHYSICS I** (3-0-3)
Fundamentals of quantum mechanics and applications.

**312(S) INTRODUCTION TO QUANTUM PHYSICS II** (3-0-3)
See Phys 311.

**331 JUNIOR PHYSICS LABORATORY I** (1-6-2)

**332 JUNIOR PHYSICS LABORATORY II** (1-6-2)

**411(F) NUCLEAR AND PARTICLE PHYSICS** (3-0-3)

**412(S) SOLID STATE PHYSICS** (3-0-3)

**425(F) STATISTICAL AND THERMAL PHYSICS** (3-0-3)

**431(F) SENIOR PHYSICS RESEARCH I** (1-6-3)

**432(S) SENIOR PHYSICS RESEARCH II** (1-6-3)

**461 INDEPENDENT RESEARCH** (Variable)
A reading course in special topics.

**462(S) INDEPENDENT RESEARCH** (Variable)
See Phys 461.

**515(F) CLASSICAL DYNAMICS** (3-0-3)
Also offered as Spac 515.

**521(F) QUANTUM MECHANICS I** (3-0-3)
Graduate-level quantum mechanics.

**522(S) QUANTUM MECHANICS II** (3-0-3)
Continuation of Phys 521.

**526(F) STATISTICAL PHYSICS** (3-0-3)

**532(S) CLASSICAL ELECTRODYNAMICS** (3-0-3)
Graduate-level electrodynamics. Also offered as Spac 532.

**541(F) NUCLEAR AND PARTICLE PHYSICS** (3-0-3)
Nuclear structure and reaction mechanisms. Study of accelerators, detectors, and systematics.

**542(S) ELEMENTARY PARTICLE PHYSICS** (3-0-3)
Theory of elementary particles and characteristic features of experimental data.

**552(S) SPECIAL TOPICS IN BIOPHYSICS** (3-0-3)

**563(S) INTRODUCTION TO SOLID STATE PHYSICS I** (3-0-3)
Fundamental concepts of crystalline solids, including crystal structure, band theory, and lattice vibration theory. Also offered as Elec 563.

**564(F) INTRODUCTION TO SOLID STATE PHYSICS II** (3-0-3)
Continuation of Phys 563, including scattering of waves by crystals, transport theory, and magnetic phenomena. Also offered as Elec 564.

**566(S) SURFACE PHYSICS** (3-0-3)

**571(S) ATOMIC AND MOLECULAR SPECTRA** (3-0-3)
Atomic structure, principles of lasers, fundamental interactions of atoms with electromagnetic radiation, including coherent effects, laser spectroscopy, quantum optics, laser cooling of atoms. Prerequisite: Phys 521.

**574(S) SPIN POLARIZED SPECTROSCOPIES** (3-0-3)

**581(F) COLLISION THEORY** (3-0-3)
Potential scattering; resonances. Born and semiclassical approximations. Quantum dynamics and S-matrix theory. Multichannel phenomena. Applications to simple atomic and nuclear systems. Prerequisite: Phys 521, 522.

**595 PHYSICS TEACHING** (1-3-3)

**596 PHYSICS TEACHING** (1-3-3)

**621(F) ADVANCED QUANTUM MECHANICS I** (3-0-3)
Relativistic quantum mechanics and quantum electrodyanamics.

**622(S) ADVANCED QUANTUM MECHANICS II** (3-0-3)
QED, QCD, and unified theories.

**663(F) CONDENSED MATTER THEORY: APPLICATIONS** (3-0-3)

**664(S) CONDENSED MATTER THEORY: MANY-BODY FORMALISM** (3-0-3)

**665(F) MAGNETISM** (3-0-3)

**800 GRADUATE RESEARCH** (Variable)

# Policy Studies

Policy Studies is a liberal arts oriented interdisciplinary major focusing on policy issues that are of public interest. Evaluation and analysis of the determinants and effects of policy decisions are the central subject matter. It is a course of study concerned with theoretical issues as well as applied and prescriptive policy questions.

The policy studies major represents an area of concentration which can be taken only as a second major, complementary to a major in any University department. The intent of the major is to provide students from a wide variety of academic backgrounds with an understanding of the policy-making process and an intellectual foundation in the skills of policy makers and evaluators. Students in the fields of engineering and basic sciences considering professions in the business and/or government would benefit from an understanding of how technical innovations or regulations are adopted and implemented as matters of public poicy. Students in humanistic fields such as languages or English would receive systematic exposure to area of study which have high intellectual appeal and in which their language skills might prove to be particulartly valuable.

The administration of the program is in the hands of a committee consisting of representatives from the Departments of Anthropoligy (Professor Marcus), Economics (Professor Zodrow), Psychology (Professor Dipboye), Sociology (Professor Davidson), Mathematical Sciences (Professor Scott), and History (Professor Wiener). The chair of the committee is Professor Stein. Students interested in policy studies should see Professor Stein, who will assign them an advisor closely related to their field of interest.

Students majoring in Policy Studies can participate in American University's Washington Semester Program. The Washington Semester Program offers a full semester of course work at American University in Washington, D.C. Students also participate in an internship which exposes them to the operation of different branches of the federal government. American University offers separate programs in American Politics, U.S. Foreign Policy, Journalism, Economic Policy, Justice, Public Law, and Peace and Conflict Resolution. Students interested in the program should contact Professor Stein in the Political Science Department.

*Degree Offered:* B.A.

**Undergraduate Program.** Students are required to take 12 courses. Three introductory social science courses (each from a different discipline, but including Economics 211 or 212) selected from:

Anthropology 201, 306, Economics 211, 212, Political Science 210, 211, 212, Psychology 101, 102, Sociology 203, 231, 353.

One course in statistical methods selected from:

Economics 350, Statistics 280, 382, Political Science 495, Psychology 339, or a more advanced course.

One course in analytical approaches: Social Science 300.

Three courses in advanced analysis selected from:
Anthropology 313, 314, 333, 336, Economics 301, 370, 372, 375, 416, 440, 455, 483, History 350, Philosophy 307, Political Science 317, 318, 337, 339, 380, 435, Psychology 231, Sociology 301, 311, 325, 425. Statistics 301.

Three courses in an applied area selected from one of the following groups:

1. Human Resources/Health/Welfare: Anthropology 381, 383, 386, 388, Economics 415, History 430, Philosophy 314, 315, Psychology 332, Religious Studies 462, 463, Sociology 313, Social Sciences 420, 430.
2. Foreign Policy/International Relations: Anthropology 353, 360, Economics 420, 430, 450, History 456, 469, Political Science 351, 354, 360, 361, 371, 372, 378, 379.
3. Law and Justice: Anthropology 326, Economics 438, History 297, 298, 397, 398, Political Science 321, 410, Philosophy 101, Sociology 321.
4. Quantitative Analysis: Economics 400, 472, Mathematical Sciences/Economics 471, 475, 476, Psychology 340, Sociology 313, 496. Statistics 381, 480, 481.
5. Urban Studies: Anthropology 348, Economics 461, Political Science 432, Sociology 308, 309, 425, 432, 441, 446, 496.

One approved special topics seminar or one semester of independent work in a participating department, involving a research paper on a policy topic.

In addition to the requirements for the major, students must also satisfy the University's distribution and graduation requirements. The policy studies major can be taken only as a second major. The first major cannot be also in an interdepartmental program. See Degree Requirements and Majors, pages 65-85.

# Political Science

## The School of Social Sciences

**Associate Professor Wilson,** *Chair*
**Professors Ambler, Black, Cuthbertson, Dix, Hobby, Stein, Stoll, and von der Mehden**
**Associate Professors Alford, Hamm, and Morgan**
**Assistant Professors Anderson, Funk, and Ward**
**Lecturers Goldman and Hudspeth**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** Students majoring in political science are required to complete thirty semester hours (ten courses) in the field. All majors must also complete six semester hours (two courses) of advanced work, selected with the advice of the department, in any of the following fields: anthropology, economics, history, philosophy, psychology, or sociology.

Double majors in one of the above fields may automatically substitute six semester hours (two courses) in upper-level courses in their second field for six of the required 30 semester hours in political science courses. Double majors whose second major is managerial studies or policy studies may automatically substitute three hours (one course). Double majors whose second field is not listed above normally are required to take 30 semester hours (ten courses) in political science. They may petition for substitution of courses in other fields, but such substitutions are permitted only when the course to be substituted has a close and significant relationship to political science.

Within the major, each student is encouraged to take a program of courses that provides both a broad understanding of the field and a specialized knowledge of some portion of it. Specific distribution requirements are minimal. However, students are required to take at least one course in any four of the six areas listed below:

1. American Political Institutions and Behavior
2. Comparative Politics
3. International Relations
4. Political Philosophy and Legal Theory
5. Empirical Theory and Method
6. American Public Policy

Political Science 209, 210, 211, and 212 constitute the introductory courses in political philosophy, American politics, international relations, and comparative government, respectively. Prospective majors are encouraged to take one or more of these courses, preferably in their first or second year. However, none is required of majors, except that Political Science 210 is the course that meets the Texas state licensing requirements in political science for teachers. It should be noted that no more than two of the above introductory courses may be counted toward the major and that Political Science 310 may not be counted toward the major.

Two of the political science courses must be seminars (courses at the 400 or 500 level). A student may not take both seminars from the same faculty member. Reading courses will not satisfy this requirement. Students may not substitute a course in another department to meet this requirement. Students participating in the honors program (see below) are additionally required to take one seminar. Note that all courses at the 500 level require the student to obtain the permission of the instructor before registering and that all seminars have an enrollment limit of twenty.

Directed Readings (Political Science 305, 306) and Senior Thesis (405, 406) will be counted towards the major only in addition to twenty-four hours of regular course work and will not count toward the department's distribution requirement. A student may not take more than one directed readings course (305, 306) from a single faculty member, and that faculty member must have a full-time appointment. Students should file a brief (no more than one page) description of the work that will be conducted in the readings course no later than two weeks into the semester in which the student is taking the course. The description should include the name of the faculty member who is supervising the research. It should be filed with the departmental director of undergraduate studies.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**Honors Program**. The honors program is a two-semester sequence. The first semester is a readings course that will serve as the basis for drawing up a prospectus for the honors thesis. At the end of the first semester, the prospectus must be approved by a thesis committee composed of two full-time members of the political science department. The second semester will consist of the writing of the honors thesis, which must be approved by the student's thesis committee. The two honors courses must be taken in different semesters. A student who successfully completes the honors requirement may substitute the two semester honors sequence for one of the two seminars required for the major. Admission to the honors program requires the approval of the departmental director of undergraduate studies.

**Interdisciplinary Programs**. The Department of Political Science participates in the interdepartmental programs in managerial studies and policy studies. See description of these programs on page 404 for managerial studies and page 461 for policy studies.

**Graduate Program.** The Department of Political Science offers a graduate program leading to the Ph.D. The Ph.D. student is expected to complete 48 semester hours in advanced courses or seminars prior to candidacy and to present a dissertation displaying original research. Normally, the student takes the core courses in the three general fields of American government, comparative government, and international relations. The student takes additional course work and comprehensive examinations in two of these three fields. Before taking the comprehensive examinations, the student is expected to complete a course in statistical analysis, demonstrate some familiarity with traditional political theory, satisfy the language or skill requirement in his or her major field, and complete all course requirements, including a two-semester sequence in scope and methods. Specific courses are chosen in consultation with the faculty adviser.

## Political Science

*Political Science Courses*

**209(S) INTRODUCTION TO CONSTITUTIONALISM AND MODERN POLITICAL THOUGHT** (3-0-3)

* DISTRIBUTION COURSE: CATEGORY II.3

Constitutionalism and authoritarianism from Machiavelli to Marx; introduction to contemporary ideologies. Together with Poli 210 meets state professional requirements for teachers.

*Cuthbertson, E.*

**210(F) AMERICAN GOVERNMENT AND POLITICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.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.

*Black, E.*

**211(S) INTERNATIONAL RELATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.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 development of the Third World, are also discussed.

*Stoll, R.*

**212(F) INTRODUCTION TO COMPARATIVE POLITICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An examination of political institutions and behavior in selected democratic, Communist, and "Third World" countries.

*Ambler, J.*

**300(S) FEDERALISM AND INTERGOVERNMENTAL POLITICS** (3-0-3)
Examines the relationships between the federal government and the states. Lays out the effects of national policy on state governments and explores changes in intergovernmental aid transfers between levels of government.

*Stein, R.*

**301(F) STATE POLITICS** (3-0-3)
This course is organized around the themes of the constraints and influences on the adoption and implementation of public policies in the American states. Not offered in 1993-1994.

*Hamm, K.*

**305(F) DIRECTED READING I** (Variable)
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.

*Stoll, R.*

**306(S) DIRECTED READING II** (Variable)
See Poli 305.

*Stoll, R.*

**309(F) LAW AND SOCIETY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An examination of the nature of law and of justice; employment of the casebook method to study specific aspects of the law. Enrollment limited to juniors and seniors.

*Goldman, N.*

**310(S) LAW AND SOCIETY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
See Poli 309. Does not count toward Political Science major.

*Goldman, N.*

**317(F) CONGRESS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.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. Enrollment limited to 75.

*Ward, D.*

**318(F) THE PRESIDENCY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Presidential powers and behavior are analyzed in the context of the legal, electoral, personal, and other forces that shape and limit the actions of the president. Enrollment limited to 75.
*Wilson, R.*

**321(F) AMERICAN CONSTITUTIONAL LAW** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Interpretation of the Constitution by the Supreme Court (juniors and seniors preferred). Enrollment limited to 50.
*Cuthbertson, G.*

**328(F) LAW AND FOREIGN POLICY**
Examines the making of U.S. foreign policy in a changing world, with emphasis on the role of constitutional constraints and opportunities in trade, aid, and diplomacy. Prerequisite: Permission of the instructor. Also offered as Admn 571.
*Silverstein, G.*

**332(F) URBAN POLITICS** (3-0-3)
Examines issues of political behavior and public policy in urban and metropolitan areas. Specific topics include urban decline and revitalization, conflict between "Snowbelt" and "Sunbelt" cities, fiscal management, and urban and suburban relations.
*Hamm, K.*

**333(S) COMPARATIVE LEGISLATURES**
Examines the similarities and differences of legislatures in different countries. Explores the causes and consequences of these differences.
*Hamm, K.*

**334(F) PARTIES AND INTEREST GROUPS** (3-0-3)
Examines the organization and behavior of political parties and interest groups within the American political system. Enrollment limited to 75. Not offered 1993-94.
*Hamm, K.*

**336(F) POLITICS OF REGULATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
This course will focus principally on government regulation of business and the political factors that shape its content. Enrollment limited to 75. Not offered 1993-94.
*Staff*

**337(S) PUBLIC POLICY AND BUREAUCRACY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
The role public bureaucracy plays in national policy-making process. Sources of agency power are examined and then linked to different policy outcomes. Offered irregularly. Enrollment limited to 75.
*Stein, R.*

**338(F) BUSINESS AND PUBLIC POLICY**
Examines the range of business-government relationships with a focus on the public policy decision-making process and the effects of public policy on the business environment. Prerequisite: graduate standing and instructor's permission. Also offered as Admn 567.
*Whitmire, K.*

**340 ANCIENT AND MEDIEVAL POLITICAL THEORY** (3-0-3)
The sources of ancient and medieval political thought. Special emphasis on historical analysis of political philosophy and mythology and the influence of Plato and Aristotle. Not offered 1993-94.
*Cuthbertson, G.*

**351(S) POLITICS OF SOUTHEAST ASIA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Political processes, institutions, and attitudes in selected Southeast Asian states. Emphasis on the postwar period, but traditional forces influencing contemporary political behavior also considered. Enrollment limited to 75.

*von der Mehden, F.*

**353(F) POLITICS OF CHINA AND JAPAN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Political processes, institutions, and attitudes of China and Japan; emphasis on postwar developments in relation to traditional patterns, political ideology, and international politics. Not offered 1993-94.

*von der Mehden, F.*

**354(F) LATIN AMERICAN POLITICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A study of the political process in contemporary Latin America, with particular attention to selected major countries. Enrollment limited to 40.

*Dix, R.*

**360(S) WESTERN EUROPEAN DEMOCRACIES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of government and politics in Western European democracies, with primary emphasis on Great Britain, France, and Germany. Enrollment limited to 75. Not offered 1993-94.

*Ambler, J.*

**361(S) COMPARATIVE COMMUNIST SYSTEMS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
A survey of government and politics in selected Communist systems, including the USSR and Communist China. Not offered 1993-94.

*Staff*

**362(F) EUROPEAN INTEGRATION**
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. Enrollment limited to 75.

*Anderson, C.*

**364(S) GERMAN POLITICS**
Examines the political process, institutions, and attitudes in Germany and German-speaking societies. The main focus is on the Federal Republic of Germany, but attention is also given to the politics of Austria and the former East Germany.

*Anderson, C.*

**371(F) COMPARATIVE FOREIGN POLICY** (3-0-3) Offered irregularly.
A survey and comparative analysis of the foreign policies and policy-making systems of selected countries, including China, Japan, and the Soviet Union. Not offered 1993-94.

*Staff*

**372(S) AMERICAN FOREIGN POLICY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Examines the internal and external aspects of foreign policy leadership, presidential initiative, congressional control, press, public opinion, and crisis management. Not a Managerial Studies elective. Enrollment limited to 50. Not offered 1993-94.

*Morgan, T.C.*

**373(F) INTERNATIONAL CONFLICT** (3-0-3)
Considers the theoretical basis of, and empirical evidence for, a number of explanations of the occurrence of interstate war. Contemporary theories dealing with dispute escalation, arms races, deterrence, crisis management, and low intensity conflict are also evaluated.

*Morgan, T.C.*

**374(F) STRATEGIC INTERACTIONS IN INTERNATIONAL RELATIONS** (3-0-3)
This class will introduce students to the uses of game theory in the study of international relations. Not offered 1993-94.

*Staff*

**378(F) POLITICS OF AMERICAN NATIONAL SECURITY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Major issues of national security policy, including strategic doctrines, policy-making processes on defense issues, arms control, and defense of Europe. Not a Managerial Studies elective. Enrollment limited to 75.

*Stoll, R.*

**379(F) PROBLEMS IN INTERNATIONAL RELATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Enrollment limited to 75. Not offered 1993-94.

*Staff*

**380(F) POLITICAL BEHAVIOR** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Examines basic concepts in political behavior and includes politicization, public opinion, political participation, and voting behavior. Students will learn basic data analysis techniques.

*Funk, C.*

**381(F) WOMEN AND AMERICAN POLITICS** (3-0-3)
Examines the participation of women in American political life, including the emergence of the contemporary women's movement and the participation of women as candidates and as officeholders. Also offered as Sosc 320.

*Whitmire, K.*

**382(S) PUBLIC OPINION**
Examines the formation of political attitudes, the role of political socialization, and political participation. Enrollment limited to 75.

*Funk, C.*

**405(F) SENIOR THESIS** (3-0-3)
Open to senior honors majors with the permission of the department. Students must complete both Poli 405 and 406 to obtain credit. Enrollment limited to 20. Prerequisite: permission of instructor.

*Stoll, R.*

**406(S) SENIOR THESIS** (3-0-3)
See Poli 405.

*Stoll, R.*

**410(F) ADJUDICATION OF CURRENT SOCIAL ISSUES** (3-0-3)
Most political and social questions in America, as Tocqueville observed, ultimately become judicial questions. In this course we examine current developments in several fields, including basic constitutional issues, property, contracts, torts, crimes, corporate responsibility and privacy. Offered irregularly. Enrollment limited to 10 students. Prerequisite: permission of the instructor. Not offered 1993-94.

*Hudspeth, C.*

**417(S) SEMINAR IN CONGRESS** (3-0-3)
Seminar on the study of Congress. Topics vary from year to year. Enrollment limited to 20. Prerequisite: permission of instructor. Not offered 1993-94.

*Ward, D.*

**430(S) SEMINAR IN TEXAS POLITICS** (3-0-3)
Research seminar in the history of Texas politics. Enrollment limited to 20. Prerequisite: permission of instructor.

*Cuthbertson, G.*

**431(F) ELECTORAL CAMPAIGNS** (3-0-3)
Examines the role of campaigns in determining the outcome of political races. Enrollment limited to 20. Prerequisite: permission of instructor. Not offered 1993-94.

*Alford, J.*

**432(S) URBAN POLITICS** (3-0-3)
Research seminar examining issues of political behavior and public policy in urban and metropolitan areas. Specific topics include urban decline and revitalization, conflict between "Snowbelt" and "Sunbelt" cities, fiscal management, and urban and suburban relations. Enrollment limited to 20. Prerequisite: permission of instructor.

*Hamm, K.*

**433(S) COMPARATIVE LEGISLATURES** (3-0-3)
Research seminar examining the similarities and differences of legislatures in different countries. Explores the causes and consequences of these differences. Enrollment limited to 20 students. Prerequisite: permission of instructor. Not offered 1993-94.

*Hamm, K.*

**434(F) INTEREST GROUPS AND POLITICAL PARTIES** (3-0-3)
Examines the organization and behavior of political parties and interest groups within the American political system. The course emphasizes the extent to which these organizations operate differently across the national, state, and local levels of government.

*Hamm, K.*

**437(F) REPRESENTATION**
Deals with problems of representation in the U.S. political system. Enrollment limited to 20. Not offered 1993-94.

*Alford, J., Stein, R.*

**439(S) RESEARCH SEMINAR ON SOUTHERN POLITICS** (0)
Focuses on political behavior and political institutions in southern states. Of special interest is contemporary Texas politics. Enrollment limited to 20 students.

*Black, E.*

**440(S) CURRENT LEGISLATIVE ISSUES** (3-0-3)
This course intensively studies a small number of current legislative issues. It deals both with the policy issues that are involved and the problems of passing and implementing the legislation from both a practical and theoretical perspective. Enrollment limited to 20. Prerequisite: 2 courses in American political institutions and behavior or American public policy and permission of instructor.

*Hobby, W., Stein, R.*

**454(S) REVOLUTIONARY MOVEMENTS** (3-0-3)
Causes and outcomes of revolutions, both past and contemporary, and their relationships to the societies in which they occur. Enrollment limited to 15. Prerequisite: permission of instructor. Not offered 1993-94.

*Dix, R.*

**457(S) CONDITIONS OF DEMOCRACY** (3-0-3)
An examination of why some countries are democratic and others not, with particular emphasis on the breakdown and restoration of democracy in Latin America and southern Europe. Enrollment limited to 20.

*Dix, R.*

**460(S) SEMINAR IN COMPARATIVE GOVERNMENT** (3-0-3)
This seminar will analyze noneconomic factors influencing development in Asia. Enrollment limited to 20. Prerequisite: permission of instructor.

*von der Mehden, F.*

**462(F) COMPARATIVE PUBLIC POLICY** (3-0-3)
This seminar will examine the process and substance of public policy across nations, with a primary focus upon Western democracies. Attention will be given to such policy areas as education, health, economic policy, and defense. Enrollment limited to 20. Prerequisite: permission of instructor.

*Ambler, J.*

**463(S) POLITICAL ECONOMY OF INDUSTRIAL SOCIETIES**
Research seminar examining the interrelationship of economics and politics in advanced industrial societies. Specific topics include economic policy-making, political behavior and economic conditions, and the role of institutions for channeling conflicts between democracy and capitalism. Enrollment limited to 20.

*Anderson, C.*

**465(S) INTERAMERICAN RELATIONS** (3-0-3)
This seminar will examine relations between the United States and the countries of Latin America, with particular emphasis on the efforts of the U.S. to promote or inhibit political change, including revolutionary change in Latin America. Enrollment limited to 15. Prerequisite: permission of instructor. Not offered 1993-94.

*Dix, R.*

**466(F) POLITICAL PARTIES AND VOTING BEHAVIOR IN WESTERN DEMOCRACIES** (3-0-3)
This seminar will deal with the determinants of party systems, the structure and functions of parties, and theories of voting behavior in Western democracies. Not offered 1993-94.

*Ambler, J.*

**470(S) TOPICS—INTERNATIONAL RELATIONS** (3-0-3)
Conflict modeling and quantitative analysis of alliance formation. May be repeated.

*Morgan, T. C.*

**471(F) U.S. FOREIGN POLICY** (3-0-3)
Not offered 1993-94.

*Staff*

**472(S) AMERICAN FOREIGN POLICY** (3-0-3)
The content of American foreign policy, its sources, and the process of policy formulation. Enrollment limited to 20. Prerequisite: permission of the instructor. Not offered 1993-94.

*Morgan, T.C.*

**473(S) SEMINAR—DOMESTIC POLICY** (3-0-3)
Not offered 1993-94.

*Staff*

**474(F) COLLECTIVE SOCIAL CHOICE** (3-0-3)
The objective of this course is to introduce students to a growing body of literature on how and why individual preferences dominate those of others; and the relationship between decision making structures and the nature of decisional outcomes. Enrollment limited to 20. Prerequisite: permission of instructor. Not offered 1993-94.

*Wilson, R.*

**479(F) SEMINAR IN QUANTITATIVE INTERNATIONAL RELATIONS** (3-0-3)
This seminar explores topics in the quantitative study of international relations. This year, the seminar will explore the uses of the computer simulation GLOBUS. Students will develop their own study of the simulation. Enrollment limited to 20. Prerequisite: permission of instructor.
*Morgan, T.C.*

**490(S) MODERN POLITICAL THEORY AND INTERDISCIPLINARY FIELDS** (3-0-3)
The development of modern political theory and its relevance to contemporary problems. Enrollment limited to 20.
*Cuthbertson, G.*

**495(F) INTRODUCTION TO STATISTICS** (3-0-3)
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. Enrollment limited to 20. Prerequisite: permission of instructor.
*Alford, J.*

**503(F) TOPICS IN METHODS ANALYSIS** (3-0-3)
Applications of least squares and general linear model.
*Alford, J.*

**510(S) SCOPE AND METHODS** (3-0-3)
Introduction to research in political science, problems of the discipline, and basic political concepts. History of political science as a discipline. Prerequisite: permission of instructor.
*Wilson, R.*

**511(F) MEASUREMENT AND RESEARCH DESIGN** (3-0-3)
Research design. Measurement theory. Data collection and modes of analysis. Use of the computer in political research. Theory building. Prerequisite: permission of instructor.
*Ward, D.*

**520(F) APPROACHES TO COMPARATIVE GOVERNMENT** (3-0-3)
Core graduate course analyzing basic approaches to the study of comparative government. Open to qualified undergraduates with permission of instructor.
*von der Mehden, F.*

**527(S) ORGANIZATION THEORY** (3-0-3)
Examination of applications of organization theory to the study of American political institutions. Not offered 1993-94.
*Wilson, R.*

**530(S) APPROACHES TO AMERICAN GOVERNMENT** (3-0-3)
Core graduate course analyzing basic approaches to the study of American politics. Prerequisite: permission of instructor.
*Ward, D.*

**531(S) STATE POLITICS** (3-0-3)
Examines similarities and differences in the organization of state politics. Major issues include state legislative organization, state elite behavior, and policy implementation. Not offered 1993-94.
*Hamm, K.*

**533(S) POLITICAL BEHAVIOR**
Seminar on electoral behavior, political socialization, and political participation. Enrollment limited to 20.
*Funk, C.*

**537(F) PUBLIC POLICY/PUBLIC ADMINISTRATION** (3-0-3)
The administration and implementation of public policies across federal, state, and substate governments. Prerequisite: permission of instructor. Also offered as Admn 563.
*Stein, R.*

**540(S) INTERNATIONAL RELATIONS** (3-0-3)
Core graduate course analyzing basic approaches to the study of international relations. Open to qualified undergraduates with permission of instructor.
*Stoll, R.*

**564(F) PUBLIC FINANCIAL MANAGEMENT** (3-0-3)
Also offered as Admn 565.
*Windsor, D.*

**565(F) TOPICS IN MANAGEMENT PRODUCTION/OPERATIONS** (3-0-3)
Also offered as Admn 593. THE HEALTH CARE SYSTEM 123
*Staff*

**566(S) TOPICS IN MANAGEMENT II PUBLIC/PRIVATE PARTNERSHIPS** (3-0-3)
Also offered as Admn 594. Section I: Public-Private Partnerships.
*Loukissas, P.*

**571(S) POLITICAL RISK ANALYSIS** (3-0-3)
Analyses of political and social factors affecting business operations abroad, including domestic instability, foreign conflict, corruption, nationalization, indigenization, etc. A simulation exercise is required. Prerequisite: permission of instructor. Also offered as Admn 572.
*von der Mehden, F.*

**580(S) TOPICS IN AMERICAN POLITICS** (3-0-3)
Not offered 1993-94.
*Alford, J.*

**580(F) SEMINAR IN AMERICAN POLITICS** (3-0-3)
Not offered 1993-94.
*Staff*

**591(F) DIRECTED READING—METHODOLOGY** (3-0-3)
Not offered 1993-94.
*Wilson, R.*

**593(F) DIRECTED READING—AMERICAN POLITICS** (3-0-3)
*Staff*

**594(S) DIRECTED READING—AMERICAN POLITICS** (3-0-3)
*Staff*

**595(F) DIRECTED READING—INTERNATIONAL RELATIONS** (3-0-3)
*Staff*

**596(S) DIRECTED READING—INTERNATIONAL RELATIONS** (3-0-3)
*Staff*

**597(F) DIRECTED READING—COMPARATIVE POLITICS** (3-0-3)
*Staff*

**598(S) DIRECTED READING—COMPARATIVE POLITICS** (3-0-3)
*Staff*

**600 M.A. RESEARCH AND THESIS** (Variable)
Research and thesis for resident students.

*Staff*

**600 TOPICS IN POLITICAL SCIENCE** (Variable)
Research and thesis for resident students.

*Staff*

**800 PH.D. RESEARCH AND THESIS** (Variable)

*Staff*

# Psychology

## The School of Social Sciences

**Professor Schneider,** *Chair*
**Professors Brelsford, Dipboye, Laughery, R.C. Martin, Pomerantz, Roediger, Schneider, R.N. Taylor, and Watkins**
**Adjunct Professors Elden, Lowman, Overall, and Wright**
**Associate Professors Batsell, Burnett, D.M. Lane, and Napier**
**Adjunct Associate Professor Loveland**
**Assistant Professors Dutta, Gaugler, and Quiñones**
**Adjunct Assistant Professors Burnside, Czerwinski Goldsberry, Pearson, Vandaveer, and Wunder**
**Adjunct Instructor Diddel**
**Adjunct Lecturer Laux**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** Twenty-nine semester hours are required for a major in psychology. The following courses are required for the major in psychology: Psyc 101, 202, 203, 339, and 340. There may be no substitution or transfer credit for 339 or 340. In addition to the five required courses listed above, the student must take at least one course from each of the following blocks of courses:

Block 1: Psyc 308, 309, 351, 362
Block 2: Psyc 329, 330, 332

An honors program is available that requires completion of the major requirements listed above, an honors thesis, and other requirements as determined by the student's honors committee. Candidates for the honors program must submit an application. A decision to admit a student will be made by vote of the faculty.

In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**Graduate Program.** Graduate programs are offered at both the M.A. and Ph.D. levels. The emphasis, however, is upon doctoral training, and only applicants of Ph.D. caliber are admitted.

A research thesis with public oral defense is required for both M.A. and Ph.D. degrees. In addition, 60 semester hours must be accumulated for the Ph.D. and 30 for the M.A. Included in this total are required courses in the areas of memory, cognition, engineering and industrial/organizational psychology, social psychology, and methodology, plus whatever offerings are available in the student's specialty area. The three specialty areas currently offered are cognitive-experimental, industrial-organizational/social, and engineering psychology.

Competence in a foreign language is not required. The student must, however, pass an admission-to-candidacy procedure designed to establish his or her expertise in the chosen specialty area.

*Psychology Courses*

**101 INTRODUCTION TO PSYCHOLOGY** (3-0-3)
A survey of the diverse topics, problems, and approaches in contemporary psychology. Includes the following topics: biological basis of behavior; sensation, perception, and attention; learning and memory; thinking; language; abnormal behavior and therapies; personality and individual differences; child development; and social process.
*Laughery, K., Roediger, H.,Watkins, M.*

**102 READINGS IN PSYCHOLOGY** (1-0-1)
Discussion of articles and research reports in psychology. Concurrent registration in Psyc 101 required. Permission of instructor required.
*Laughery, K., Roediger, H.,Watkins, M.*

**202(F) INTRODUCTION TO SOCIAL PSYCHOLOGY**
An overview of topics in social psychology such as conformity and social influence, attitude change and the mass media, aggression, altruism, relationships, liking and loving, prejudice and stereotyping, and socialization. Prerequisite: Psyc 101.
*Schneider, D.*

**203(S) INTRODUCTION TO COGNITIVE PSYCHOLOGY**
An overview of topics in cognitive psychology such as perception, attention, memory, psycholinguistics, thinking and reasoning, problem solving, concept formation, and decision making. Prerequisite: Psyc 101.
*Martin, R.*

**221(F) DEVELOPMENTAL PSYCHOLOGY** (3-0-3)
Focus on behavioral changes with age and general laws of development in both human and nonhuman species. Prerequisite: Psyc 101.
*Staff*

**231(S) INDUSTRIAL AND ORGANIZATIONAL PSYCHOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An overview of the principles, techniques, and theories of psychology applied in the industrial setting. Prerequisite: Psyc 101.
*Dipboye, R.*

**308(F) MEMORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Critical review of traditional and contemporary approaches to the study of remembering and forgetting. Prerequisite: Psyc 101, 203, or permission of instructor. Limit 50.
*Roediger, H.*

**309(F) PSYCHOLOGY OF LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Human and other animal communication, structure of human language, word meaning and semantic memory, psychological studies of syntax, bilingualism, language and thought, language errors and disorders. Prerequisite: Psyc 101, 203, or permission of instructor. Limit 50. Offered alternate years. Also offered as Ling 309.
*Martin, R.*

**329(F) PSYCHOLOGICAL TESTING** (3-0-3)
Techniques for measuring individual differences and critical review of theories of individual differences in intelligence and personality. Prerequisite: Psyc 101, 339, and permission of instructor. Limit 50.
*Gaugler, B.*

**330(F) PERSONALITY THEORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Consideration of those aspects of personality emphasized by the major theorists past and present. Prerequisite: Psyc 101, 202. Limit 50. Offered alternate years.

*Dipboye, R.*

**332(S) ABNORMAL BEHAVIOR** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Reactions to stress, neurotic traits, therapy, depression, and schizophrenia. The course presents an ecletic, empirically based exploration of the subject of abnormal psychology and explores topics and theories in the light of research findings. Prerequisite: Psyc 101, 202 and permission of instructor. Limit 50.

*Gaugler, B.*

**339(F) STATISTICAL METHODS-PSYCHOLOGY** (3-1-4)
Introduction to quantitative and computer methods applicable to the analysis of experimental data. Prerequisite: Psych 101 or permission of instructor. Limit 50.

*Quiñones, M.*

**340(S) RESEARCH METHODS** (3-1-4)
A continuation of Psyc 339 with a strong emphasis on individual student experiments and the writing of research reports. Prerequisite: Psyc 101, 339. Limit 50.

*Watkins, M.*

**350(F) PSYCHOLOGY OF LEARNING** (3-0-3)
Theoretical and empirical explorations into the topic of learning. Both historically important theoretical positions and modern perspectives will be considered. Current and historically important human and animal research will be discussed. Prerequisite: Psyc 101, Psyc 203, Psyc 339, Psyc 340 or permission of instructor. Limit 20.

*Brelsford, J.*

**351(S) PSYCHOLOGY OF PERCEPTION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An overview of the sensory and cognitive processes involved in human vision and audition. Prerequisite: Psyc 101, 203 or permission of instructor. Offered alternate years.

*Pomerantz, J.*

**360(S) THINKING** (3-0-3)
The study of such higher mental processes as forming concepts, solving problems, making decisions, and reasoning. Not offered every year. Prerequisite: Psyc 101, Psyc 203, Psyc 339, Psyc 340 or permission of instructor.

*Staff*

**362(S) BIOPSYCHOLOGY** (3-0-3)
An overview of the neurophysiological correlates of behavior. Prerequisite: Psyc 101. Offered alternate years.

*Staff*

**411(F) HISTORY OF PSYCHOLOGY** (3-0-3)
A consideration of the evolution of psychological theory from the Greeks to the present and the development of scientific approaches to the study of human thought and behavior. Not offered every year. Prerequisite: Psyc 101, Psyc 202, Psyc 203.

*Schneider, D.*

**440(S) SEMINAR IN ADVANCED GENERAL PSYCHOLOGY** (3-0-3)
Through discussion and extensive reading of empirically oriented issues drawn from various areas of psychology. The course focuses on a more intensive and mature examination of topics typically discussed in Introductory Psychology. Open to senior-level majors. Prerequisite: permission of instructor. Limit 15.

*Brelsford, J.*

**442(F) COMPUTER APPLICATIONS** (3-0-3)
Use of small computers in psychological research. Prerequisite: permission of the instructor. Limit 10.

*Lane, D.*

**450(F) ANIMAL BEHAVIOR METHODS** (3-0-3)
Use of animal behavior as models of various applied human situations. Limit five. Prerequisite: permission of the instructor.

*Wright, A.*

**470(S) ENGINEERING PSYCHOLOGY** (3-0-3)
Principles of psychology and human performance applied to the design of modern systems. Prerequisite: Psyc 101, 203, or permission of instructor. Limit 50.

*Brelsford, J.*

**480 ADVANCED TOPICS IN PSYCHOLOGY** (3-0-3)
An intensive examination of a topic of contemporary interest to modern psychologists. Course may be repeated when topics vary. Prerequisite: Psyc 101, Psyc 202, Psyc 203 and permission of instructor.

*Schneider, D.*

**485 SUPERVISED RESEARCH IN PSYCHOLOGY** (Variable credit)
Supervised empirical research. Course may be repeated for credit. Prerequisite: Permission of instructor. Limited to psychology majors.

*Schneider, D.*

**488 SUPERVISED READING IN PSYCHOLOGY** (Variable credit)
Supervised reading of books and empirical papers on a topic of mutual interest to students and faculty. Course may be repeated for credit. Prerequisite: permission of instructor. Limited to psychology majors.

*Schneider, D.*

**499 SENIOR THESIS** (Variable)
Prerequisite: Psyc 101, 339, 340 and permission of instructor.

*Schneider, D.*

**500(F) MEASUREMENT IN PSYCHOLOGY** (3-0-3)
An introductory course on the principles of measurement in psychological research including the topics of psychophysics and scaling, measurement theory, and test theory.

*Staff*

**501(F) INTRODUCTION TO PSYCHOLOGICAL STATISTICS** (3-0-3)
Introduction to quantitative and computer methods for analyzing experimental data.

*Dutta, A.*

**502(F) ADVANCED PSYCHOLOGICAL STATISTICS I** (3-0-3)
Introduction to inferential statistics with emphasis on analysis of variance and multiple regression. Prerequisite: 501 or permission of instructor.

*Dutta, A.*

**503(S) ADVANCED PSYCHOLOGICAL STATISTICS II** (3-0-3)
A continuation of Psyc 502, focusing on multiple regression. Other multivariate techniques and distribution-free statistics are also covered. Prerequisite: Psyc 502 or permission of instructor.
*Lane, D.*

**504(F) COMPUTER APPLICATIONS IN PSYCHOLOGY** (3-0-3)
Introduction to SAS, Hypercard, Excel, Basic and other software (software will vary from semester to semester), using Macintosh computers and focusing on data analysis and computer-based experimentation.
*Lane, D.*

**507(S) RESEARCH METHODS** (3-0-3)
Graduate-level treatment of a wide range of laboratory and field research methodologies. Offered alternate years.
*Dipboye, R.*

**510 TOPICS IN GENERAL PSYCHOLOGY** (3-0-3)
Lectures or seminar discussions on topics of broad interest. An example would be discussions of Great Books in Psychology. May be repeated for credit.
*Staff*

**511(F) HISTORY AND SYSTEMS OF PSYCHOLOGY** (3-0-3)
The philosophical foundations of psychology, the development of scientific models in the nineteenth century, twentieth-century schools of psychology, the growth of fields of modern psychology. Offered alternate years.
*Schneider, D.*

**512(S) DECISION MAKING** (3-0-3)
An overview of the principal concepts, theories, methods, and evidence associated with the exploration of human decision functions. Both descriptive and normative approaches are critically examined from a variety of perspectives: behaviorial, cognitive, applied. Offered every three years.
*Staff*

**520(F) FOUNDATIONS OF COGNITIVE PSYCHOLOGY** (3-0-3)
An intoduction to the basic topics in cognitive psychology, including perception, memory, psycholinguistics, concept formation, problem solving, and decision making.
*Martin, R.*

**521(F) PERCEPTION** (3-0-3)
The study of how people interpret signals from their senses in a meaningful way. Offered every three years.
*Pomerantz, J.*

**522(F) INFORMATION PROCESSING AND ATTENTION** (3-0-3)
The study of such problems as information overload, selective attention, response conflict, and automatic and controlled processing. Offered every three years.
*Staff*

**523(F) MEMORY AND COGNITION IN ANIMALS** (3-0-3)
Lecture, discussion, and laboratory course in learning and behaviorial control. Explores the application of conditioning techniques to the study of memory and cognition in animals. Prerequisite: permission of instructor. Limit five.
*Wright, A.*

**524(F) MEMORY** (3-0-3)
An overview of the issues and research in remembering and forgetting. Offered alternate years.
*Roediger, H., Watkins, M.*

**525(S) PSYCHOLINGUISTICS** (3-0-3)
The psychology of language, including the study of speech perception, reading, syntax, meaning, bilingualism, language and thought, language errors and disorders. Offered alternate years.

*Martin, R.*

**526(S) ARTIFICIAL INTELLIGENCE AND COGNITIVE SCIENCE** (3-0-3)
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. Offered every three years.

*Lane, D., Martin, R.*

**527(F) THINKING** (3-0-3)
The study of such higher mental processes such as forming concepts, solving problems, making decisions and reasoning. Offered every three years.

*Staff*

**528(S) COGNITIVE NEUROPSYCHOLOGY** (3-0-3)
Study of the implications of neuropsychological data for cognitive theory. Offered alternate years.

*Martin, R., Roediger, H.*

**529 COGNITIVE RESEARCH SEMINAR** (1-0-1)
A weekly student-staff seminar on current and recent research about mental phenomena. May be repeated for credit.

*Martin, R.*

**530(F) FOUNDATIONS OF I/O PSYCHOLOGY** (3-0-3)
Graduate-level introduction to the study of human behavior in the work setting. Prerequisite: permission of instructor.

*Gaugler, B.*

**531(S) PERSONNEL PSYCHOLOGY** (3-0-3)
The application of psychological research and theory to problems of organizing human resource utilization. Prerequisite: Foundations of I/O Psychology (Psyc 530). Offered alternate years.

*Gaugler, B.*

**532(F) ORGANIZATIONAL PSYCHOLOGY** (3-0-3)
An in-depth examination of selected research and theory in organizational psychology with an emphasis on work motivation, leadership, and group dynamics. Offered alternate years.

*Dipboye, R.*

**540(S) FOUNDATIONS OF ENGINEERING PSYCHOLOGY** (3-0-3)
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.

*Brelsford, J.*

**541(S) HUMAN-COMPUTER INTERACTIONS** (3-0-3)
Topics covered are relevant to the creation of effective interface design methodology, interaction modes, hypertext, mental models, visual display characteristics, input devices, and on-line help.

*Lane, D.*

**542(F) HUMAN RELIABILITY AND SAFETY** (3-0-3)
Topics covered include human reliability in systems, accident analysis techniques, hazard and risk perception, and safety communications. Offered every three years.
*Laughery, K.*

**550(F) FOUNDATIONS OF SOCIAL PSYCHOLOGY** (3-0-3)
Review of theories of social psychology with an emphasis on current empirical research.
*Staff*

**551(S) INDIVIDUAL DIFFERENCES AND PERSONALITY** (3-0-3)
Consideration of individual differences in motivation, behavior, and cognition. Offered every three years.
*Schneider, D.*

**560 PSYCHOLOGY PRESENTATIONS** (2-2-3)
A practicum on oral and written psychology presentations. May be repeated for credit. Offered alternate years.
*Staff*

**561 TEACHING IN PSYCHOLOGY** (3-1-3)
Assistance in the teaching of undergraduate and occasionally graduate courses in psychology. May be repeated for credit.
*Staff*

**571 FIRST-YEAR PROJECT** (0-8-3)
An individual research project undertaken in the first year of the graduate program.
*Staff*

**572 SECOND-YEAR PROJECT** (0-8-3)
An individual project undertaken during each semester of the second year of the graduate program. May be repeated for credit.
*Staff*

**573 NON-THESIS GRADUATE RESEARCH** (variable)
Individual research not for first- or second-year project or for thesis. May be repeated for credit.
*Staff*

**600(S) TOPICS IN QUANTITATIVE METHODS** (3-0-3)
Selected topics in quantitative methodology. May be repeated for credit. Offered alternate years.
*Lane, D., Martin, R.*

**601(S) MULTIVARIATE STATISTICS** (3-0-3)
Topics in multivariate statistics, such as factor analysis, multiple regression, cluster analysis, multidimensional scaling, discriminate analysis and structural equations. Offered alternate years.
*Martell, R., Martin, R.*

**602(S) PSYCHOMETRICS** (3-0-3)
Test theory including reliability, validity, scaling, norms, sampling, and factor analysis. Offered alternate years.
*Lane, D.*

**610 ADVANCED RESEARCH SEMINAR** (1-0-1)
Weekly lunchtime talk by department graduate students and faculty. May be repeated for credit.
*Roediger, H.*

**620 TOPICS IN COGNITIVE PSYCHOLOGY** (3-0-3)
Seminars offered on an irregular basis on special topics in cognitive psychology. May be repeated for credit. Offered alternate years.

*Pomerantz, J., Martin, R.*

**621 TOPICS IN MEMORY** (3-0-3)
Intensive study of selected topics and theories about memory. May be repeated for credit.

*Roediger, H., Watkins, M.*

**622(S) PERCEPTUAL ORGANIZATION** (3-0-3)
Issues concerning how sensory information is shaped into perceptual units, how it is grouped, and how one unit (the figure) is segregated from other units (the ground) for purposes of attention. Offered every three years.

*Pomerantz, J.*

**623(S) RETRIEVAL PROCESSES IN HUMAN MEMORY** (3-0-3)
Studies of how information is retrieved from memory, including such topics as reminiscence and hypermnesia, the effectiveness of retrieval cues, encoding/retrieval interactions, and implicit retention. Offered every three years.

*Roediger, H.*

**628 MEMORY RESEARCH SEMINAR** (1-0-1)
A weekly seminar to discuss recent research in human memory.

*Watkins, M.*

**629 PSYCHOLINGUISTICS RESEARCH SEMINAR** (1-0-1)
A weekly seminar to discuss recent research in psycholinguistics.

*Martin, R.*

**630 TOPICS IN I/O PSYCHOLOGY** (3-0-3)
Selected topics in I/O Psychology, such as organizational development and change, training, test construction, utility of personnel procedures, career development, and job analysis. May be repeated for credit. Offered alternate years.

*Gaugler, B.*

**631(S) SOCIAL COGNITION IN ORGANIZATIONS** (3-0-3)
Introduction to theory and research in social cognition as it relates to topics in organizational behavior. Offered every three years.

*Staff*

**632(F) LEADERSHIP: THEORY AND RESEARCH** (3-0-3)
Examination of the major psychological approaches to the study of leadership. Emphasis is on theory and pratice in formal organizations. Offered every three years.

*Dipboye, R.*

**633(S) WORK ATTITUDES AND MOTIVATION** (3-0-3)
Theory and research regarding attitudes and motivation of individuals within work organizations. Offered every three years.

*Staff*

**634(S) PERSONNEL SELECTION** (3-0-3)
Review of research and theory associated with both objective and subjective methods of selecting personnel in organizations. Offered alternate years.

*Dipboye, R., Gaugler, B.*

**635(S) THE ASSESSMENT CENTER METHOD** (3-0-3)
Advanced graduate-level course on assessment center theory, research, and practice. Prerequisite: Foundations of I/O Psychology. Offered every three years.
*Gaugler, B.*

**639 I/O PSYCHOLOGY INTERNSHIP** (variable)
Supervised experience in organizational and/or personnel psychology. May be repeated for credit.
*Staff*

**640(F) TOPICS IN ENGINEERING PSYCHOLOGY** (3-0-3)
Seminars offered on special topics in engineering psychology. May be repeated for credit. Offered alternate years.
*Brelsford, J., Laughery, K.*

**649 ENGINEERING PSYCHOLOGY INTERNSHIP** (variable)
Supervised experience in engineering psychology. May be repeated for credit.
*Brelsford, J., Laughery, K.*

**651(F) TOPICS IN SOCIAL PSYCHOLOGY** (3-0-3)
Seminars offered in special topics in social psychology. May be repeated for credit. Offered alternate years.
*Schneider, D.*

**652(S) SOCIAL COGNITION** (3-0-3)
Discussion of recent research and theory in person perception, perception of and memory for social events, and social/cultural influences in cognitive processes. Offered every three years.
*Schneider, D.*

**660(S) PROFESSIONAL ISSUES** (variable)
Selected topics on professional matters, including grant writing, licensing, and ethics in psychology. Offered every three years.
*Dipboye, R.*

**700 THESIS RESEARCH** (variable)
Research for the masters thesis. May be repeated for credit.
*Staff*

**800 DISSERTATION RESEARCH** (variable)
Research for the doctoral dissertation. May be repeated for credit.
*Staff*

# Religious Studies

## The School of Humanities

**Professor Kelber,** *Chair*
**Professors Sellers, Stroup, and Wyschogrod**
**Associate Professor Klein**
**Assistant Professor McKenny**
**Adjunct Professor Reiser**
**Adjunct Assistant Professors Heitman and Sanborn**
**Lecturers Benjamin, Dunne, and Karff**

*Degrees Offered:* B.A., M.A., Ph.D.

**Undergraduate Program.** Students majoring or double-majoring in religious studies are required to complete 24 semester hours (8 courses). Of these, 18 hours (6 courses) must be on the advanced level (300 and 400). A maximum of 6 semester hours (2 courses) may be taken outside of religious studies.

To gain exposure to principal approaches to and expressions of religion the 8 courses are to be selected according to two sets of distribution requirements. These are broadly defined in terms of methodology and religious traditions.

Methodology divides into the following four areas:

1) The **textual** approach, which focuses on the study and interpretation of sacred scriptures: Reli 308, 310, 355, 356, 357, 358, 470, 471.
2) The **historical** approach, which studies religion(s) in their development over time: Reli 224, 240, 306, 307, 312, 381, 446, 454, 456, 458; Huma 211.
3) The **normative** approach, which reflects on the ethical, theological, and philosophical expressions of religion(s): Reli 202, 203, 230, 236, 291, 301, 321, 322, 345, 361, 362, 391, 393, 415, 451, 462, 463; Phil 304.
4) The **sociocultural** approach, which examines religion(s) with the methods provided by sociology, psychology, and anthropology: Reli 112, 205, 294, 325, 331, 334, 390, 457; Hart 309; Soci 430.

Religious traditions divide into the following five areas:

1) Buddhism: Reli 322, 325, 328, 330, 470, 471.
2) Christianity: Reli 221, 308, 310, 321, 381, 382, 454, 456, 458; Hart 309.
3) Comparative: Reli 211, 302, 311, 312.
4) Islam: Hist 281, 381, 438.
5) Judaism: Reli 303, 351, 352, 355, 356, 357, 358, 446; Hist 373, 374.

Majors and double majors are required to take one course in each of the four methodological areas and one course in four of the five areas covering religious traditions. A number of courses will satisfy both the methodological and the traditions requirements. All students who declare a major or double major in religious studies are encouraged to devise a plan of study in consultation with a faculty adviser.

Students who wish to pursue a course of study more directly oriented toward their intellectual and personal interests are referred to the existence of the area major. See Other Options for Undergraduate Majors, pages 75-78. As a rule, area majors in Religious Studies will be required to write a thesis.

In addition, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

**Graduate Program.** Admission to the graduate program will be granted to a limited number of qualified students. A distinguished undergraduate record and high GRE scores are essential. An advanced degree in the humanities is desirable. Students are accepted in the following five fields: Asian Religions (Indo-Tibetan Buddhism), Biblical Studies (New Testament), Ethics (including Medical Ethics), History of Christianity, and Philosophy and Religious Thought. While the M.A. is offered in Asian Religions, both M.A. and Ph.D. are conferred in each of the remaining four fields. The program is designed to facilitate broad knowledge in religious studies and to permit flexibility and interdisciplinary pursuits within a framework of clearly defined fields.

Within the limits of available funds, fellowships and scholarships are awarded to qualified students. Fellowships include a stipend and a tuition waiver; scholarships provide a waiver of tuition only. As part of their training, a modest amount of service to the department, such as teaching assistance or library work, is customarily required from students.

**Program in Health Care Ethics.** The Department of Religious Studies in cooperation with the University of Texas Health Science Center offers a Ph.D. in ethics with a specialization in health care ethics. Focus of the program is ethics in health care generally, with attention to issues of religion and culture. This focus distinguishes the Rice-UT Program from other programs that focus more exclusively on moral philosophy or clinical ethics.

The program recognizes that entering students come with various interests. Students seeking rigorous academic training in religious studies in general and in theoretical approaches to ethics in particular but who also are interested in clinical and policy issues in health care will benefit most. There are two tracks in the program: one for those preparing to teach ethics, including medical ethics, in an academic department of a college or university, and another for those preparing for a career in a clinical setting, institute, or policy setting. Both tracks will prepare students to develop academic skills in interpreting religious and cultural texts and practices and in theoretical and concrete issues in ethics, including medical ethics. The second track will also prepare students to develop skills in clinical judgment, interpretation of cases, and clinical research.

The academic requirements for the two tracks overlap for general preparation in religious studies and ethics. The program draws upon the strengths and interests of the department. Students will take the standard number of course hours (54) and examinations (M.A. and Ph.D. comprehensives) and will fulfill the other degree requirements. They will be encouraged to select courses and examinations in consultation with their adviser and with individual faculty members to facilitate maximum exposure to intellectual issues of importance for work in health care ethics. The two tracks are distinguished primarily in the selection of courses and in the content of the Ph.D. comprehensive examination in health care ethics.

It is expected that students in the later stages of the program who seek careers in clinical settings, research institutes, or policy settings will have opportunities for clinical research in the form of an internship with selected faculty members of the University of Texas Health Science Center.

Course and Comprehensive Exam Requirements

| M.A. | Ph.D. (continuing) | Ph.D. (entering) |
|---|---|---|
| 8 courses | 10 courses | 18 courses |
| 5 exams | 5 exams | 6 exams |
| (1 in Ethics) | (1 major exam each in Ethics & Health Care Ethics; 3 minor exams) | (1 major exam each in Ethics & Health Care Ethics; 4 minor exams) |

**Requirements for the Degree of Master of Arts:**

1. Completion of 24 semester hours. At least one course is required in each of the five fields. The remaining three courses are to be selected in consultation with the faculty adviser. Students in ethics, medical ethics, and Asian Religions are expected to take courses outside the department.
2. A reading examination in a foreign language.
3. One oral examination in each one of three fields selected as minors. Two written examinations: one in the field of specialization and a second one in the remaining fifth field.
4. Completion of an M.A. thesis.
5. For students who wish to pursue the M.A. as a transit toward the Ph.D., the M.A. thesis may be waived depending on the outcome of the oral/written exams.
6. Oral defense of M.A. thesis.

**Requirements for the Degree of Doctor of Philosophy:**

1. Rice students who continue toward the Ph.D. will take additional course work of 30 hours divided among four fields. Of those, two will count as minors and two as majors. One course is required in each minor and two courses for each major. Of the remaining four courses, two should be taken outside of the department.
2. A reading examination in a second foreign language.
3. One oral examination in each minor and one written examination in each major.
4. Approval of formal proposal by faculty adviser.
5. Approval of thesis by the appointed thesis committee.
6. Oral defense of thesis.

Students enrolled directly in the Ph.D. program will complete 54 semester hours. Of the five fields, three will count as minors and two as majors. One course is required for one minor and two courses for each of the other two. Additionally, a minimum of three courses is to be taken for each major. The remaining seven courses are to be selected in consultation with the faculty adviser. At least two of those seven ought to be selected outside of the department. Reading examinations in two foreign languages are required. Comprehensive examinations consist of two orals in two minors and three written tests and the thesis itself require final approval. The requirements are concluded with the oral defense of the thesis.

*Religious Studies Courses*

**112(S) RELIGION AND CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Religious alternatives. The secular versus the sacred. Competing worldviews, East and West. Enrollment limited to 30.

*Dunne, C.*

**202(S) ATHEISM AND ITS CRITICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Readings in Marx, Feuerbach, Nietzsche, Sartre, Russell, as well as classical theistic arguments. Enrollment limited to 40.

*Schubert, F.*

**203(F) REVOLUTIONARIES OF THOUGHT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Study of the founders of the great religions as well as contemporary thinkers. Not offered 1993-94.

*Staff*

**205(F) ARCHAEOLOGY AND THE BIBLE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
The Bible-on-location with slides from excavations in Jordan, Israel, Sinai and Cyprus. The Bible story alongside stories which architecture, pottery, metalwork, sculpture, tombs, painting and other arts in biblical lands tell. Not offered 1993-94.

*Staff*

**211(F) INTRODUCTION TO ASIAN CIVILIZATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
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. Also offered as Hist 206 & Huma 211.

*Klein, A., Smith, R.*

**221(F) ROMAN CATHOLICISM AND MODERN CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Exploration of the life and thought of Roman Catholicism in its attempt to confront the demands of modern culture. Special topics include Vatican I, Vatican II, ecumenism, reform, liberation theology and the struggle for Catholic identity. Not offered 1993-94.

*Staff*

**224(S) IMMIGRANT JEWS IN AMERICA: PATTERNS OF ETHNICITY AND ACCULTURATION (3-0-3)**
*DISTRIBUTION COURSE: CATEGORY I.2
A survey of the American Jewish community in the period of mass migration from Europe (1880-1924). Topics include the Jewish family and the immigrant neighborhood, Jewish occupational and educational behavior, the Jewish labor movement, Zionism, and Jewish religious and political behavior.

*Staff*

**230(S) CONTEMPORARY MORAL ISSUES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Discussion of controversial moral issues such as abortion, euthanasia, capital punishment, war, and the role of the state. Limited enrollment. Not offered 1993-94.

*Staff*

**236(S) THEOLOGICAL ETHICS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
A survey of fundamental issues and problems of theological ethics from Christian and Jewish sources. Topics include moral selfhood, moral reasoning, evil, and the relation of religion to morality. Not offered 1993-94.

*Staff*

**240(S) RELIGIONS ALONG THE NILE AND EUPHRATES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
A survey of religions and cultures flourishing in Egypt, Mesopotamia, Hatti and Syria-Palestine after 3,000 B.C.E. Readings from their great stories, law codes, military histories and love poetry including Enuma Elish, Gilgamesh, Ba'al and Anat, The Code of Hammurabi, The Treaty of Ramses and Hattusilis, The Annals of Tiglath Pileser.

*Benjamin, D.*

**241(F) THE WORLD OF THE BIBLE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Explores the world of the Bible as a key to understand better the Bible itself. Examines important social institutions like prophecy or hospitality to appreciate how ancient audiences responded to texts like Isaiah's Virgin Birth or Sodom and Gomorrah. Also listed as Anth 311.

*Benjamin, D.*

**257(S) PERCEPTIONS OF JEWS AND JUDAISM: FROM TACITUS TO TOYNBEE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Compares Jewish self-images with perceptions of Jews and Judaism held by the dominant cultures in the West from antiquity through the modern period. Readings include selections from Tacitus, Paul, Eusebius, Chrysostom, Helevi, Luther, Modena, Grimmelshausen, da Costa, Spinoza, Glueckl of Hameln, Solomon Maimon, Marx, Freud, Hitler, Kook, Grade and Toynbee. Also offered as Hist 257.

*Fishman, T.*

**260(F) RELIGION AND THE SOCIAL SCIENCES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Designed to introduce the student to classic texts in the social scientific study of religion. Readings in Freud, Weber, Durkheim, Berger, Geertz, Kakar. Empasis on cross-cultural issues.

*Parsons, W.*

**283(F) CHRISTIANITY AS PERSONAL FAITH AND CULTURAL FORCE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Interaction of historic Christian faith with Western culture: Augustine, Dante, Luther, Calvin; Spener or Bunyan; Wesley or Schleiermacher; Kierkegaard; Bonhoeffer, Barth or Tillich; visual arts, music (e.g., Bach), literature (e.g., Walter Percy), film (e.g., Bergman), and hymnody. Not offered 1993-94.

*Staff*

**284(S) PROTESTANTISM AS IDENTITY AND FORM OF LIFE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Protestant origins; spiriuality, secularization, doubt, and faith in the post-Reformation period; morphology of the self in Protestant culture; pluralism, political legitimacy and Protestant identity in the present age. Not offered 1993-94.

*Staff*

**286(S) THE REFORMATION AND ITS RESULTS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Theology and church-state issues from sixteenth-century Reformation to seventeenth century; medieval background; Luther, Calvin, Catholic Reformation; religious wars, Protestant Orthodoxy; Pietist spirituality; Puritanism; calls for toleration. Also offered as Hist 286. Not offered 1993-94.

*Staff*

**291(F) RELIGION AND CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Introduction to the personal, social, theological, and linguistic aspects of religions, East and West, in the works of Tillich, Eliade, Levi-Strauss, and Freud. Analysis of narrative accounts of religious experience in Augustine, Edwards, and in selected texts from the Hindu and Buddhist traditions. Not offered 1993-94.

*Staff*

**294(S) RELIGION IN FICTION AND FILM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Examines views of the sacred through interreligious encounter from the perspective of recent literary theory, modern and postmodern theology in the fiction of Graham Greene, Shisako Endo, Yukio Mishima, Thomas Mann, Zora Neale Hurston, and, films of Werner Herzog, Satyajit Ray, and Peter Brooks. Enrollment limited to 25.

*Wyschogrod, E.*

**301(F) MYSTICISM AND EXISTENTIALISM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Examination of these two approaches to life in Christian and non-Christian literature, ancient and modern. Limited enrollment to 30.

*Dunne, C.*

**302(S) JEWISH-CHRISTIAN DIALOGUE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Discussion of the basic questions that appear in interfaith exchange. Jewish and Christian beliefs about God, man, history, evil and eschatology. Limited enrollment to 40.

*Karff, S., Schubert, F.*

**303(S) PERCEPTIONS OF JEWS & JUDAISM: FROM TACITUS TO TOYNBEE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
An enriched version of Reli 257. Students may not receive credit for both Reli 257 and Reli 303. Also offered as Hist 357.

*Fishman, T.*

**306(S) MODERNIZATION OF JUDAISM: FROM EUROPE TO AMERICA** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Exploration of the evolution of Judaism in the modern era, beginning with emancipation of the Jews in Western Europe and concluding with development of Jewish religious movements in America. Discussion of origins of Reform, Conservative, and Orthodox movements in Europe and their growth in America.

*Staff*

**307(F) CHRISTIAN ORIGINS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Early Christianity in the context of ancient Mediterranean civilizations.

*Kelber,W.*

**308(S) SYNOPTIC GOSPELS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
A reading of the gospel stories from a literary perspective.

*Kelber,W.*

**310(S) PAULINE THEOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Introduction to the theological controversies between Paul and anti-Pauline Christians. Not offered 1993-94.

*Staff*

**311(F) HISTORY OF RELIGION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Readings in the religious texts of India, China, and Japan. Study of Hinduism, Buddhism, Confucianism, and Taoism. Not offered 1993-94.

*Staff*

**312(S) HISTORY OF RELIGION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Study of Judaism, Christianity, and Islam in their historical development. Attention to the basic themes of Western theism. Enrollment limited to 30.

*Dunne, C.*

**313(F) DIRECTED READING: NEW TESTAMENT GREEK**(3-0-3)
Intermediate reading course in New Testament Greek with emphasis on epistolary literature.

*Nelson, R.*

**321(F) SEMINAR ON CONTEMPORARY THEOLOGIANS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Study and critical evaluation of the writings of contemporary religious thinkers. Not offered 1993-94.

*Staff*

**322(S) INTRODUCTION TO BUDDHISM** (3-0-3)
The thought, practice, and historical development of Buddhism in India, Tibet, China, and Japan. Also offered as Reli 572.

*Klein, A.*

**325(F) BUDDHISM AND THE FEMALE** (3-0-3)
Questions of self, relationships, and personal changes explored through examining Buddhist theories and female symbolism in light of current work on or by women. (May be taken for graduate credit with supplementary work.) Not offered 1993-94.

*Staff*

**328(S) SHAMANS AND PHILOSOPHERS: RELIGION/RITUAL ANCIENT TIBET** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Tibetan culture was formed through Buddhist influence from India and Bön tradition, thought to have originated in Persia. Both traditions borrowed from and questioned the other. Focus on tensions between shamanic perspective of early Bön and philosophical perspective of later Bön and Buddhism, as well as rituals each employed. Much of this material has never been studied in the West before. (Tibetan language available for extra credit.) Also offered as Reli 530.

*Staff*

**330(S) INTRODUCTION TO TIBETAN LANGUAGE** (3-0-3)
Readings in Tibetan Bön and Buddhist religious texts.
Also offered as Reli 532 and Ling 330.

*Staff*

**331(F) PSYCHOLOGY OF RELIGION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Study of the primary developments in the field, with particular emphasis on changing issues and methods. Enrollment limited to 30.

*Dunne, C.*

**334(S) PSYCHOLOGY OF RELIGION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Significant contemporary problems examined from a clinical standpoint, e.g., ideas of God, evil, anxiety, guilt, and therapeutic process.

*Sanborn, R.*

**345(F) ETHICS AND LIFE CYCLE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Concrete problems of the life "spiral," including the quest for identity, sex ethics, medical ethics, aging, death and dying. Not offered 1993-94.

*Staff*

**351(F) ELEMENTARY BIBLICAL HEBREW** (3-0-3)
Also listed as Ling 351.

*Katz, A.*

**352 INTERMEDIATE BIBLICAL HEBREW**(3-0-3)
Also listed as Ling 352.

*Katz, A.*

**355(F) BIBLICAL ANCESTORS AND HEROES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Studies in the lore of kings in Ancient Israel: Genesis, Exodus, Leviticus, Numbers, Deuteronomy, Joshua. Judges, 1-2 Samuel, 1-2 Kings.

*Benjamin, D.*

**356(S) THE PROPHETS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Analysis of prophets in ancient Israel: 1-2 Samuel, 1-2 Kings, Amos, Hosea, Isaiah, Jermiah, and Ezekiel.

*Benjamin, D.*

**357(F) WOMEN IN THE BIBLE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Teaching literature in Ancient Israel. Clan-mothers and queens, warriors, wives, and lovers in Proverbs, Qoheleth, Job, Psalms, Song of Songs, Ruth, Judith, Esther. Not offered 1993-94.

*Staff*

**358(S) BIBLE, CREATION, AND APOCALYPSE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Alpha and Omega stories in Ancient Israel: The Garden of Eden, the Flood, the Exodus, the Battle of Jericho, Isaiah's Messiah, Ezekiel's New Jerusalem, Daniel, Zechariah, Jonah.

*Staff*

**361(F) LOVE, JUSTICE, AND FRIENDSHIP** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Explores the relation of self and other as an ethical issue. Topics include friendship, self-sacrifice, the tension between love and justice, altruism and egoism, mutuality and radical alterity. Prerequisite: previous coursework in ethics. Also offered as Reli 542.

*McKenny, G.*

**362(S) RELIGION, ETHICS, AND ECOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Explores issues and problems of ecology, the environment, and future generations from perspectives offered by ethical theories and religious traditions.

*McKenny, G.*

**381(F) INTRODUCTION TO HISTORY OF WESTERN CHRISTIANITY I: ORIGINS TO REFORM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Emergence of Christianity as a cultural force in antiquity; salvation, self, and society in the Middle Ages from Augustine to Dante; the Reformation of Luther and Calvin. Not offered 1993-94.

*Staff*

**382(S) INTRODUCTION TO HISTORY OF WESTERN CHRISTIANITY II: TOLERATION—PLURALISM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
The end of religious war; the crisis of Enlightenment; liberal theologies and renewal movements; the contemporary situation. Not offered 1993-94.

*Staff*

**391(F) DEATH AND DYING IN RELIGION AND LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Death, immortality, resurrection, grief, and mourning in selected texts of Western and Asian religious traditions and modern and postmodern literature. Readings from the Bible, Plato, Augustine, Pascal, St. Theresa of Avila, the Upanishads, selected Buddhist texts and the works of Tolstoy, Rilke, Kafka, Dickenson, Goyen, Celan, and Jabes. Also offered as Reli 591.

*Wyschogrod, E*

**393(F) RELIGION, MYTH, AND LANGUAGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY 1.2
Survey of approaches to myth and language in relation to religious experience and meaning. Readings from Feuerbach, Freud, Jung, Tillich, Eliade, Wittgenstein, Heidegger, James, Dewey, Levi-Strauss, and Mary Douglas. Also offered as Reli 593.

*Wyschogrod, E*

**401(F) INDEPENDENT STUDY** (Variable)
Permission of instructor required.

*Staff*

**402(S) INDEPENDENT STUDY** (Variable)
Permission of instructor required.

*Staff*

**415(F) CONTEMPORARY MORAL ISSUES** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Discussion of controversial moral issues such as abortion, euthanasia, sexuality, war, and the environment. Not offered 1993-94.

*Staff*

**430(F) RELIGION AND THE MODERN THERAPIES** (3-0-3)
An exploration of the fundamental issues and problems generated by the psychology and religion movement. Particular emphasis will be placed on the emergence of psychological religiousness

*Parsons, W.*

**430(F) RELIGION AND THE MODERN THERAPIES** (3-0-3)
An exploration of the fundamental issues and problems generated by the psychology and religion movement. Particular emphasis will be placed on the emergence of psychological religiousness

*Parsons, W.*

**446(F) POWER AND POWERLESSNESS IN JEWISH HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.3
Flouting the image of Jews as all-powerful manipulators of international finances, media, and politics is the perception of Jews as politically powerless from the fall of Jerusalem in 70 C.E. to the establishment of the state of Israel in 1948. Course will explore myths of Jewish absolute power and Jewish powerlessness, their uses by Jews and Christians alike, and their correspondence to Jewish collective behavior through the ages. Jewish responses—political, social, and theological—to historical crises from the Destruction of the First Temple through the Holocaust will be examined through primary source readings. Also offered as Hist 446.
*Fishman, T.*

**451(S) PHILOSOPHIES AND THEOLOGIES OF HISTORY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.
Modern thought on the meaning and ultimate direction of history; roots in eschatology, Augustine, flowering in progress and historicism—e.g., Vico, Lessing, Hegel, Ranke, Burckhardt, Nietzsche, Harnack, Toeltsch, Meinecke, Spengler, Heidegger, Butterfield, Dawson, Schweitzer, Jaspers, Toynbee. Also offered as Hist 451.
*Stroup, J.*

**454(F) HISTORY OF CHRISTIANITY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Survey from the Reformation to the seventeenth century. Not offered 1993-94.
*Staff*

**456(F) HISTORY OF WESTERN CHRISTIANITY: REFORMATION TO THE PRESENT** (3-0-3)
Spirituality, politico-social movements, and intellectual life in the West from Luther and Calvin to Bonhoeffer, Barth, Tillich, Marx, Nietzsche, and Jung. Not offered 1993-94.
*Staff*

**457(S) MODERNITY, ANTIMODERNITY, AND POSTMODERNITY AS STYLES OF RELIGIOSITY** (3-0-3)
Problem of defining "modernity"; contemporary sociological and political theory. (May be taken for graduate credit with supplementary work.) Not offered 1993-94.
*Staff*

**458(S) FROM REFORM TO REACTION** (3-0-3)
Currents of spirituality and social thought from St. Francis of Assisi to William Blake. (May be taken for graduate credit with supplementary work.) Not offered 1993-94.
*Staff*

**462(F) MEDICAL ETHICS AND AMERICAN VALUES I** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Readings and discussion of the principles and priorities of medical ethics, with attention to historical development. Prerequisite: permission of instructor.
*Heitman, E., Reiser, S.*

**463(S) MEDICAL ETHICS AND AMERICAN VALUES II** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Continuation of 462, with attention to clinical experience. Prerequisite: Reli 462.
*Heitman, E.*

**470(S) BUDDHIST WISDOM TEXTS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Indo-Tibetan analyses of theory and practice as discussed in indigenous texts. Also offered with additional work as Reli 570.
*Klein, A.*

**471(F) BUDDHIST MEDITATION THEORY: WOMEN AND MEN** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY I.2
Meditation practices of South Asia, Tibet, and Japan, and the theories, visual symbols, literary genres, and cultural assumptions associated with these, read in light of current Euro-American feminist work on religion. Option to do work in Tibetan language for extra credit. Also offered as Reli 571. Prerequisite: permission of instructor.

*Klein, A.*

**492(S) DIRECTED READING** (3-0-3)
Advanced reading course in New Testament with emphasis on narrative literature. Prequisite: reading knowledge of Greek.

*Staff*

**501(F) REFORMATION OF THE SIXTEENTH CENTURY** (3-0-3)
Not offered 1993-94.

*Staff*

**503(S) CHRISTIANITY AND THE MODERN WORLD** (3-0-3)
Not offered 1993-94.

*Staff*

**506(F) GOSPEL AND TRADITION** (3-0-3)
Not offered 1993-94.

*Staff*

**507(F) PAULINE THEOLOGY** (3-0-3)

*Kelber, W.*

**508(S) JOHN AND LOGOCENTRISM** (3-0-3)

*Kelber, W.*

**509(S) NEW TESTAMENT AND HERMENEUTICS** (3-0-3)
Not offered 1993-94.

*Staff*

**511(F) HEBREW BIBLE AND HERMENEUTICS** (3-0-3)
Not offered 1993-94.

*Staff*

**512(S) RELIGION OF ANCIENT ISRAEL** (3-0-3)
Not offered 1993-94.

*Staff*

**523(F) INDEPENDENT STUDY** (Variable)

*Staff*

**524(S) INDEPENDENT STUDY** (Variable)

*Staff*

**530(S) SHAMANS AND PHILOSOPHERS: RELIGION/RITUAL ANCIENT TIBET** (3-0-3)
Tibetan culture was formed through Buddhist influence from India and Bön tradition, thought to have originated in Persia. Both traditions borrowed from and questioned the other. Focus on tensions between shamanic perspective of early Bön and philosophical perspective of later Bön and Buddhism, as well as rituals each employed. Much of this material has never been studied in the West before. (Tibetan language available for extra credit.)

*Staff*

**532(S) INTRODUCTION TO TIBETAN LANGUAGE** (3-0-3)
Readings in Tibetan Bön and Buddhist religious texts. Prerequisite: 1 semester Tibetan.

*Staff*

**541(F) SEMINAR IN ETHICS: HISTORY AND METHODS** (3-0-3)
Not offered 1993-94.

*Staff*

**542(S) LOVE, JUSTICE, AND FRIENDSHIP** (3-0-3)

*McKenny, G.*

**543(F) MEDICAL ETHICS AND AMERICAN VALUES I** (3-0-3)

*Heitman, E., Reiser, S.*

**544(S) SEMINAR IN MEDICAL ETHICS AND AMERICAN VALUES II** (3-0-3)
Prerequisite: Reli 543.

*Heitman, E.*

**545(F) ADVANCED TUTORIAL IN THEOLOGICAL-MEDICAL ETHICS** (3-0-3)
Tutorial studies for graduate students with two semesters of ethics.

*McKenny, G.*

**547(F) RELIGIOUS ETHICS AND POSTMODERNISM** (3-0-3)
Examines issues posed for religious ethics by social and cultural aspects of postmodernism. Topics include liberalism and communitarianism, power and authority, and relativism and objectivism in ethics. Not offered 1993-94.

*Staff*

**548(S) COMPARATIVE RELIGIOUS ETHICS** (3-0-3)
Explores classical and contemporary approaches to religious ethics from cross-cultural and comparative perspectives. Not offered 1993-94.

*Staff*

**553(F) DEPARTMENTAL COLLOQUIUM** (3-0-3)

*Staff*

**554(S) DEPARTMENTAL COLLOQUIUM** (3-0-3)

*Staff*

**555(S) EMERGENCE OF MODERN POLITICAL THEOLOGY** (3-0-3)

*Stroup, J.*

**556(S) CHRISTIANITY AND SOCIAL HISTORY** (3-0-3)
Not offered 1993-94.

*Staff*

**557(S) RELIGIOSITY AND SOCIAL POLICY IN AGE OF THE BAROQUE** (3-0-3)
Not offered 1993-94.

*Staff*

**558(F) CRISIS OF MODERN CHRISTIANITY IN LITERATURE/ART/ MUSIC/FILM** (3-0-3)
Not offered 1993-94.

*Staff*

**559(F) INTRODUCTION TO HISTORIOGRAPHY OF WESTERN CHRISTIANITY** (3-0-3)
Survey of standard literature and main problems in interpretation. Not offered 1993-94

*Staff*

**561(F) GOD AND POSTMODERNISM** (3-0-3)
Examines meanings of postmodernism and their implications for concepts of God, faith and religious experience. Readings include Nietzsche, Bataille, Derrida, Kriteva, Jean-Luc Marion, Sloterdijk. Not offered 1993-94.

*Staff*

**562(S) RELIGION AND ASCETICISM** (3-0-3)
Explores interpretations of the body in selected religous traditions in the context of contemporary analyses of corporeality. Topics include the theological meanings of pain, suffering, self-denial and renunciation of the world. Not offered 1993-94.

*Staff*

**570(S) BUDDHIST WISDOM TEXTS** (3-0-3)
Indo-Tibetan analyses of theory and practice as discussed in indigenous texts.

*Klein, A.*

**571(F) BUDDHIST MEDITATION THEORY: WOMEN AND MEN** (3-0-3)
Meditation practices of South Asia, Tibet, and Japan and the theories, visual symbols, literary genres and cultural assumptions associated with these, read in light of current Euro-American, feminist work on religion. Option to do work in Tibetan language for extra credit.

*Klein, A.*

**572(S) INTRODUCTION TO BUDDHISM** (3-0-3)
The thought, practice, and historical development of Buddhism in India, Tibet, China, and Japan.

*Klein, A.*

**575(F) BUDDHISM AND THE FEMALE** (3-0-3)
Questions of self, relationships, and personal changes explored through examining Buddhist theories and female symbolism in light of current work on or by women. Perquisite: permission of instructor. Not offered 1993-94.

*Staff*

**591(F) DEATH AND DYING IN RELIGION AND LITERATURE** (3-0-3)
Death, immortality, resurrection, grief, and mourning in selected texts of Western and Asian religious traditions, and modern and postmodern literature. Readings from the Bible, Plato, Augustine, Pascal, St. Theresa of Avila, the Upanishads, selected Buddhist texts, and the works of Tolstoy, Rilke, Kafka, Dickenson, Goyen, Celan, and Jabes.

*Wyschogrod, E.*

**592(S) ISSUES IN RELIGION AND POSTMODERNISM** (3-0-3)
Introduction to postmodern analyses of temporality, representation, otherness, difference, desire, errancy and writing in relation to problems in the philosophy of religion. Readings from Hegel, Kierkegaard, Nietzsche, Heidegger, Levinas, Blanchot, Lyotard, Derrida, Kristeva, and Deleuze.

*Wyschogrod, E.*

**593(F) RELIGION, MYTH, AND LANGUAGE** (3-0-3)
Survey of approaches to myth and language in relation to religious experience and meaning. Readings from Feuerbach, Freud, Jung, Tillich, Eliade, Wittgenstein, Heidegger, James, Dewey, Levi-Strauss, and Mary Douglas.

*Wyschogrod, E.*

**800 THESIS RESEARCH** (Variable)

*Kelber, W.*

# Social Sciences

## The School of Social Sciences

**Lecturer K.J. Whitmire**

The School of Social of Social Sciences offers majors in anthropology, economics, mathematical economic analysis, political science, psychology, and sociology.

The requirements for the interdepartmental major in policy studies, which overlaps the School of Social Sciences, the School of Engineering, and the School of Humanities, is outlined on page 390. The requirements for the managerial studies major, which overlaps the School of Social of Social Sciences, the Jones School, and the School of Engineering, is described on page 404. The cognitive sciences major which overlaps the School of Social Sciences, the School of Humanities, and the School of Engineering, is described on page 250.

*Social Science Courses*

**102(S) INTELLECTUAL FOUNDATIONS OF THE SOCIAL SCIENCES** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3 OR II.4
A survey of fundamental ideas, theories, and approaches that have shaped the intellectual heritage of the social sciences. A FOUNDATION COURSE.

*Staff*

**300(S) SOCIAL SCIENCE AND PUBLIC POLICY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3 OR II.4
This course will survey how disciplines in the social sciences study public policy. Specific policy questions will be examined as a means of highlighting each disciplines approach to the study of public policy.

*Stein, R.*

**320(F) WOMEN AND AMERICAN POLITICS** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.3 OR II.4
Examines the participation of women in American political life, including the emergence of the contemporary women's movement and the participation of women as candidates and as office holders. Also offered as Poli 381.

*Whitmire, K.*

**420(S) HEALTH CARE: CHOICE AND PUBLIC POLICY** (3-0-3)
Explores the generation of technology from science, its transformation by engineering intervention into workable innovations, and pocesses and problems of evaluating benefits and limits before it diffuses into clinical practice. Not offered 1993-94.

*Staff*

**430(F) THE SHAPING OF HEALTH POLICY** (3-0-3)
As health care becomes an important institution of the private and public sector, an understanding of how policy decisions are made and implemented becomes essential. This course brings together the disciplines of government, law, ethics, economics, and history to explore health care policy. Seminars will involve faculty experts in the above disciplines and guests who are leading national figures in the shaping of public policy to present case discussions of major policy problems.

*Linder, S., Reiser, S.*

# Sociology

## The School of Social Sciences

**Professor Martin,** *Chair*
**Professors Davidson, Gordon, and Klineberg**
**Associate Professor Long**
**Assistant Professor Valenzuela**
**Adjunct Professor Smith**
**Lecturer Shapiro**

*Degree Offered:* B.A.

**Undergraduate Program.** The major is designed to encourage a deeper understanding of human societies, whether as a solid preparation for graduate study in sociology and related fields, as the foundation for a variety of occupations, or as an organizing theme for a liberal education. The program provides the student with considerable latitude in defining and pursuing personal interests while seeking to ensure familiarity with basic theoretical approaches and research methods.

Majors in sociology are not required to take a foreign language; those planning graduate study, however, should be aware that many graduate departments of sociology require demonstrated competence in at least one foreign language. A minimum of 30 semester hours (ten courses) in sociology must be passed in order to satisfy the departmental requirements for the major. Students must also satisfy the distribution requirements and complete at least 90 semester hours outside the departmental requirements for a total program of at least 120 semester hours. See Degree Requirements and Majors, pages 65-85.

Requirements for the major in sociology are: (1) Sociology 203; (2) at least one of several courses emphasizing theoretical approaches, e.g., Sociology 317, 353, 395; (3) Sociology 421; and (4) at least 18 semester hours (six additional courses) in the substantive areas of sociological specialization. A statistics course such as Statistics 280, 301, 381, 480, 481, or Psychology 339 may be used as one of these.

All sociology courses listed are regularly offered by the present faculty, although not necessarily every year. Additional courses may be offered with the addition of new faculty or variations in present course assignments; similarly, some courses may be discontinued from the regular offerings. It is the responsibility of the student to consult the listing of university distribution requirements before registering in order to satisfy all the requirements for his or her degree. The registration of every sociology major must be signed by the departmental adviser, Professor Klineberg.

**Honors Program.** The honors program is designed to (1) provide undergraduates whose primary concentration is in the field of sociology with the opportunity to deepen their understanding of the discipline through a two-semester program of directed independent research and writing, and (2) provide an opportunity for the recognition of undergraduates who have demonstrated unusual competence in sociology by successfully completing a sustained independent research project.

To be eligible for the program, a student must have maintained a "B" average in at least four sociology courses beyond the introductory level. During the first semester of their junior year, all eligible students are invited to submit, no later than two weeks prior to registration for the spring semester, a description of their proposed research project to the Undergraduate Honors Committee (Professor Klineberg, chair). This

feasibility and its sociological significance. Upon acceptance into the program, the student is assigned a faculty adviser to supervise the student's independent research and the selection of further courses relevant to the project. It is expected that all honors candidates will have completed Sociology 421 before beginning their second semester of honors research.

Honor students register for two successive semesters in Directed Honors Research (Sociology 492, 493). The first half of the course, usually taken in the spring semester of the junior year, is normally devoted to a review of the relevant literature and the preparation of a detailed outline of the planned research. The research itself is carried out during the summer and fall of the senior year and is analyzed and written up by the end of the fall semester as a completed Honors Thesis.

The thesis is read and evaluated by two other faculty members in addition to the student's primary adviser and followed by an oral examination open to the public. These three faculty members share responsibility for determining departmental honors based on the student's performance in the program as a whole.

## Sociology

*Sociology Courses*

**203(F) INTRODUCTION TO SOCIOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Introduction to the principal concepts, theories, and methods of sociology.
*Martin, W.*

**301(F) SOCIAL INEQUALITY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
A study of the extent of social inequality, its causes, costs, and benefits. Should (and can) it be abolished? Is inequality compatible with democracy?
*Davidson, C.*

**306(F) SOCIOLOGY OF GENDER** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
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. Not offered 1993-94.
*Long, E.*

**309(F) RACE AND ETHNIC RELATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Historical and contemporary issues and theories of race and ethnic relations in the United States. The primary focus will be on the statuses, roles, and experiences of blacks, native Americans, and Mexican Americans. Race/ethnicity will be treated as an organizing feature of society.
*Valenzuela, A.*

**311(F) COLLECTIVE BEHAVIOR** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Consideration of relatively noninstitutionalized conduct: crowds, mobs, publics, social movements; conditions and consequences of social unrest, excitement, panic, protest, and terrorism. Not offered 1993-94.
*Gordon, C.*

**313(S) DEMOGRAPHY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An introduction to the study of dynamics of population change. Demographic data sources, components of population change, mortality patterns, family planning, the measurement of migrations, population-economic models.

*Smith, D.*

**317(F) SOCIOLOGICAL THEORY: CONTEMPORARY TRENDS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
A seminar devoted to consideration of the major recent trends in sociological theory, especially the writings of Erving Goffman, Anthony Giddens, Jürgen Habermas, Michel Foucault, and Pierre Bourdieu, and in the approaches of symbolic interactionism, cultural studies, text/discourse/semiotic analyses, feminist theory and postmodern sociology. Enrollment limited.

*Gordon, C.*

**321(S) CRIMINOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Types of criminal behavior, theories of crime and juvenile delinquency, with attention to the role of police, courts, correction agencies, and other social structures. Fieldwork. Enrollment limited. Not offered 1993-94.

*Martin, W.*

**325(F) SOCIOLOGY OF SPORT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Historical and sociological analysis of the role of sport in American society. Some topics to be addressed: socialization through sport, intercollegiate sport, race and sport, gender and sport, sports and politics. Course will enable students to use sociological concepts to understand American sport, to explore how sport reflects race, class, gender, ideologies, and to view sport as a social institution capable of change. Enrollment limited.

*Shapiro, B.*

**331(S) POLITICS AND SOCIETY IN TEXAS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Texas as an emerging industrialized state with deep roots in a southern rural past. Populism; "folk conservatism"; cosmopolites and yahoos; theories of how Texas politics works.

*Davidson, C.*

**334(S) SOCIOLOGY OF THE FAMILY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Comparative analysis of role structure, sexuality, emotional bonds, and interaction patterns in differing forms of contemporary families. The functioning of the family in differing cultures, classes, and lifestyles.

*Valenzuela, A.*

**336(S) MASS COMMUNICATIONS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Structure, social context, and effects of large-scale impersonal communication to dispersed and heterogeneous audiences, through such media as televison, radio, print, motion pictures, and recordings. Not offered 1993-94.

*Jowett, G.*

**345(F) SOCIOLOGY OF MEDICINE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
This course gives a brief overview of relationships between social factors and health. It will analyze medicine as a solution and cause of many social and individual problems. It will examine stress and health, medicine and health care systems. Describes cross-cultural differences in health, alternative sources in health policies, patterns of diseases and health policies in other countries. Not offered 1993-94.

*Staff*

**350(S) SOCIOLOGICAL APPROACHES TO POVERTY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.4
What are the dimensions and causes of poverty in America? What are the most promising solutions? Is the problem worse in America than in other Western democracies? To what extent is poverty the result of individual shortcomings as distinct from structural barriers to opportunity? Is there a "culture of poverty"? Can the welfare system be reformed or should it be junked? Is racial and ethnic discrimination a major cause of poverty today, as it was thirty years ago? Field research will be encouraged but not required.

*Davidson, C.*

**353(F) CONCEPTIONS OF HUMAN NATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
The contrasting perspectives on human nature that dominate the behavioral sciences: sociobiology, psychoanalysis, behaviorism, and symbolic interactionism; the "paradigm shift" toward a recognition of the irreducible freedom in human beings as active participants in the cognitive construction of social reality. Not offered 1993-94.

*Klineberg, S.*

**360(S) TELEVISION IN AMERICAN CULTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Analysis of television as popular discourse, in the context of politics, economics, class, gender, age, and other cultural forms.

*Gordon, C.*

**367(F) ENVIRONMENTAL SOCIOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Building on the findings of the biennial "Texas Environmental Survey" that began in 1990, the course will examine empirically the dynamics of public attitudes toward environmental issues and will explore the interaction between technological developments and ecological constraints as they shape the contours of the American future. Not offered 1993-94.

*Klineberg, S.*

**370(F) SOCIOLOGY OF EDUCATION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Analyses of schools as social institutions. Contemporary sociological perspectives on the role of schools in society. Status attainment and allocation models will provide frameworks for understanding relations between social class origin, school achievement, and socioeconomic attainment.

*Valenzuela, A.*

**386(S) SEXUALITY AND THE SOCIAL ORDER** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Ways societies conceive of and regulate sexuality in members' lives; sexual value systems; forms of sexual conduct (especially the number and identities of participants and the intimacy and power relations among them); the changing role of sexuality over the typical life span; forms and effects of sexual communication; issues in the future of sexuality; and AIDS.

*Gordon, C.*

**395(S) FEMINIST SOCIAL THOUGHT** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Feminist theory as critique and reconstruction—from Wollstonecraft and Simone de Beauvoir to contemporary debates about equity, difference, knowledge, sexuality, and power. Also offered as Huma 420.

*Long, E.*

**403(F) INDEPENDENT STUDY** (3-0-3)
Directed reading and written papers on subjects not regularly offered; advanced study of subjects on which courses are offered. Prerequisite: permission of the department. One to three credit hours. Repeatable.

*Staff*

**404(S) INDEPENDENT STUDY** (3-0-3)
Directed reading and written papers on subjects not regularly offered; advanced study of subjects on which courses are offered. Prerequisite: permission of the department. One to three credit hours. Repeatable.

*Staff*

**411(F) SOCIAL CHANGE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Analysis of ongoing transformations in gender roles and family structures, work roles and public policies, global economic and environmental interdependencies, public attitudes and beliefs. Individual and collective responses to the challenges of our time. Not offered 1993-94.

*Klineberg, S.*

**420(S) ADVANCED RESEARCH SEMINAR: ETHNIC POLITICS IN THE 1990s** (3-0-3)
This course will examine the complexities of ethnic politics in the 1990s. The voting patterns, pressure group activities, and political goals of blacks, Hispanics, Anglos, and perhaps other ethnic groups will be investigated. Both library research and field research will be possible. Investigative methods of several kinds will be used. Not offered 1993-94.

*Davidson, C.*

**421(S) THE CRAFT OF SOCIOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
What has been, and is today, the "work" of sociology? This question will be addressed by a self-reflective exploration of the discipline—its historical and social origins and development, its shifting philosophical foundations, its methodological refinements, its ethical and political implications—and discussion of sociological studies, both classic and controversial. Required for sociology majors.

*Long, E.*

**424(S) THE GOOD SOCIETY** (3-0-3)
*DISTRIBUTION COURSE: CATEGORY II.4
Social science has played a crucial role in analyzing specific social problems, in generating critical appraisals of the existing social order, and in envisioning both abstractly and more programmatically how to move toward "the good society." This course will examine these linked projects of analysis/critique/renewal in relation to concrete social issues (the family, inequality, the environment) as well as more generally. Not offered 1993-94.

*Long, E.*

**425(F) POLITICAL SOCIOLOGY** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Examination of social phenomena that impinge on political systems; mass society, informal power structures, ideology, intergroup conflict, insurgent social movements.

*Davidson, C.*

**430(S) SOCIOLOGY OF RELIGION** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Religious beliefs, symbols, actions, organizations, roles, and various interrelationships between religion and society, including new religious movements, secularization, and fundamentalism. Fieldwork. Enrollment limited.

*Martin, W.*

**433(F) SOCIOLOGY OF THE LIFE CYCLE: DEATH AND DYING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Consideration of the social meanings of death in various cultures; medical and other definitions of death; attitudes toward death and dying; career of the self in life and death; too-early, on-time and too-late deaths; "near-death experiences"; social management of death and dying in various organizational settings (homes, hospitals, nursing homes, hospices, battlefields, etc.); changing causes of death, mortality rates and demographic characteristics of dying persons; various types of death (suicide, accident, illness, murder, war, etc.); relations of aging and death; implications of changing death patterns for individuals, families, organizations, and societies in this nuclear age.

*Gordon, C.*

**436(S) SOCIOLOGY OF LITERATURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Examination of social actors and institutions involved in production, dissemination, and reception of literature: authors, publishers, and other literary "gatekeepers"; critics who shape the literary canon; and audiences—what they read and how books ("good" or "trash") function in their lives. Not offered 1993-94.

*Long, E.*

**441(S) MINORITIES IN THE SCHOOLING PROCESS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
Minority academic underachievement, as viewed from various theoretical perspectives in the sociology of education. Using a survey format, contemporary issues pertaining to the undereducation of cultural and linguistic minorities will be discussed and analyzed in light of current empirical evidence.

*Valenzuela, A.*

**450(F) TOPICS IN THE STUDY OF RELIGION: FUNDAMENTALISM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An examination of fundamentalist religious institutions, behavior, and thought with consideration of fundamentalist attitudes toward, participation in, and impact on politics, economics, education, mass communication and family life. Attention will be given to Christian, Islamic, and Jewish examples. Fieldwork. Enrollment limited. Not offered 1993-94.

*Martin, W.*

**463(F) POWER AND CULTURE IN CONTEMPORARY SOCIAL THEORY** (3-0-3)
Marxist and poststructuralist cultural criticism: elite vs. popular or "mass" culture, domination and resistance, cultural capital and imperialism, ideology and the construction of subjectivity. We will consider Williams, Hall, Bourdieu, Foucault, Robinson. Not offered 1993-94.

*Long, E.*

**475(F) SOCIAL MOVEMENTS** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
This course examines both the historical development and contemporary relevance of social movements in an empirical and theoretical context. Examination of the classical literature on collective behavior and social movements, as well as recent criticisms of these perspectives. Utilization of these historical data and theoretical approaches to assess the impact and potential future of social movements in Europe and the U.S. Not offered 1993-94.

*Staff*

**481(F) PERSPECTIVES ON THE FUTURE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY II.4
An exploration of the major processes underlying the transformation of industrial societies, with particular reference to the impact of technological developments and environmental constraints as they interact with human values and aspirations to shape the contours of the future. Not offered 1993-94.

*Klineberg, S.*

**492(S) DIRECTED HONORS RESEARCH** (3-0-3)
Sociological research under faculty supervision. First semester: review of relevant literature and preparation of outline for planned research. Second semester: research carried out and honors thesis completed. Open only to students in sociology honors program.

*Staff*

**493(F) DIRECTED HONORS RESEARCH** (3-0-3)
Sociological research under faculty supervision. First semester: review of relevant literature and preparation of outline for planned research. Second semester: research carried out and honors thesis completed. Open only to students in sociology honors program.

*Staff*

**496(S) ADVANCED RESEARCH SEMINAR: THE HOUSTON AREA SURVEY** (3-1-4)
The "research team" will continue the series of annual surveys exploring the ways Houston residents are reacting to changes in American society. By participating fully in sampling procedures, questionnaire construction, interviewing, and data analysis, students will gain direct experience with the logic and skills of survey research, in a project of professional quality. The course concludes with a final research report that develops empirical hypotheses and tests their validity with the survey findings. Permission of instructor required.

*Klineberg, S.*

# Space Physics and Astronomy

## The Wiess School of Natural Sciences

**Professor Weisheit,** *Chair*
**Professors Cloutier,** *Assistant Chair* **Dufour, Dunning, Few, Freeman, Haymes, Heymann, Liang, Michel, O'Dell, Reiff, Stebbings, Walters, and Wolf**
**Assistant Professor Chan**
**Distinguished Faculty Fellows Hill, Smith, and Voigt**
**Senior Faculty Fellow Ledley**
**Adjunct Professors Black, Burch, Horton, and Winningham**
**Adjunct Assistant Professor Newman**

*Degrees Offered:* B.A. in physics with space physics and astronomy option, M.S., Ph.D.

**Undergraduate Program.** There is no undergraduate major in the department; however, the Department of Physics offers a space physics and astronomy option leading to a B.A. with a major in physics for students with an interest in studies directed toward space physics and astronomy. The course requirements for this option can be satisfied in any order consistent with prerequisites. The following is a typical program (laboratory courses in parentheses):

| | |
|---|---|
| *First Year:* | Physics 101, 102, (132) |
| | Chemistry 101, 102 or 111, 112 |
| | Math 101, 102 |
| *Second Year:* | Space Physics and Astronomy 250 |
| | Physics 201, 202, (231), (331) |
| | Math 211, 212, or 221, 222 |
| *Third Year:* | Space Physics and Astronomy 300, (330) |
| | Physics 301, 302, 425 |
| | Math 381, 382, or approved substitutes |
| *Fourth Year:* | Space Physics and Astronomy—two courses at the 400 or 500 level |
| | Physics 311, 312, 431, 432 |

In addition to departmental requirements for the major, all students must satisfy the university requirements for the B.A. degree, including the completion of at least 60 semester hours of course work outside those specified for the major with option. See Degree Requirements and Majors, pages 65-85. Undergraduates also are urged to take one or more introductory courses in computer programming before their junior year.

**Graduate Program.** Research opportunities exist for graduate studies leading to degrees of Master of Science and Doctor of Philosophy in the Department of Space Physics and Astronomy. To gain such a degree, a student must be knowledgeable in many areas of space physics and astronomy and expert in at least one.

A bachelor's degree in physics or a closely related discipline is necessary for admission to the department. Research programs in the Department of Space Physics and Astronomy include ground- and space-based observational astronomy; theoretical astrophysics and space plasma physics; aeronomy and Earth system science; spacecraft development and data analysis. The requirements for M.S. and Ph.D. degrees are outlined below. Further details of research programs in space physics and astronomy and departmental degree requirements are contained in a booklet available on request from the Department of Space Physics and Astronomy.

**Requirements for the Degree of Master of Science.** Candidates for the master's degree must complete successfully at least 30 semester hours of approved graduate-level course work and research and must demonstrate an understanding of physics and astronomy in an oral examination by their faculty committee. They must prepare a written thesis on an original research topic and defend the thesis orally.

**Requirements for the Degree of Doctor of Philosophy.** The key requirement for a doctorate is demonstration of the capacity for independent, original research. A student normally is admitted to candidacy for the Ph.D. degree by satisfying the requirements for the M.S. degree in space physics and astronomy as outlined above. A student who already holds a recognized M.S. degree or who does not desire to receive a master's degree may become a candidate for the Ph.D. through procedures described in the booklet available from the departmental office.

Candidates who hold a master's degree could possibly complete requirements for the doctorate in two years; otherwise a minimum of four years of graduate study usually is required. Students must complete at least 60 semester hours of approved graduate-level course work and research, prepare a thesis on an original research topic, and defend the thesis orally. The thesis must be of a quality acceptable for publication in a reputable scientific journal.

*Space Physics and Astronomy Courses*

**201(S) STARS, GALAXIES, AND THE UNIVERSE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
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. Prerequisite: Nsci 101, 102.

*Haymes, R.*

**202(F) EXPLORATION OF THE SOLAR SYSTEM** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
An introductory course for students in academic programs. The structure and energetics of the sun; planetary motions, interplanetary fields and plasma; the planets, their satellites and rings, comets, etc. The purposes and methods of solar system exploration—manned and unmanned spacecraft, space stations and space colonies, are discussed in some detail. Prerequisite: Nsci 101, 102.

*Reiff, P.*

**203 ATMOSPHERE, WEATHER, AND CLIMATE** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.5
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. Prerequisite Nsci 101, 102. Not offered 1993-94.

**250(F) INTRODUCTION TO ASTROPHYSICS** (3-0-3)
A survey of stars and galaxies, emphasizing both observational data and the basic physical principles that regulate their structure, evolution, and fate. Modern concepts in cosmology will also be introduced. This course is intended for students who have had at least two semesters each of physics, chemistry, and calculus; credit will not be given for both Spac 250 and Spac 201.

*O'Dell, R.*

**300(F) SEMINAR IN SPACE PHYSICS AND ASTRONOMY** (1-0-1)
Technical readings and weekly discussion focused on an important issue in space physics and astronomy. For 1993 the topic is the search for extraterrestrial life. Prerequisite: Spac 250 and Phys 202. May be repeated for credit.

*Haymes, R.*

**330(S) ASTRONOMY LABORATORY** (1-3-2)
An introduction to modern techniques of observational astronomy. Students will use telescopes and computer analyze data to determine properties of solar system, Galactic, and extragalactic objects. The course also involves field trips to dark-sky observing sites, including George Observatory. Prerequisite: Spac 250; or one of Spac 201 or 202 and consent of the instructor.

*Staff*

**443(S) EARTH SYSTEM DYNAMICS** (3-0-3)
The dynamics of fluid flow, the dynamics of energy exchanges, and the dynamics of major active chemical components in the Earth system will be studied. Open to upper-level undergraduates and graduate students in science and engineering. Credit will not be given for both Spac 443 and Spac 203.

*Few, A.*

**455(S) EXPERIMENTAL ASTROPHYSICS** (3-0-3)
Study of instruments and methods by which information is obtained in space physics and astronomy. Different regions of the electromagnetic spectrum, cosmic rays, neutrinos, and magnetic fields and particles in the solar system may all be considered. Special techniques for the analysis of massive astronomical data sets will be discussed. Prerequisite: Spac 250 and Spac 330, or consent of instructor. Not offered 1993-94.

**461(S) GALACTIC ASTRONOMY** (3-0-3)
Analysis of the stellar and gaseous content of the Milky Way; the kinematics of stellar systems; and the structure and evolution of other, normal galaxies. Introduction to active galaxies—starbursts, Seyferts, and quasars. Prerequisite: Spac 250 and Phys 301 or consent of instructor.

*Dufour, R.*

**471(F) SOLAR SYSTEM PHYSICS** (3-0-3)
The sun, solar-terrestrial relationships, solar wind; planetary atmospheres, ionospheres, and magnetospheres. Prerequisite: Spac 250; Phys 301, 302, or equivalent.

*Cloutier, P.*

**500 GRADUATE SEMINAR** (1-0-1)
A presentation of current research programs in the department. May be repeated for credit.

*Staff*

**503(F) PLASMA PHYSICS I** (3-0-3)
Magnetohydrodynamics, gas dynamics, particle drifts, electrical conductivities. Emphasis on fundamentals.

*Michel, C.*

**504(S) PLASMA PHYSICS II** (3-0-3)
Plasma waves, confinement, and instabilities. Emphasis on fundamentals. Not offered 1993-94.

**506(F) PLASMA PHYSICS III** (3-0-3)
Kinetic theory of waves in a hot magnetized plasma; electrostatic waves; examples relevant to space plasma physics. Introduction to non-linear plasma physics, including simple analytic solutions, BGK waves, double layers, the Korteweg-deVries equation. Parametric instabilities. Weak turbulence theory.

*Chan, A.*

**510 MAGNETOSPHERIC PHYSICS** (3-0-3)
The course describes the plasma physics of the Earth's magnetosphere, including interactions of the magnetosphere with the solar wind, the ionosphere, and the neutral atmosphere. The observational knowledge is summarized, and the basic theories of the most important phenomena are developed. 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. Not offered 1993-94.

**512 IONOSPHERIC PHYSICS** (3-0-3)
Planetary ionospheres: Their aeronomy and structure. The aurora; ionospheric currents and conductivities. Not offered 1993-94.

**515(F) CLASSICAL DYNAMICS** (3-0-3)
Lagrangian and Hamiltonian mechanics; dynamics of continuous media; mathematical methods. Also offered as Phys 515.

*Wolf, R.*

**532(S) CLASSICAL ELECTRODYNAMICS** (3-0-3)
Special relativity; covariant formulation of electrodynamics and charged-particle radiation processes; mathematical methods. Also offered as Phys 532.

*Wolf, R.*

**540(S) QUANTUM PROCESSES IN ASTROPHYSICS** (3-0-3)
Principles of quantum mechanics applied to atomic structure theory and to atomic collisional and radiative processes. Plasma ionization balance; spectral line shapes. Analysis of cosmic spectra.

*Weisheit, J.*

**551(F) SOLAR AND STELLAR ASTROPHYSICS** (3-0-3)
Physics of stellar interiors and atmospheres; solar phenomena. Concepts of stellar evolution.

*Liang, E.*

**552(S) NEBULAR ASTROPHYSICS** (3-0-3)
The physics of emission nebulae. Topics include: radiative transfer, photoionization and thermal equilibria, and internal gaseous dynamics. Analysis of the spectra of nebulae, novae and supernova remnants.

*O'Dell, R.*

**561(F) GENERAL RELATIVITY** (3-0-3)
Einstein's theory of gravitation, gravity waves; relativistic cosmological models. Not offered 1993-94. Prerquisite: Spac 532.

**562(S) COSMOLOGY** (3-0-3)
Study of the observed contents and large-scale structure of the universe vis-a-vis the standard (Big Bang) cosmological model. Formation and evolution of self-gravitating systems. Quasars and related phenomena. Not offered 1993-94. Prerquisite: Spac 461 or Spac 561.

**565(S) COMPACT OBJECTS AND HIGH ENERGY ASTROPHYSICS** (3-0-3)
Discussion of white dwarfs, neutron stars, black holes and their environs (e.g., pulsars, accretion disks). Supernova phenomena; energetic plasma processes.

*Michel, C.*

**600-605 SPECIAL TOPICS IN SPACE PHYSICS AND ASTRONOMY**
Advanced graduate-level seminars on subjects of particular interest to departmental faculty and students. Previous course topics include atmospheric dynamics, globular clusters, experimental plasma physics, origin of the solar system, kinetic theory, cosmo-chemistry, and astrophysical plasma phenomena. May be repeated for credit when course content changes. Offered irregularly.

**603(S) SPECIAL TOPIC: VENUS AND MARS** (3-0-3)
Solar wind interaction with ionospheres and atmospheres of Venus and Mars. Data from 15 years of Pioneer-Venus observations as well as anticipated data from Mars Observer will be compared to theoretical expectations. Possible consequences of long-term evolution of the atmospheres of these planets will also be discussed. Prerequisite: Spac 471 or Spac 503.
*Cloutier, P.*

**700 TEACHING PRACTICUM** (Variable)
For graduate students in space physics and astronomy.
*Staff*

**800 GRADUATE RESEARCH** (Variable)
*Staff*

# Statistics

## The George R. Brown School of Engineering

**Professor Thompson,** *Chair*
**Professors Brelsford, Brown, Cox, Johnson, Pfeiffer, Scott, and Sickles**
**Adjunct Professors Brown, Cardus, Downs, Frankowski, Gehan, Gentle, Hsi, Jansson, Thames, and Zimmerman**
**Associate Professors Austin, Ensor, Kimmel, Lane, and Wilson**
**Adjunct Associate Professors Atkinson, Hacker, Johnston, and White**
**Visiting Professor Holmstrom**
**Visiting Lecturers Drouilhet and Gawel**

*Degrees Offered:* B.A., M.Stat., M.A., Ph.D.

**Undergraduate Program.**
The department's goals are to acquaint students with the role played in the modern world by probabilistic and statistical ideas and methods, to provide instruction in the theory and application of techniques that have been found to be commonly useful, and to train research workers in statistics. The undergraduate statistics program is flexible and may be oriented toward theoretical or applied training or toward joint work in a related department, such as economics, education, electrical and computer engineering, computational and applied mathematics, political science, and psychology.

1. Students normally take seven basic courses:
   Calculus: Mathematics 101and 102
   Differential equations and linear algebra: Mathematics 211
   Computer programming: Computer Science 210 or 211 or Computational and Applied Mathematics 223 (3 hours)
   Model building: Statistics 300 or 301
   Introduction to Probability and Statistics: Statistics 310
   Data Analysis: Statistics 410

2. Students also take five elective courses from the statistics department (or other departments with approval from their advisor) at the 300 level or higher.

Mathematically oriented students should also take Mathematics 212 and 355 (or Caam 310). In addition to the departmental requirements for the major, students must also satisfy the distribution requirements and complete no fewer than 60 semester hours outside the departmental requirements for a total program of at least 120 semester hours.

**Graduate Program.** Graduate programs at three levels are offered: master's without thesis (M.Stat.), master's with thesis (M.A.), and doctoral degree (Ph.D.). Applicants should request application materials and provide Graduate Record Examination scores (quantitative, verbal, and advanced), transcripts, three letters of recommendation, and TOEFL scores when appropriate. Support is available for well-qualified doctoral students.

Thirty semester hours of approved course work must be completed for master-level degrees, with 90 hours required for the doctoral degree. Course work is expected at the 400-level and above, but two approved 300-level courses may be offered. An original thesis with public oral defense is required for the M.A. and Ph.D. degrees. Doctoral students must perform satisfactorily on preliminary and qualifying examinations and pass a reading examination in one foreign language.

*Statistics Courses*

**280 ELEMENTARY APPLIED STATISTICS** (2-2-4)
* DISTRIBUTION COURSE: CATEGORY III.6
An introduction to statistical methods with emphasis on techniques. Computer-assisted data analysis is explored in laboratory sessions.

*McGee, M., Gelder Ehm, M.*

**300(S) MODEL BUILDING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Examples to illustrate mathematical formulation (modeling) of scientific problems, their solution and interpretation. Emphasis on physical science models. Prerequisite: Math 211 or permission of instructor.

*Atkinson, E.N.*

**301(F) MODEL BUILDING** (3-0-3)
* DISTRIBUTION COURSE: CATEGORY III.6
Same as Stat 300, with emphasis on behavioral science models.

*Gawel, B.*

**305(S) INTRODUCTION TO STATISTICS FOR BIOSCIENCES** (3-0-3)
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.

*Kimmel, M.*

**310 PROBABILITY AND STATISTICS** (3-0-3)
Probability theory and the central concepts and methods of statistics. Prerequisite: Math 102; Math 212 is recommended.

*Kimmel, M., Thompson, J.*

**339(F) STATISTICAL METHODS IN PSYCHOLOGY** (3-1-4)
Also offered as Psyc 339.

*Staff*

**381 APPLIED PROBABILITY** (3-0-3)
Prerequisite: Math 102. Also offered as Caam 381 and Elec 331.

*Pfeiffer, P.*

**400(S) ECONOMETRICS** (3-0-3)
Also offered as Econ 400.

*Vella, F.*

**410(S) INTRODUCTION TO STATISTICAL COMPUTING AND REGRESSION** (3-0-3)
A survey of statistical methods with emphasis on computing and computing environments, focusing on applied regression. Prerequisite: Stat 310 or permission of instructor.
*Staff*

**420(F) QUALITY AND PROCESS CONTROL FROM AN EXPERIMENTAL DESIGN PERSPECTIVE** (3-0-3)
A historical development of quality control including the approaches of Ford, Pareto, Shewhart, Deming, Box and Tageuchi. Prerequisite: Stat 310 or permission of instructor.
*Thompson, J.*

**421(S) INTRODUCTION TO TIME SERIES ANALYSIS** (3-0-3)
Time series modeling and forecasting. Prerequisite: Stat 310 or permission of instructor.
*Ensor, K.*

**431(F) MATHEMATICAL STATISTICS I** (3-0-3)
Distribution theory. Estimation theory. Admissibility and minimaxity. Maximum-likelihood estimation. Hypothesis testing. Confidence intervals. Neyman-Pearson theory. Uniformly most powerful tests. Cramer-Rao inequality. Prerequisite: Stat 310 or permission of instructor.
*Cox, D.*

**432(S) MATHEMATICAL STATISTICS II** (3-0-3)
Regression and linear models. Gauss-Markow theorem. Nonparametric tests. Kolmogorov-Smirnov tests. Decision theory. Prerequisite: Stat 431.
*Cox, D.*

**490(F) INDEPENDENT STUDY** (3-0-3)
*Staff*

**503(S) TOPICS IN METHOD AND DATA ANALYSIS** (3-0-3)
Applications of least squares and general linear model. Also offered as Poli 503. Not offered every year.
*Alford, J.*

**509(F) ADVANCED PSYCHOLOGICAL STATISTICS** (3-0-3 each semester)
Also offered as Psyc 502.
*Staff*

**510(S) ADVANCED PSYCHOLOGICAL STATISTICS** (3-0-3 each semester)
Also offered as Psyc 503.
*Lane, D.*

**540(S) ASYMPTOTICS** (3-0-3)
Modes of Convergence, Asymptotic theory for nonparametric and parametric inference, Asymptotic relative efficiency, U-Statistics. Von-Mises Statistics, and M, L, and R estimates. Prerequisite: Stat 431 or consent of instructor. Not offered every year.
*Ensor, K.*

**541(S) MULTIVARIATE ANALYSIS** (3-0-3)
Multivariate normal theory, principal components, factor analysis, discrimination, hypothesis testing. Prerequisite: Stat 431 or consent of instructor. Not offered every year.
*Staff*

**542 SIMULATION** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**543 ADVANCED TOPICS IN STATISTICAL COMPUTING** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**544 SAMPLING THEORY** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**545 GENERALIZED LINEAR MODELS** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**546 DESIGN AND ANALYSIS OF EXPERIMENTS** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**550(S) NONPARAMETRIC FUNCTION ESTIMATION** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.
*Cox, D.*

**551 TIME SERIES ANALYSIS** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**552 APPLIED STOCHASTIC PROCESSES** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**553 SURVIVAL ANALYSIS** (3-0-3)
Nonparametric methods for analysis of survival data with medical applications. Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**554 ROBUST METHODS** (3-0-3)
Prerequisite: Stat 431 or consent of instructor.

**555 TOPICS IN POPULATION DYNAMICS** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**556 QUALITY CONTROL AND RELIABILITY** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**557 BAYESIAN FOUNDATIONS OF STATISTICAL INFERENCE** (3-0-3)
Prerequisite: Stat 431 or consent of instructor. Not offered every year.

**581(F) MATHEMATICAL PROBABILITY I** (3-0-3)
Measure-theoretic foundations of probability. Open to qualified undergraduates. Also offered as Caam 581.
*Pfeiffer, P.*

**582(S) MATHEMATICAL PROBABILITY II** (3-0-3)
Continuation of Stat 581.
*Pfeiffer, P.*

**583(F) INTRODUCTION TO RANDOM PROCESSES AND APPLICATIONS** (3-0-3)
Also offered as Elec 533 and Caam 583.
*Aazhang, B.*

**584(S) ESTIMATION THEORY** (3-0-3)
Also offered as Elec 534 and Caam 584. Not offered every year.

*Staff*

**600 GRADUATE SEMINAR IN STATISTICS** (credit variable)

*Ensor, K.*

**604(F) ADVANCED ECONOMIC STATISTICS** (3-0-5)
Also offered as Econ 504.

*Rau, H.*

**610(S) ECONOMETRICS** (3-0-5)
Also offered as Econ 510.

*Brown, B.*

**611(F) APPLIED ECONOMETRICS** (3-0-5)
Also offered as Econ 511.

*Sickles, R.*

**680-689 ADVANCED TOPICS IN STATISTICS** (3-0-3)

**680(F) TOPICS IN MARKOV PROCESSES** (3-0-3)

*Gawel, B.*

**681(F) A TOPIC IN BIOMETRY** (3-0-3)

*Kimmel, M.*

**683(F) GROUP PRESENTATION IN PROBBAILITY & STATISTICS**

*Thompson, G.*

**800 THESIS** (Credit variable)

*Staff*

# The Study of Women and Gender

**Professor Michie,** *Director*
**Professors Chance, Citron, Eifler, and Gordon**
**Associate Professors Klein, Long, Polanyi, Sanders, Taylor, and Traweek**
**Assistant Professors Derrick, Flutz, Harter, Lamos, Lurie, Quillen, Sherman, and Valenzuela**
**Lecturers Daichman and Logan**

*Degree Offered:* B.A.

*The Study of Women and Gender* uses interdisciplinary approaches to explore both 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 other social, political, and legal structures; and the implications of feminist theory for philosophical and epistemological traditions.

Students receiving a B.A. in the Study of Women and Gender are expected to understand the challenges posed to existing disciplines by making gender a significant category of analysis; to have mastered methods of studying and comparing cultural constructions of gender and sexuality; and to be familiar with the fundamental debates in the field of women's and gender studies. The requirements for the major are designed with these expectations in mind.

**Requirements:** In addition to fulfilling the distribution requirements for Group I and Group II majors, students complete 36 hours of course work (30 if a second major). All students must take Huma 270 (Introduction to the Study of Women and Gender) and one capstone course. Each student must take at least one approved comparative course and one approved theory course. Of the eight remaining required courses, no more than four may be from a single department. **All students must work out their individual courses of study with their faculty advisers and each student's course of study must be approved by the director of the major.**

**Courses:** 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.

## I. *Courses That Satisfy the Core Requirements*

**HUMA 270(S) INTRODUCTION TO THE STUDY OF WOMEN AND GENDER**

*Michie, H., Sanders, P.*

**SOCI 395(S) FEMINIST SOCIAL THOUGHT**
Satisfies capstone requirement.

*Long, E.*

II. *Courses That Satisfy the Comparative or Cross-Cultural Requirement*

**ANTH 327(F) GENDER AND SYMBOLISM**

*Taylor, J.*

**ENGL 303(F) AFRICAN-AMERICAN LITERATURE: THE MOTHER/ DAUGHTER PLOT**

Not offered 1993-94.

*Fultz, L.*

**ENGL 303(S) AFRICAN-AMERICAN LITERATURE: BLACK WOMEN WRITERS**

Not offered 1993-94.

*Fultz, L.*

**HIST 438(S) GENDER AND SOCIETY IN ISLAM**

Not offered 1993-94.

*Sanders, P.*

**LING 415(F) SEX, CLASS, AND LANGUAGE**

Not offered 1993-94.

*Polanyi, L.*

**RELI 357(S) BUDDHISM AND THE FEMALE**

Not offered 1993-94.

*Klein, A.*

**RELI 471(F) BUDDHIST MEDITATION THEORY: WOMEN AND MEN**

*Klein, A.*

*III. Courses That Satisfy the Theory Requirement*

**ENGL 413(S) FEMINIST LITERARY THEORY**

*Lurie, S.*

**SOCI 395(S) FEMINIST SOCIAL THOUGHT**

*Long, E.*

*IV. Other Courses*

**ENGL 102(S) GENDER IMAGES** (section 5)

*TBA*

**ENGL 304(F) TWENTIETH-CENTURY WOMEN WRITERS**

*Lurie, S.*

**ENGL 321(S) GENDER AND POWER IN OLD ENGLISH LITERATURE**

*Chance, J.*

**ENGL 403(F) JANE AUSTEN AND CHARLOTTE BRONTË**

Not offered 1993-94.

*Michie, H.*

**ENGL 405(S) WHITMAN, DICKINSON, CRANE: WORD AND BODY**
Not offered 1993-94.
*Derrick, S.*

**ENGL 462(F) VICTORIAN MARRIAGE**
Also offered as Hist 462.
*Michie, H., Wiener, M.*

**ENGL 510(S) FEMINIST THEORY**
Permission of instructor required.
*Lurie, S.*

**ENGL 513(S) NINTEENTH-CENTURY WOMEN NOVELISTS AND THE MALE TRADITION**
Permission of instructor required. Not offered 1993-94.
*Derrick, S.*

**ENGL 514(F) SEMINAR: ALTERNATIVE SHAKESPEARES: RACE, CLASS, AND GENDER**
Permission of instructor required.
*Skura, M.*

**FREN 360(F) GENDER AND SEXUALITY IN MODERN FRENCH HISTORY**
Taught in English. Cross-listed as Hist 360. Not offered 1993-94.
*Sherman, D.*

**FREN 460(F) WOMEN IN FRENCH LITERATURE**
*Harter, D.*

**GERM 392(S) SPECIAL TOPICS: WOMEN AUTHORS**
Not offered 1993-94.
*Eifler, M.*

**HIST 244(F) INTRODUCTION TO WOMEN'S HISTORY**
Not offered 1993-94.
*Quillen, C.*

**HUMA 376(S) GENDER AND SCIENCE**
Not offered 1993-94.
*Longino, H.*

**MUSI 329(S) WOMEN COMPOSERS**
Not offered 1993-94.
*Citron, M.*

**SOCI 306(F) SOCIOLOGY OF GENDER**
Not offered 1993-94.
*Long, E.*

**SOCI 334(S) SOCIOLOGY OF THE FAMILY**
*Valenzuela, A.*

**SOCI 386(S) SEXUALITY AND THE SOCIAL ORDER**
*Gordon, C.*

**SOSC 320(F) WOMEN AND AMERICAN POLITICS**
*Whitmire, K.*

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*NOTE: This catalog represents the most accurate information available at the time of publication. However, it necessarily cannot reflect changes in staff and costs over the longer term. As far as courses are concerned, the departments have used their best judgment in anticipating which courses will be offered over the one-year period and when they will be offered. Despite their best efforts, though, the inevitable changes in faculty as well as student demand and even funding, in some cases, may affect course offerings. A good faith effort has been made to indicate these uncertainties appropriately; however, these provisions are subject to change without notice.*

**Offices to contact for additional information:**
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| | |
|---|---|
| Admission, Catalogs, Applications | Office of Admission<br>109 Lovett Hall; (713) 527-4036 |
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| Undergraduate and Graduate Students, Undergraduate Curricula | Office of the Vice President for Student Affairs<br>101 Lovett Hall; (713) 527-4996 |

*Rice University seeks to attract to its faculty, staff, and student body qualified persons of diverse backgrounds. In accordance with this policy, Rice does not discriminate in admissions, educational programs, or employment against any individual on the basis of race, color, religion, sex, sexual preferance, national or ethnic origin, age, disability, or veteran status. University policy also includes affirmative action in seeking to recruit, hire, and advance women, minority group members, individuals with disabilities, Vietnam era veterans, and special disabled veterans.*

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