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THE BULLETIN

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THE UNDERGRADUATE BULLETIN
OF
NORTH CAROLINA
AGRICULTURAL AND TECHNICAL
STATE UNIVERSITY
Greensboro

CO-EDUCATIONAL INSTITUTION

SEVENTY-EIGHTH ANNUAL
CATALOGUE 1976-77
WITH ANNOUNCEMENTS FOR 1977-78

GREENSBORO, NORTH CAROLINA

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NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY
Greensboro

UNIVERSITY CALENDAR 1976-77

FALL SEMESTER, 1976

August 19—Thursday	Administrator's Conference
August 20—Friday	Faculty-Staff Conference
August 22—Sunday	Freshmen and Transfer Students Report
August 23-24; Monday and Tuesday	Orientation and Advisement of Freshmen and Transfer Students
August 25—Wednesday	Upperclassmen Report
August 26-28; Thursday - Saturday	Registration
August 30—Monday	Classes Begin
September 6—Monday	Holiday (Labor Day)
September 7—Tuesday	Classes Resume at 7:00 a.m.
September 9—Thursday	Last Day to Add a Course
October 18-23; Monday - Saturday	Mid-Semester Evaluation
October 22—Friday	Last Day to Apply for Fall Semester Graduation
November 2-5; Tuesday - Friday	Pre-Registration for Spring Semester
November 4—Thursday	Last Day to Drop a Course Without Grade Evaluation
November 24—Wednesday	Thanksgiving Holidays Begin at 1:00 p.m.
November 29—Monday	Classes Resume at 7:00 a.m.
December 11—Saturday	Reading Day
December 13—Monday	Final Examinations Begin
December 18—Saturday	Final Examinations End
December 18—Saturday	Fall Semester Ends, Christmas Holidays Begin

UNIVERSITY CALENDAR 1976-77

SPRING SEMESTER, 1977

January 3—Monday	Faculty and Staff Report
January 4—Tuesday	Freshmen and Transfer Students Report
January 5—Wednesday	Orientation and Advisement of Freshmen and Transfer Students
January 5—Wednesday	Upperclassmen Report
January 6-8; Thursday - Saturday	Registration
January 10—Monday	Classes Begin
January 10—Monday	Late Registration Begins
January 20—Thursday	Last Day to Apply for Graduation
March 7-12; Monday - Saturday	Mid-Semester Evaluation
March 14—Monday	Spring Holidays Begin
March 21—Monday	Spring Holidays End, Classes Resume at 7:00 a.m.
March 23—Wednesday	Last Day to Drop a Course Without Grade Evaluation
April 5-8; Tuesday - Friday	Pre-Registration for Fall Semester
April 11—Monday	Holiday (Easter Monday)
April 12—Tuesday	Classes Resume at 7:00 a.m.
April 13—Wednesday	Awards Day Convocation
April 20-23; Wednesday - Saturday	Final Examinations for Graduating Students
May 8—Sunday	Commencement
May 9—Monday	Reading Day
May 10—Tuesday	Final Examinations Begin
May 14—Saturday	Final Examinations End, Spring Semester Ends

CALENDAR 1976

1976

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CALENDAR 1977

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BOARD OF GOVERNORS
THE UNIVERSITY OF NORTH CAROLINA

William A. Johnson, *Chairman*
Mrs. Howard Holderness, *Vice Chairman*
E. B. Turner, *Secretary*

Class of 1977

Victor S. Bryant ..... Durham
George Watts Hill ..... Durham
Wallace N. Hyde ..... Asheville
Robert B. Jordan, III ..... Mount Gilead
Mrs. John McCain ..... Wilson
Reginald F. McCoy ..... Laurinburg
Maceo A. Sloan ..... Durham
Thomas J. White, Jr. ..... Kinston

Class of 1979

Julius L. Chambers ..... Charlotte
Dr. Hugh S. Daniel, Jr. ..... Waynesville
William A. Dees, Jr. ..... Goldsboro
Jacob H. Froelich, Jr. ..... High Point
William A. Johnson ..... Lillington
E. B. Turner ..... Lumberton
Mrs. George D. Wilson ..... Fayetteville

Class of 1981

Hugh Cannon ..... Raleigh
Philip G. Carson ..... Asheville
T. Worth Coltrane ..... Asheboro
Luther H. Hodges, Jr. ..... Charlotte
Mrs. Hugh Morton ..... Linville
J. J. Sansom, Jr. ..... Raleigh
David J. Whichard, II ..... Greenville

Class of 1983

Irwin Belk ..... Charlotte
Wayne Corpening ..... Winston-Salem
Daniel C. Gunter ..... Gastonia
Mrs. Howard Holderness ..... Greensboro
John R. Jordan, Jr. ..... Raleigh
J. Aaron Prevost ..... Hazelwood
Louis T. Randolph ..... Washington
Harley Shuford, Jr. ..... Hickory

BOARD OF TRUSTEES

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

Marshall B. Bass ..... Winston-Salem
Lacy H. Caple ..... Lexington
C. C. Griffin ..... Concord
Frontis W. Johnston ..... Davidson
Richard D. Levy ..... Greensboro
Robert Linton ..... Greensboro
John H. McArthur, Jr. ..... Wakulla
David W. Morehead ..... Greensboro
Mrs. L. Richardson Preyer ..... Washington, D. C.
Henry H. Shavitz ..... High Point
John S. Stewart ..... Durham
Otis E. Tillman ..... High Point
Tony Tyson ..... Farmville

OFFICERS OF ADMINISTRATION

THE UNIVERSITY OF NORTH CAROLINA

Sixteen Constituent Institutions

William Clyde Friday, B.S., LL.B., LL.D., ... *President*
Raymond Howard Dawson, B.A., M.A., Ph.D., ... *Vice President, Academic Affairs*
L. Felix Joyner, A.B., ... *Vice President—Finance*
John L. Sanders, A.B., J.D., ... *Vice President—Planning*
Cleon Franklyn Thompson, B.S., M.S., ... *Acting Vice President—Student Services and Special Programs*
George Eldridge Bair, B.A., M.A., Ph.D., ... *Director of Educational Television*
Charles Ray Coble, Jr., B.S., M.A., Ph.D., ... *Associate Vice President—Planning*
John B. Davis, Jr., B.S., M.A., Ed.D., ... *Associate Vice President—Institutional Development and Special Programs*
James L. Jenkins, Jr., A.B., ... *Assistant to the President*
Edgar Walton Jones, B.S., M.S., Ph.D., ... *Associate Vice President—Research and Public Service*
John P. Kennedy, Jr., S.B., B.A., M.A., J.D., ... *Secretary of the University*
Arnold Kimsey King, A.B., A.M., Ph.D., ... *Assistant to the President*
Roscoe D. McMillan, Jr., B.S., ... *Assistant to the President for Governmental Affairs*
Richard H. Robinson, Jr., A.B., LL.B., ... *Assistant to the President*
Robert W. Williams, A.B., M.A., Ph.D., ... *Associate Vice President—Academic Affairs*

The University of North Carolina was chartered in 1789 and opened its doors to students at its Chapel Hill campus in 1795. Throughout most of its history, it has been governed by a Board of Trustees chosen by the Legislature and presided over by the Governor. During the period 1917-1972, the Board consisted of one hundred elected members and a varying number of *ex-officio* members.

By act of the General Assembly of 1931, without change of name, it was merged with The North Carolina College for Women at Greensboro and The North Carolina State College of Agriculture and Engineering at Raleigh to form a multicampus institution designated The University of North Carolina.

In 1963 the General Assembly changed the name of the campus at Chapel Hill to The University of North Carolina at Chapel Hill and that at Greensboro to The University of North Carolina at Greensboro and, in 1965, the name of the campus at Raleigh was changed to North Carolina State University at Raleigh.

Charlotte College was added as The University of North Carolina at Charlotte in 1965, and, in 1969, Asheville-Biltmore College and Wilmington College became The University of North Carolina at Asheville and The University of North Carolina at Wilmington respectively.

A revision of the North Carolina State Constitution adopted in November 1970 included the following: "The General Assembly shall maintain a public system of higher education, comprising The University of North Carolina and such other institutions of higher education as the General Assembly may deem wise. The General Assembly shall provide for the selection of trustees of The University of North Carolina. . . ." In slightly different language, this provision had been in the Constitution since 1868.

On October 30, 1971, the General Assembly in special session merged, without changing their names, the remaining ten state-supported senior institutions into the University as follows: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, North Carolina School of the Arts, Pembroke State University, Western Carolina University, and Winston-Salem State University. This merger, which resulted in a statewide multicampus university of sixteen constituent institutions, became effective on July 1, 1972.

The constitutionally authorized Board of Trustees was designated the Board of Governors, and the number was reduced to thirty-two members elected by the General Assembly, with authority to choose their own chairman and other officers. The Board is "responsible for the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." Each constituent institution, however, has its own board of trustees of thirteen members, eight of whom are appointed by the Board of Governors, four by the Governor, and one of whom, the elected president of the student body, serves *ex officio*. The principal powers of each institutional board are exercised under a delegation from the Board of Governors.

Each institution has its own faculty and student body, and each is headed by a chancellor as its chief administrative officer. Unified general policy and appropriate allocation of function are effected by the Board of Governors and by the President with the assistance of other administrative officers of the University. The General Administration office is located in Chapel Hill.

The chancellors of the constituent institutions are responsible to the President as the chief administrative and executive officer of The University of North Carolina.

OFFICERS

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

Lewis C. Dowdy, A.B., M.A., Ed.D. Litt.D. ..... *Chancellor*

Glenn F. Rankin, B.S., M.S., Ed.D. ..... *Vice Chancellor for Academic Affairs*

Matthew L. King, B.S., M.S. ..... *Vice Chancellor for Fiscal Affairs*

Jesse E. Marshall, B.S., M.S., Ed.D. ..... *Vice Chancellor for Student Affairs*

Albert E. Smith, B.S., M.S. Ph.D. ..... *Vice Chancellor for Development and University Relations*

Theodore Mahaffey, B.S., M.B.A., Ph.D. ..... *Administrative Assistant to the Chancellor*

Howard Robinson, B.S., M.S., Ph.D. ..... *Director of Research Administration*

W. Archie Blount, B.S., M.S., Ed.D. ..... *Director of Institutional Research*

ACADEMIC AFFAIRS

Glenn F. Rankin, B.S., M.S., Ed.D. ..... *Vice Chancellor for Academic Affairs*

Willie T. Ellis, B.S., M.S., Ph.D. ..... *Assistant Vice Chancellor for Academic Affairs*

Suresh Chandra, B.Sc., M.Ch.E. Ph.D. ..... *Dean, School of Engineering*

Quiester Craig, B.A., M.B.A., Ph.D. ..... *Dean, School of Business and Economics*

Frank H. White, B.S., A.M., Ph.D. ..... *Dean, School of Arts and Sciences*

S. Joseph Shaw, B.S., M.A., Ph.D. ..... *Dean, School of Education*

Albert W. Spruill, B.S., M.S., Ed.D. ..... *Dean, The Graduate School*

B. C. Webb, B.S., M.S., Ph.D. ..... *Dean, School of Agriculture*

Naomi W. Wynn, B.S., M.A. ..... *Dean, School of Nursing*

J. Niel Armstrong, B.S., A.M. ..... *Director of Summer School*

Tommie M. Young, B.A., M.A.L.S. ..... *Director of Library Services*

Lt. Colonel Charles E. Summers, B.S., M.S. ..... *Professor of Aerospace Studies*

Lt. Colonel Lawrence A. Lipscomb, B.S., M.S. ..... *Professor of Military Science*

STUDENT AFFAIRS

Jesse E. Marshall, B.S., M.S., Ed.D. ..... *Vice Chancellor for Student Affairs*

William C. Parker, Jr., B.S., M.S., M.Ed., Ed.D. ..... *Dean of Student Affairs for Service*

William Goode, B.S. ..... *Dean of Student Affairs for Student Management and Human Relations*

Lucille Piggott, B.S., M.Ed. ..... *Dean of Student Affairs for Student Organizations and Student Development*

Robert L. Wilson, A.B., M.S., Ph.D. ..... *Director of Counseling Services*

Vance E. Gray, B.S., M.B.A. ..... *Director of Student Financial Aid*

William H. Gamble, B.S. ..... *Director of Admissions*

Rudolph Artis, B.S., M.S., Ed.D. ..... *Director of Registration and Records*

W. I. Morris, B.S., M.A. ..... *Director of Placement*

Cleo McCoy, B.A., B.S., B.D. ..... *Director of Religious Activities*

Sullivan Welborne, B.S., M.S. ..... *Director of Memorial Union*

James Wright, B.S., M.S. ..... *Acting Director of Student Activities*

FINANCIAL AFFAIRS

Matthew L. King, B.S., M.A. ..... *Vice Chancellor for Fiscal Affairs*

Fred L. Jackson, B.S. ..... *Director of Accounting*

Lawrence Gulley, B.S. ..... *Internal Auditor*

James E. Garfield, B.S., M.S. ..... *Director of Auxiliary Services*

Doris D. Canada, B.S. ..... *Director of Personnel*

Maxine D. Davis, B.S., M.S. ..... *Director of Purchasing*

Ruby W. Jones, B.S. ..... *Director of Contracts and Grants*

Gerard E. Gray, B.S., M.S. ..... *Director of Physical Plant*

DEVELOPMENT

Albert E. Smith, B.S., M.S. Ph.D. ..... *Vice Chancellor for Development and University Relations*

Joseph D. Williams, B.S., M.S. ..... *Associate Director of Development and University Relations for Alumni Affairs*

Richard Moore, B.S., M.S. ..... *Associate Director of Development and University Relations for Information Services*

Joseph Faust, A.B. ..... *Director of Sports Information*

Harold L. Lanier, B.S., M.S. ..... *Director of Cooperative Education*

OFFICER EMERITUS

Warmoth T. Gibbs, A.B., Ed.M., LL.D. ..... *President Emeritus*

GENERAL INFORMATION

The Chancellor Talks with Students

HISTORICAL STATEMENT

North Carolina Agricultural and Technical State University was established as the A. and M. College for the Colored Race" by an act of the General Assembly of North Carolina ratified March 9, 1891. The act read in part:

> That the leading object of the institution shall be to teach practical agriculture and the mechanic arts and such branches of learning as relate thereto, not excluding academical and classical instruction.

The College began operation during the school year of 1890-91, before the passage of the state law creating it. This curious circumstance arose out of the fact that the Morrill Act passed by Congress in 1890 earmarked the proportionate funds to be allocated in bi-racial school systems to the two races. The A. and M. College for the White Race was established by the State Legislature in 1889 and was ready to receive its share of funds provided by the Morrill Act in the Fall of 1890. Before the college could receive these funds, however, it was necessary to make provisions for Colored students. Accordingly, the Board of Trustees of the A. and M. College in Raleigh was empowered to make temporary arrangements for these students. A plan was worked out with Shaw University in Raleigh where the College operated as an annex to Shaw University during the years 1890-1891, 1891-1892, and 1892-1893.

The law of 1891 also provided that the College would be located in such city or town in the State as would make to the Board of Trustees a suitable proposition that would serve as an inducement for said location. A group of interested citizens in the city of Greensboro donated fourteen acres of land for a site and $11,000 to aid in constructing buildings. This amount was supplemented by an appropriation of $2,500 from the General Assembly. The first building was completed in 1893 and the College opened in Greensboro during the fall of that year.

In 1915 the name of the institution was changed to The Agricultural and Technical College of North Carolina by an Act of the State Legislature.

The scope of the college program has been enlarged to take care of new demands. The General Assembly authorized the institution to grant the Master of Science degree in education and certain other fields in 1939. The first Master's degree was awarded in 1941. The School of Nursing was established by an Act of the State Legislature in 1953 and the first class was graduated in 1957.

The General Assembly repealed previous acts describing the purpose of the College in 1957, and redefined its purpose as follows:

> "The primary purpose of the College shall be to teach the Agricultural and Technical Arts and Sciences and such branches of learning as related thereto; the training of teachers, supervisors, and administrators for the public schools of the State, including the preparation of such teachers, supervisors and administrators for the Master's degree. Such other programs of a professional or occupational nature may be offered as shall be approved by the North Carolina Board of Higher Education, consistent with the appropriations made therefor."

The General Assembly of North Carolina voted to elevate the College to the status of a Regional University effective July 1, 1967.

On October 30, 1971, the General Assembly ratified an Act to consolidate the Institutions of Higher Learning in North Carolina. Under the provisions of this Act, North Carolina Agricultural and Technical State University became a constituent institution of The University of North Carolina effective July 1, 1972.

Six presidents have served the institution since it was founded in 1891. They are as follows: Dr. J. O. Crosby, (1892-1896), Dr. James B. Dudley, (1896-1925), Dr. F. D. Bluford, (1925-1955), Dr. Warmoth T. Gibbs, (1956-1960), Dr. Samuel DeWitt Proctor, (1960-1964), and Dr. Lewis C. Dowdy, who was elected President April 10, 1964.

LOCATION

North Carolina Agricultural and Technical State University is fully accredited by the Southern Association of Colleges and Schools. This coeducational institution occupies a unique campus nine blocks from the center of metropolitan Greensboro, North Carolina. The University's urban location puts major shopping areas, theaters, churches and transportation within convenient distance. This location is also an advantage to the many students who obtain part-time employment in the city.

Students at A&T State University may take full advantage of Greensboro's outstanding cultural climate. The City has become known for its libraries, museum, art galleries and university and college campuses. Greensboro's central location in the state provides convenient access to other nearby points of interest.

A wide variety of entertainment and recreation is available on the campus and in facilities of the city. The four and one-half million dollar Greensboro Memorial Auditorium-Coliseum attracts outstanding athletic, entertainment and cultural events. The city also fields professional teams in baseball and hockey. The city has facilities available for ice skating, bowling, boating and fishing, horseback riding, tennis and golf.

THE PHYSICAL PLANT

The university campus comprises modern, fire resistant buildings, all thoroughly maintained for the highest level of efficiency, located on land holdings in excess of 181 acres.

UNIVERSITY BUILDINGS

Dudley Memorial Building (Administration)
F. D. Bluford Library
Harrison Auditorium
Charles Moore Gymnasium
Coltrane Hall (Headquarters for N. C. Agricultural Extension Service)
Memorial Union
The Oaks (President's Residence)

CLASS ROOM AND LABORATORY BUILDINGS

Carver Hall ..... School of Agriculture
Cherry Hall ..... School of Engineering
Crosby Hall ..... School of Arts and Sciences
Hodgin Hall ..... School of Education
Noble Hall ..... School of Nursing
Price Hall ..... Division of Industrial Education and Technology
Benbow Hall ..... Home Economics
Garret House ..... Home Economics
Hines Hall ..... Chemistry
Sockwell Hall ..... Agricultural Technology
Ward Hall ..... Dairy Manufacturing
Reid Greenhouses
Graham Hall ..... School of Engineering and Computer Science Center
Frazier Hall ..... Music-Art
Price Hall ..... Division of Industrial Education & Technology
Price Hall Annex ..... Child Development Laboratory
Campbell Hall ..... ROTC Headquarters
Barnes Hall ..... Biology
Merrick Hall ..... School of Business and Economics

RESIDENCE HALLS

Curtis Hall (148)
Gibbs Hall (200)
High Rise Dormitory (East) (194)
High Rise Dormitory (West) (208)
Holland Hall (144)
Morrison Hall (94)
Vanstory Hall (200)
Cooper Hall (400)
Scott Hall (1010)
Senior Hall (200)

Service Buildings

Murphy Hall ..... Cafeteria
Brown Hall ..... Cafeteria, Post Office, Student Financial Aid Office
Sebastian Infirmary
Power Plant
Laundry-Dry Cleaning Plant

Other Facilities

University Farms—including 600 acres of land and modern farm buildings
Athletic field—including three practice fields for football, quarter mile track, baseball diamond and field house.

ACCREDITATION AND INSTITUTIONAL MEMBERSHIPS

North Carolina Agricultural & Technical State University is a fully accredited member of the SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS.

The School of Engineering is accredited by the Engineer's Council on Professional Development

The School of Nursing is accredited by the National League for Nursing, Department of Baccalaureate and Higher Degree Programs

The Department of Chemistry is accredited by the American Chemical Society

The Department of Sociology and Social Service is accredited by the Council on Social Work Education

The university holds institutional membership in the following associations:

American Association of Colleges for Teacher Education

American Association of Collegiate Registrars and Admission Officers

National Association of State Universities and Land Grant Colleges

American College Public Relations Association

American Council on Education

American Public Welfare Association

American Library Association

Association of American Colleges

Association of Collegiate Deans and Registrars

Association of Collegiate Schools of Architecture

College Language Association

National Association of Business Teacher Education

American Personnel and Guidance Association

National Association of Student Personnel Administrators

Association of College Unions International

National Association of College and University Food Service

National Commission on Accrediting

National Institutional Teacher Placement Association

National League for Nursing, Council of Member Agencies, Department of Baccalaureate and Higher Degree Programs

North Carolina Association of Colleges and Universities

North Carolina League for Nursing

North Carolina Library Association

Southeastern Library Association

Graduates of the University are eligible for membership in the American Association of University Women

FERDINAND D. BLUFORD LIBRARY

The Ferdinand D. Bluford Library is housed in a modern airconditioned building located near the center of the main campus. The current holdings include 325,982 volumes and a collection of records, films, filmstrips and prints. The Library subscribes to 1,279 periodicals, newspapers and indexes. It is an officially designated depository for selected United States government publications and participates in established inter library loan programs.

Special facilities and services provided by the Library include an assembly room, individual study carrels, various types of microfilm and microfilm readers and a film collection.

The Library schedule is as follows:

Monday-Thursday	8:00 a.m. - 12:00 M
Friday	8:00 a.m. - 8:00 p.m.
Saturday	8:00 a.m. - 5 p.m.
Sunday	2:00 p.m. - 12:00 M

The Teacher Education Materials Center and The Clinton Taylor Art Gallery are located on he ground floor of the F. D. Bluford Library. The Ethnic Studies Resource Center is located on the first floor of the library.

A reference collection for the department of Chemistry is located in Hines Hall.

THE AUDIOVISUAL CENTER

The Audiovisual Center is a resource pool of materials, services and facilities. It purports to assist in the improvement of instruction by providing means of facilitating the communication of ideas, attitudes and facts in the teaching-learning process. The Center is located on the first floor (Room 101) of Crosby Communications Building. The Audiovisual Center provides the following services for the campus:

-Information on Instructional Materials and Equipment from other Sources

-Projectionist for Audiovisual Showings

-Classroom and Preview Showings

-Assistance in the selection and preparation of Instructional Materials

-Consultation on problems relating to the location, selection, utilization, design and evaluation of instructional materials and equipment

CLOSED CIRCUIT TELEVISION

An important adjunct to the educational program of the University is the newly activated television facility. This closed-circuit installation is housed in the Crosby Communications Building. Programs may be originated in the studio, in six classrooms and in the Little Theater. Programs may be received from the studio or from "off the air" in 23 classrooms or seminars rooms. Assistance in designing and producing instructional programs is provided to members of the faculty, and students are instructed in television production in the studio.

COMPUTER SCIENCE CENTER

The Computer Science Center is located in the Graham Building, the engineering annex. The Center provides instruction, research and administrative service for the university.

The Center is composed of two primary units which operate independently but in unison to solve the data processing problems of the University. One operating unit handles administrative data processing and the other handles or maintains the software system and handles academic data processing.

The staff helps with the preparation of computer programs, provides instruction concerning the use of equipment, serves as consultants to computer users conducting research and performs certain administrative functions.

The computer system in use at the Center is a Control Data Corporation (CDC) 3300 System and supporting pieces of IBM unit record equipment.

LANGUAGE LABORATORY

An electronic, dial-access laboratory has been provided for students enrolled in Foreign Language, Speech, and Reading Courses. This facility provides positions from which students may dial prepared lessons, exercises or lectures. In addition, certain positions provide the opportunity to control remote tape recorders on which to record their own responses. Certain rooms are equipped with over-head speakers accessing both tape drives and record players. Although primarily designed for the departments mentioned, the facility is available to other departments of the University.

READING CENTER

The University Reading Center is located in Crosby Hall. It was established to provide assistance for students who need to improve their reading skill. English 102, Developmental Reading, is offered through the center to help students improve their reading efficiency and strengthen their communicative skills. Diagnostic and remedial services are available to students also. In addition to these services the center serves as a laboratory for teacher preparation.

INSTITUTE FOR RESEARCH IN HUMAN RESOURCES

The University has organized an Institute for Research in Human Resources. Its broad purpose is to investigate problems that exist for people who are culturally, economically, educationally or socially disadvantaged. The Institute has been structured to bring together available resources and attributes from the University and the larger community for research service and study. The interdisciplinary approach employed by the Institute allows social scientists, humanists and the natural scientists to place special emphasis upon achieving new approaches and new solutions to many human resource problems.

THE CENTER FOR MANPOWER RESEARCH AND TRAINING

Originally funded by a grant from the U. S. Department of Labor, Manpower Administration, the Center for Manpower Research and Training offers to students and faculty an opportunity for interdisciplinary training and research in the areas of manpower planning to solve problems of unemployment, underemployment and discrimination. The participating departments include business administration, economics, industrial education, industrial technology, psychology, guidance, and sociology and social service.

TRANSPORTATION INSTITUTE

The Transportation Institute draws faculty, staff members and students from a number of different departments to create an interdisciplinary unit that conducts training and research programs in the field of transportation. It also serves as a resource for planners, social scientists, public officials, and community groups in helping them solve transportation problems.

In the Training Program, students choose from a coordinated series of courses offered by the Departments of Architectural Engineering, Business Education, Economics and Political Science. Students are encouraged to seek a broad background which can be tailored to meet their individual needs.

The Research Program covers a wide range of areas, from investigating transportation needs of the poor to developing a transportation systems model. The programs are oriented towards both exploring various problem areas and providing students the opportunity to become knowledgeable in transportation analysis.

Activities of the Transportation Institute are not limited to students. The Institute is a regional center which offers seminars, workshops, and short courses designed to provide instruction in current techniques and transportation concepts. These programs are designed for individuals outside the University who have an interest in transportation.

OFFICE OF DEVELOPMENT AND UNIVERSITY RELATIONS

The Office of Development and University Relations is maintained by the University not only to assist with the overall institutional development, but also to promote its continual interest among alumni, parents, friends, foundations, corporations and other sectors of the national community. It encourages annual alumni giving, deferred giving and conducts special fund campaigns. The Office embraces the following areas of operation: Alumni Affairs, Public Information, Fund Raising, Publications, Public Relations, Legislative Relations, Industrial Liaison, Sports Publicity and special educational projects.

In addition, the Office aids in conducting the affairs of the A & T University Foundation, Inc., which has been established to assist in soliciting gifts from other than state coffers for such worthy purposes as unrestricted student scholarships, specialized scholarships for students in science, engineering and fine arts, faculty improvement, faculty chairs, research programs, an endowment fund, the art gallery, historical museum and capital funds.

The Office is conveniently located on the main floor of the Dudley Memorial Building.

COOPERATIVE EDUCATION

Cooperative Education is a carefully organized and supervised program of "Experiential Learning" in which the participating student enriches his or her education by alternating periods of classroom study with periods of work related to his or her academic major. It is OPTIONAL on the part of the student and is COUNSELING-CENTERED. The objective of the program is to enrich the Total Educational Experience of students involved.

FINANCIAL INFORMATION

STUDENT LOAN FUND

N. C. A. and T. State University Student Aid Fund was established by the Student Council of 1946-1947 to provide a source of revenue for loans to deserving students. This fund is supported by the contributions from students, faculty members, and campus organizations. Any regular term student, duly registered, is eligible to apply for aid through this fund.

THE NATIONAL DEFENSE STUDENT LOAN PROGRAM

A. and T. State University participates in the National Defense Student Loan Program. This program was authorized by Public Law 85-864, the National Defense Education Act of 1958. It provides a loan fund from which undergraduates and graduate students may borrow on reasonable terms for the purpose of completing their higher education. A student must be a citizen of the United States, enrolled as a full-time or half-time undergraduate or graduate student in order to be eligible for a loan. Application forms and additional information may be obtained from the Financial Aid Officer, North Carolina A. & T. State University, Greensboro, North Carolina.

NORTH CAROLINA REHABILITATION CORPORATION STUDENT LOAN PROGRAM

Loans under this program are available to needy and worthy North Carolina farm boys and girls who plan to study agriculture or home economics. The loans bear interest at the rate of four percent per annum. Application forms and additional information may be obtained from North Carolina Rural Rehabilitation Corporation, Post Office Box 2403, Raleigh, North Carolina.

REQUIRED FEES, DEPOSITS, AND CHARGES

Total registration fees and charges are due and payable in full on or before registration of each semester. Payments mailed in shall be postmarked not later than the first week in August for the Fall Semester, and the second week in December for the Spring Semester; and shall be addressed to the Cashier's Office, North Carolina A & T State University, Greensboro, North Carolina 27411. All payments shall be made by certified check, bank draft, postal money order, or cash. If other than cash, make payable to North Carolina A & T State University. PLEASE DO NOT SEND CASH PAYMENTS BY MAIL!

ADVANCE DEPOSITS

An advance deposit of $15.00 is required of all students and is to be paid in the following manner:

1. New and Transfer Students shall pay prior to the end of the Second Semester of the current academic year.
2. Returning or Re-admitted Students shall pay within three weeks of the date of the Permit to Register.

The deposit will be applied as follows:

1. Against tuition and fees upon registration should the student matriculate at the University.
2. Returned to the depositor should the student decide not to matriculate at the University and notification is received:
   (a) prior to the beginning of the term, if a new, transfer, returning, or re-admitted student
   (b) within thirty (30) days following the close of the Second Semester of the current academic year, if a continuing student.
3. Forfeited should the student decide not to matriculate at the University, and notification is not received as stipulated in #2 above.

A $10.00 NON-REFUNDABLE APPLICATION FEE IS REQUIRED OF ALL NEW AND TRANSFER STUDENTS.

		Residence Status	
Charge Category	**Date Due**	**In-State**	**Out-Of-State**
DAY STUDENT (Student Living off Campus)	Each Semester	$276.00	$1,092.50
BOARDING ONLY STUDENT (Student Living off Campus but taking meals on campus)	Each Semester	498.50	1,315.00
BOARDING AND LODGING STUDENT (Student Living on Campus— Note: All dormitory students must take meals in the University Dining Hall)	Each Semester	$756.00	$1,572.50

REGULAR SESSION PART-TIME STUDENT FEE RATES

North Carolina Student, *Per Semester Hour* (Undergraduate	$23.00
Out-of-State Student, *Per Semester Hour* (Undergraduate)	91.05
North Carolina Student, *Per Semester Hour* (Graduate)	15.45
Out-of-State Student, *Per Semester Hour* (Graduate)	83.50

SUMMER SCHOOL STUDENT FEE RATES

Tuition, N. C. Student (Per Semester Hour)	$ 8.40
Tuition, Out-of-State Student (Per Semester Hour)	25.00
Registration Fee (Per Semester Hour)	.60
Activity Fee (Per Semester Hour)	.20
Book Rental Fee (Per Semester Hour)	1.50
Health Service Fee (Per Semester Hour)	.50
Student Union Fee (Per Semester Hour)	1.00
Board (Per Week)	14.00
Room Rent with Linen Rental (Per Week)	8.50

DETAILS OF FEES, DEPOSITS AND CHARGES

Required Fees - North Carolina Student	Per Semester	Per Year
Tuition and Academic	$ 141.00	$ 282.00
Activities	46.00	92.00
Book Rental	19.00	38.00
Health Service	25.00	50.00
Student Union	25.00	50.00
Reserve for Auxiliary Services Operations	20.00	40.00
Total—All North Carolina Day Students	$ 276.00	$ 552.00
Room and Board:		
Board	$ 222.50	$ 445.00
Room Rent	220.00	440.00
Linen Rental	17.00	34.00
Linen Deposit (Refundable)	3.00	6.00
Reserve for Construction and/or Renovation of Dormitories	17.50	35.00
Total Room and Board	480.00	960.00
Total N. C. Room and Board Student	$ 756.00	$1,512.00
Required Fees—Out-of-State Student:		
Tuition and Academic Fee	$ 957.50	$1,915.00
Required Fees	135.00	270.00
Total—All Out-of-State Students	1,092.50	2,185.00
Room and Board	480.00	960.00
Total Out-of-State Room and Board Student	$1,572.50	$3,145.00

Incidental Fees and Deposits:

1. Admission Application Deposit (no refund—no credit on account)	$10.00
Advance Deposit (no refund—credit applied to account):	
New, Transfer, Returning or Continuing Students	15.00
Ambulance Service	25.00
Day Student Informary Meal Charge (Per Meal)	.60
Dormitory Key Deposit (Refundable)	1.00
Chemistry Laboratory Breakage Deposit (Refundable)	5.00
Driver Education Laboratory Fee Per Course:	
Regular Session or Summer School	10.00
Graduation Fees, Regalia Renting and Diploma:	
Bachelors	16.00
Masters	27.00
I. D. Card Replacement	3.00
Late Registration Fee	15.00
Masters Thesis Binding Fee — Three Copies	20.00
ROTC Uniform Deposit	10.00
Engineering Inspection Tour Fee	25.00
Special Examination Fees Varies $5 to $15 (average)	10.00
Transcript of Records (after first one)	1.00
Activity Sticker Replacement Fee	4.00
Meal Sticker Replacement Fee	10.00
Practice Teaching Fee, Practicum, Internship, each	35.00
Bowling Course Fee	8.50

AUDITORS

Auditing of courses is open to any person, without credit, upon the payment of all applicable fees. Currently enrolled full-time students may audit courses without additional charge. An auditor is not required to participate in class discussion, prepare assignments, or take examinations.

REFUNDS

Refunds upon official withdrawal of a student from the University will be made less any amount due the University as follows:

1. Lodging: Refund computed at the rate of $2.04 per day from date of official withdrawal.
2. Board: Refund computed at the rate of $1.76 per day for the days remaining from the date of official withdrawal.

3. Required fees according to the following schedule:
   90 percent when withdrawal is within one week of registration date.
   80 percent when withdrawal is within two weeks of registration date.
   75 percent when withdrawal is within three weeks of registration date.
   60 percent when withdrawal is within four weeks of registration date.
   45 percent when withdrawal is within five weeks of registration date.
   35 percent when withdrawal is within six weeks of registration date.
   20 percent when withdrawal is within seven weeks of registration date.
   15 percent when withdrawal is within eight weeks of registration date.
   None when withdrawal is after eight weeks.

WITHDRAWAL FROM COURSES

In order to receive financial credit for withdrawal from courses, a student must withdraw from the course(s) within the official "add" period.

SPECIAL NOTICES AND EXPLANATIONS

THE UNIVERSITY RESERVES THE RIGHT TO INCREASE OR DECREASE ALL FEES AND CHARGES AS WELL AS ADD OR DELETE ITEMS OF EXPENSE WITHOUT ADVANCE NOTICE AS CIRCUMSTANCES, IN THE JUDGEMENT OF THE ADMINISTRATION, MAY REQUIRE.

GENERAL INFORMATION

Room and board rates are based on the average cost of operation for the entire school year, which provide for services only during the scheduled operational days. Allowances have, therefore, been made for holidays when the facilities are closed.

Students' property in dormitories and other University buildings is at the sole risk of the owner, and the University is not responsible for loss, theft, or damage to such property arising from any cause.

Students are required to pay for any loss of damage to University property at replacement cost due to abuse, negligence, or malicious action, in addition to being subject to disciplinary action.

The costs of required "hardback" textbooks are included in the required fees. The cost of reference books, workbooks, supplies, and "soft-back" books are not included in the required fees. Policy and procedures governing the Book Rental System can be obtained from the University Bookstore.

Personal spending money should be sent directly and made payable to the student in the form of money orders or certified checks. As a policy, the University does not cash personal checks for students in any amount.

Diplomas and transcripts of records are withheld until the student has paid in full and fees and charges due the University. Furthermore, a student in debt to the University in any amount will not be admitted to final examinations in any course, nor will a student be permitted to register for any subsequent semester until his or her obligations are paid. If special financial arrangements have been made, failure to comply with these arrangements as stipulated will result in the student being withdrawn from the University for non-payment of required fees.

SPECIAL NOTICE TO VETERANS

Veterans attending school under the provisions of Public Law 89-358 receive a monthly subsistence allowance from the Veterans Administration. Therefore, Veterans are responsible for meeting all of their required fee obligations.

Veterans attending school under the provision of Public Law 894 (Disabled Veterans) receive a monthly subsistence allowance from the Veterans Administration and also, the Veterans Administration pays directly to the school the cost of the Veteran's tuition and required fees. All other fees are the responsibility of the Veteran.

Veterans may contact the Veterans Affairs Office on Campus for any special consideration which may be available.

ADMISSION POLICY AND PROCEDURE

Admission Policy

North Carolina Agricultural and Technical State University is an equal educational opportunity institution. In keeping with this policy, qualified applicants are admitted to the University without regard to race, sex, religion, creed or national origin.

Unless otherwise specified, admission to all curricula are under the jurisdiction of the Director of Admissions. Application forms may be secured from that office. The completed forms with required evidence of eligibility should

be submitted to the Director of Admissions as soon as possible, but at least four weeks before the beginning of the semester in which the applicant desires to enroll.

Inquiries concerning admission should be addressed to the DIRECTOR OF ADMISSIONS, NORTH CAROLINA A. AND T. STATE UNIVERSITY, GREENSBORO, NORTH CAROLINA 27411.

Admission - Freshmen

To be admitted to the University as a regular student an applicant must meet the following entrance requirements:

Be graduated or scheduled to graduate from an accredited high school. (In exceptional cases admission by special examination is possible.) Complete sixteen (16) acceptable units of secondary school credit. Present a satisfactory score on the scholastic aptitude test.

Admission - Transfer

A student who wishes to transfer from another accredited college or university must meet the following requirements:

Must have a cumulative average of "C" or above. Must be in good standing and eligible to return to the college or university last attended. Transfer students who have attended an accredited college but have earned less than thirty (30) semester hours of acceptable credit or equivalent must meet all freshman entrance requirements. These students must have a cumulative average of "C" and they must be eligible to return to the institution last attended.

Admission - Graduate School

The student who has graduated from an accredited college or university will be considered for admission to the Graduate School. Graduate School admission is under the supervision of the Dean of the Graduate School. All inquiries about graduate work should be directed to The Dean of the graduate school, NC A. and T. State University, Greensboro, N. C.

Unit Requirements

High School graduates should present sixteen (16) units of secondary school credit distributed as follows:

Subject	Number of Units
English	4
*Mathematics (preferably one unit of Algebra)	2
Social Science (Preferably U. S. History)	1
Natural Science	1
Electives	8
Total	16

*Students who plan to pursue majors in the School of Business and Economics and Science must have one unit of Algebra and one unit of Plane Geometry.

*Students who plan to major in Engineering, Mathematics and Physics must have two units of Algebra, one unit of Plane Geometry and one-half unit of Trigonometry.

The elective units may be selected from any other high school courses. However, students may not present more than two (2) units in activity courses, such as Music and Physical Education, and not more than four (4) units in vocational courses.

Conditional Admission

Students who present sixteen (16) acceptable entrance units but do not meet the entrance requirements in mathematics listed for their curricular must take special noncredit courses to remove these deficiencies. The removal of deficiencies must begin immediately upon enrollment in the first year of study.

ADMISSION PROCEDURES

Procedure for New Students

1. Write to the Director of Admissions for an application blank for admission to the University. Fill it out properly and return it to the Office of Admissions.
2. Arrange for the transcript of academic records from high school and/or college or university previously attended to be sent directly to the Director of Admissions.
3. All candidates for admission to the freshman class must take the Scholastic Aptitude Test prior to admission. This test is administered by the College Entrance Examination Board several times each year at centers throughout the United States and many foreign countries. Testing dates are regularly scheduled in November, December, January, March, May, and July. Applicants should obtain Bulletins of Information, including application blanks, directly from their high school principals or guidance counselors. If these are not available in the school, applicants should write directly to the College Entrance Examination Board, Box 592, Princeton, New Jersey, for a list of testing dates and centers so that assignments may be made to the center nearest to the applicant's residence.
4. After the completed application form, transcripts, and test results are received, they will be evaluated, and if approved, the student will receive a letter of admission and a permit to register. If the applicant for admission is not approved, the applicant will be notified.
5. Each candidate for the Freshman Class, who is scheduled to reside on campus, is expected to arrive on the campus the day preceding the date designated on the college calendar for freshman orientation. All freshmen should be present by 8:00 a.m. on the first day. The permit to register furnished beforehand by the Director of Admissions indicating the School or Department in which the applicant wishes to register must be ready for presentation to proper authorities. The dates indicated in the college calendar for freshman orientation and registration as well as those for upperclassmen must be strictly observed. Those seeking registration after the scheduled date must pay a late registration fee of $5.00.

Procedure for Transfer Students

Applications from transfer students cannot be considered until all credentials are received from the high school and all other institutions previously attended. In addition, there must be a statement of good standing and honorable dismissal from these institutions.

Previous college records must show a cumulative average of "C" or above. Even with a cumulative average of "C" or above, no course is accepted in which a grade below "C" was originally earned.

Accepted courses are recorded to the student's credit, but grade points are not calculated on the transferred courses. The grade points for a transfer student are calculated only on the courses taken here. A student must complete more than half of his or her required courses at North Carolina A & T State University in order to be considered for honors when he or she graduates.

Procedure For Special Students

In exceptional cases, an applicant of mature years, with special training along particular lines or of long experience in special fields of knowledge, may be admitted to the college to pursue a non-degree program or to study certain subjects as special students. Even though they do not satisfy regular entrance requirements, such persons must submit evidence of ability to profit from such a program and must do a passing grade of work or forfeit the privilege accorded them. These persons must:

1. Request of The Director of Admissions an application form, fill it in and return it with:
   (A) Records of previous educational experiences.
   (B) Other documentary evidence of ability to pursue the courses desired.
   (C) A statement of the applicant's objectives or purposes in pursuing studies chosen.

Visiting Student

A student regularly enrolled in another accredited college or university, may enroll at A. and T. State University for one or more courses during a regular term. Such special enrollment must be approved by the parent institution and A. and T. State University.

Filing of Credentials

Applicants should take the proper steps to see that their credentials, (transcripts, etc), are sent to the Director of Admissions as early as possible, preferably not less than thirty (30) days before the beginning of the semester in which they plan to enroll.

Re-Admission of Former Students

All students who withdraw from the University must obtain a permit to register before resuming their studies at the University. The request for a permit must be received by the Office of Registration and Records at least 30 days prior to the beginning of the semester in which the student plans to register. When requesting a permit, students should include their student number, major, last term in attendance and their permanent address.

Former students who have been dismissed from the University for failure to meet the scholastic eligibility requirements may appeal to the Committee on Admissions and Retention for a review of their case. The appeal should be addressed to the Committee in care of the Vice Chancellor for Academic Affairs.

These persons should not present themselves for re-enrollment until they have received a reply from the Committee. Appeals should reach the Committee at least sixty (60) days prior to the beginning of the term in which the person expects to register.

Former students whose attendance has been interrupted by the university for disciplinary reasons must apply to the Vice Chancellor for Student Affairs for a review of their case for possible re-admission.

ADMISSION

Residence Status for Tuition Payment

To qualify for in-state tuition a legal resident must have maintained his or her domicile in North Carolina for at least the 12 months immediately prior to his or her classification as a resident for tuition purposes. In order to be eligible for such classification, the individual must establish that his or her presence in the State during such twelve month period was for purposes of maintaining a bona fide domicile rather than for purposes of mere temporary residence incident to enrollment in an institution of higher education; further, (1) if the parents (or court-appointed legal guardian) of the individual seeking resident classification are (is) bona fide domiciliaries of this State, this fact shall be prima facia evidence of domiciliary status of the individual applicant and (2) if such parents or guardian are not bona fide domiciliaries of this State, this fact shall be prima facia evidence of nondomiciliary status of the individual.

University regulations concerning the classification of students by residence, for purposes of applicable tuition differentials, are set forth in detail in *A Manual To Assist The Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes.* Each enrolled student is responsible for knowing the contents of that *Manual*, which is the controlling administrative statement of policy on this subject. Copies of the *Manual* are available on request from the Office of Admissions, the Vice Chancellor for Students Affairs, and the Student Government Association.

ACADEMIC INFORMATION AND REGULATIONS

Each student is responsible for informing himself or herself of the academic regulations and requirements set forth in this Bulletin and for revisions of same as posted on campus bulletin boards or released in other official publications of the University. Failure to meet the requirements or comply with regulations because of lack of knowledge thereof does not excuse the student from meeting the academic regulations and requirements.

A student's program of study must be approved by his or her adviser his or her chairman or a member of the faculty in his or her major department at registration. Advisers will make every attempt to give effective guidance to students in academic matters and to refer students to those qualified to help them in other matters. However, the final responsibility for meeting all academic requirements for a selected program rests with the student.

Courses of Study

Students should refer to the requirements of their respective departments and schools about their programs of study and confer with their adviser whenever problems arise. The student is expected to follow the program outlined as close as possible. This is very important during the first two years when he or she is satisfying basic degree requirements and prerequisites for advanced work.

Preregistration

Preregistration is a time designated each semester to allow the student and his or her adviser to review the student's records and plan a program for the next semester.

The student has an opportunity to discuss academic problems with the adviser. Preregistration helps to insure that the courses requested on the preregistered schedule will be available to the students the following semester.

Students who are enrolled in the University during the preregistration period are expected to preregister.

Official Registration

In order for a student to get credit for a course, he or she must be properly registered in that course. This means that the student must have gone through the registration procedures as outlined by the University. Further, the student must have filed with the office of Registration and Records the required class schedule cards and other basic data cards and paid all required tuition and fees.

Late Registration

Students are expected to complete enrollment (including the payment of all required fees) on the dates listed on the University Calendar. The payment of fees is part of the registration process. No student is eligible to attend classes until the required fees have been paid.

Students who fail to complete registration during the scheduled dates will be required to pay a late registration fee of $15.00

Auditing a Course

Regular students may audit a course upon the written approval of the instructor and his or her faculty adviser. They must register officially for the course and pay an audit fee to the University Cashier.

Attendance, preparation, and participation in the classroom discussion and laboratory exercises shall be at the discretion of the instructor.

Auditors are not required to take examinations and tests and they receive no credit. An auditor may not change his or her registration from audit to credit or from credit to audit after the date for adding courses shown in the University Calendar.

Course Load

The normal course load is fifteen or sixteen (15 or 16) credit hours. A full-time undergraduate student is required to carry a minimum of twelve (12) credit hours. The maximum course load for an undergraduate student is twenty-one (21) hours. This includes physical education and non-credit courses.

Double Major

Students who desire to obtain a double major, involving two departments or two schools must satisfy the major requirements for each department or school.

Repetition of Courses

A student who has received a failing grade in a required course at this university must repeat and pass the course unless the Dean of the School authorizes a substitute course. In cases where a student earns a "D" in his major field and is required to repeat the course the "D" is treated in the same manner as an "F" is treated. That is, the "D" is dropped in the computation of the GPA for the purpose of meeting graduation requirements in his major field.

A course which is a prerequisite to another in a sequence must be passed before the student can take the next course in the series. When a course is repeated and passed *only* the higher grade will count towards meeting the course and degree requirements.

A student who is taking a course as an elective or out of his or her major field is not held to the prerequisite provision. However, permission of the instructor of the course or the student's department chairman is required.

A student who has received a passing grade in any course at this university may repeat the course for credit at his or her option. Again, when this is done *only* the higher grade will count towards meeting course and degree requirements. *Dual course credit is not allowed.* This is to say that only three (3) hours of credit are allowed for a three (3) hour course regardless of the number of times it is repeated.

All grades earned by the student including "F's" are a part of his or her official academic record and will appear on his or her transcript.

Course Credit by Examination

A student may receive course credit for a given course by successfully completing an examination administered by his or her department on that subject. The student receives the grade "P" and regular credit for the number of hours involved. However, the credit hours are excluded in computing the student's grade point average.

(Grading System)

Grades are assigned and recorded as follows:

Grade	Description	Grade Points
A	Excellent	4
B	Good	3
C	Average	2
D	Below average, but passing	1
F	Failure	0
I	Incomplete	
P	Satisfactory (credit by examination)	
S	Satisfactory (non-credit courses)	
U	Unsatisfactory (non-credit courses)	
W	Withdrew	

ACADEMIC RETENTION

The normal load for an undergraduate student is sixteen credit hours per semester. The minimum load for a full-time undergraduate student is 12 credit hours per semester. The student is expected to make normal progress toward a degree.

To continue at the University, a full-time student must have the following minimum grade point average and the following minimum semester hours passed at the end of the semester indicated:

SEMESTER NUMBER	GRADE POINT AVERAGE	SEMESTER HOURS
Second	1.2	24
Fourth	1.4	48
Sixth	1.7	72
Eighth	1.9	96

A student who does not meet the above requirements will be placed on academic probation and required to remove the deficiency prior to the beginning of the next fall semester, or by the end of the student's third regular semester in residence whichever comes first. Failure to remove this deficiency during the probation semester makes the student ineligible to re-enroll the following semester. The student will be suspended for one semester. Students who are on probation at the end of the spring semester may attend summer school and work toward removing their academic deficiencies. The student who has been suspended and re-admitted is required to make a minimum grade point average of 2.0 the first semester or session of re-enrollment.

A part-time undergraduate student enrolled in a degree program must maintain the following minimum cumulative grade point average at the end of the cumulative semester hours indicated:

SEMESTER HOURS	GRADE POINT AVERAGE
24	1.2
48	1.4
72	1.7
96	1.9

A part-time student is defined as one who takes less than 12 hours. The part-time student who fails to maintain the minimum average is subject to the penalty prescribed for full-time students.

Grade Points

Grade points are computed by multiplying the number of semester hour credits by 4 for courses in which a grade of A is earned; by 3 for a grade of B; by 2 for a grade of C; by 1 for a grade of D. No grade points are given for a grade of F.

Grade Point Ratio

The grade point ratio is obtained by dividing the total number of grade points earned by the total number of semester hours attempted.

Course Numbers and Classification

Each course bears a distinguishing number which identifies it within the department and indicates, broadly, its level. The numbering system is as follows:

100 - 399, lower level courses primarily for freshmen and sophomores

400 - 599, upper level courses primarily for juniors and seniors

600 - 699, courses for undergraduate and graduate students

700 - 899, courses for graduate students and appropriate professional students special programs

CLASSIFICATION OF STUDENTS

Students are classified on the basis of semester hours completed, excluding remedial and deficiency courses. The following classification scale applies to all students enrolled in a four (4) year program:

CLASSIFICATION	SEMESTER HOURS COMPLETED
Freshman	0-32
Sophomore	33-63
Junior	64-95
Senior	96 or above

The following classification scale applies to students enrolled in a five year program:

CLASSIFICATION	SEMESTER HOURS COMPLETED
Freshman	0-33
Sophomore	34-67
Lower Junior	68-100
Upper Junior	101-133
Senior	134 or above

CHANGE OF GRADE

A request for a change of grade, for any reason, must be made within one year following the date the original grade was assigned by the faculty member.

Changes in Schedules

A change in a student's program may be made with the consent of his or her instructor and department chairman. However, if a student's schedule is changed after the designated period for adding and/or dropping courses, the consent of the School Dean is required.

The student must obtain and properly execute the Change of Schedule Form and the necessary schedule cards. These materials are obtained from the Office of Registration and Records and should be returned to that office.

Changing Schools

Students may transfer from one School of the University to another with the written approval and acceptance of the Deans of the Schools involved. The proper forms on which to apply for such a change are to be obtained from the Office of the Registrar and executed at least six weeks prior to the beginning of the semester in which the student plans to transfer. When such a transfer is made the student must satisfy the current academic requirements of the school and/or department to which the student transfers.

WITHDRAWAL FROM THE UNIVERSITY

A student who wishes, or is asked to leave the University at any time during the semester shall execute and file official withdrawal forms. These forms may be obtained from the Counseling and Testing Center. They should be completed and executed in quadruplicate (quintuplicate for veterans), and taken to the Cashier's Office. For failure to execute these forms, a student incurs the penalty of receiving an "F" for each course in which he or she is enrolled that semester.

Students who withdraw from the University within 15 calendar days of the beginning of the final examination period for the semester shall receive grades based upon their performance in classes up to the date of their withdrawal.

INCOMPLETES

Students are expected to complete all requirements of a particular course during the semester in which they are registered. However, if at the end of the semester, a small portion of the work remains unfinished and should be deferred because of some serious circumstances beyond the control of the student, an "I" may be submitted.

An "I" for a prolonged illness may be submitted only after the written approval of the Vice Chancellor for Student Affairs has been secured. An "I" for other causes may be submitted only with the approval of the Dean of the School.

Along with the recording of the incomplete grade, the instructor must also file with the head of the department, the student's average grade and a written description of the work which must be completed before the incomplete is removed.

(Procedure for the Removal of an Incomplete)

An incomplete grade must be removed within SIX WEEKS after the beginning of the next semester. If the student has not removed the incomplete within the time specified, the "I" becomes an "F".

Semester Examinations

A final examination will be required as a part of every course. An examination schedule showing time and place of meeting of each course and section will be published each semester. Schedules so published will be followed without exception. Any changes in the examination schedule must be approved by the Office of Academic Affairs.

Honor Roll

To encourage scholarship, the University publishes an Honor Roll at the end of each semester. Regular students whose average grade in all courses is "B" shall be eligible for the Honor Roll.

CLASS ATTENDANCE

Regular and punctual class attendance is the responsibility of the individual student. Moreover, the student is expected to have sufficient maturity to assume the responsibility for regular attendance and to accept the consequences of failure to attend.

The non-compulsory class attendance policy places responsibility on the student and the instructor.

Student's Responsibility

1. The student is responsible for all material covered in each course for which he or she is registered. Absence from class does not relieve him or her of this responsibility.
2. The student is expected to be present for laboratory periods, scheduled examinations, and other activities that may require special preparation.
3. The student is responsible for initiating any request to make up an examination, a laboratory exercise or other work missed because of a class absence. If the instructor requests a statement concerning the reason for the absence, the student should obtain it from the appropriate officer (eg. the University Physician, the Vice Chancellor for Student Affairs.
4. The student is expected to report to each class at the beginning of the term with a validated schedule and a class admission card.

Instructor's Responsibility

1. The instructor is responsible for explaining to the class any specific expectations concerning attendance at the beginning of the term.
2. The instructor is responsible for providing the student with a schedule of the examinations and other class requirements that will provide a basis for evaluating student performance.
3. The instructor is responsible for maintaining a record of the attendance of the students in his or her class.
4. The instructor is expected to warn the student when his or her academic progress is adversely affected by excessive absence from class.

DEGREE PROGRAMS

Students who complete one of the four or five year courses of study will be awarded the degree of Bachelor of Science, or Bachelor of Arts.

Those graduating from a four-year curriculum in the School of Agriculture shall be entitled to the Bachelor of Science degree in Agricultural Education, Agricultural Science, Agricultural Technology, Agricultural Economics, Agricultural Engineering, Home Economics Education, Clothing and Textiles, Foods and Nutrition, Institution Management or Child Development.

Those graduating from a four-year curriculum in the School of Arts and Sciences shall be entitled to the Bachelor of Science degree in Art. English, Foreign Languages, Music, Biology, Chemistry, Mathematics, Physics, Economics, History, Political Science, Sociology, Social Service, or Psychology.

Those graduating from a four-year curriculum in the School of Education shall be entitled to the Bachelor of Science degree in Health and Physical Education, Psychology, Industrial Arts Education, Industrial Technical Education or Vocational Industrial Education.

Teaching majors are offered in the following areas: Art, Biology, Chemistry, English, French, Mathematics, Music, Physics, History, Social Studies, Agricultural Education, Business Education or Home Economics Education. These degree programs are offered in cooperation with the School of Arts and Sciences, the School of Agriculture and the School Division of Business and Economics.

Those graduating from a four or five year curriculum in the School of Engineering shall be entitled to the Bachelor of Science degree in Architectural Engineering*, Electrical Engineering, Mechanical Engineering, Engineering Mathematics or Engineering Physics.

Those graduating from a four-year curriculum in the School of Business shall be entitled to the Bachelor of Science degree in Accounting, Business Administration or Business Education.

Those graduating from a four-year curriculum in the School of Nursing shall be entitled to the Bachelor of Science degree in Nursing.

Core Requirements

The University Senate has approved the principle of greater flexibility in the course offerings that can be taken to satisfy the core requirements of the University. The areas in the core and the minimum semester hour requirements are as follows:

Areas	*Minimum Number of Semester Hours Required*	*Suggested Courses*
English	6	*English 100,101
Social Science	6	History, 100, 101
Natural Science	6	Biological Science 100 Physical Science 100 Botany 140 Zoology 160
Humanities	6	Chemistry 101, 102
Mathematics	6	Humanities 200, 201
Health or Physical Education	2	Mathematics 101, 102

*Five year program
*Required Course

GENERAL REQUIREMENTS FOR GRADUATION

A candidate for a degree from North Carolina Agricultural and Technical State University must satisfy the following requirements:

1. Choose a specific curriculum leading to a degree in one of the schools and complete the requirements of this curriculum.
2. Complete a minimum of 124 semester hours excluding deficiency courses and remedial work for the Bachelor's degree.
3. Complete the core requirements of the University in English, Mathematics, Natural Science, Social Science, Humanities and Health or Physical Education for the Bachelor's degree.
4. Earn an average of two (2) grade points for every semester hour undertaken including hours passed or failed. After completing the number of credit hours required for graduation, if the student is deficient in grade points, he or she must take additional courses that have been approved by his or her academic dean to secure these points. The student must also obtain an average of 2.0 or more in his or her major field.
5. Complete a minimum of three semesters as a full time student in residence at the University. At least one half of the student's credits in his or her major field must be earned here.
6. Take the Graduate Record Examination and/or the National Teachers Examination if applicable to his or her program.
7. Clear all academic conditions by the end of the semester preceding graduation.
8. Pay all University bills and fees.
9. File an application for graduation with the Office of Registrar three months prior to the expected date of graduation.

GRADUATION WITH HONORS

Graduation honors are awarded candidates who complete all requirements for graduation in accordance with the following stipulations: (1) Those who maintain a general average within the range of 3.00 to 3.24 will receive CUM LAUDE, (2) those who maintain a general average within the range from 3.25 to 3.49 will receive MAGNA CUM LAUDE, and (3) those who maintain a general average within the range of 3.50 to 4.00 will receive SUMMA CUM LAUDE. Publication of honors and scholarships is made at graduation and in the University Catalog.

GRADUATION UNDER A GIVEN CATALOGUE

A student may expect to earn a degree in accordance with the requirements of the curriculum outlined in the catalogue in force when he or she first entered the University provided the courses are being offered. Moreover, he or she must complete these requirements within six years. On the other hand, he or she may graduate under any subsequent catalogue published while he or she is a student. If a student elects to meet the requirements of a catalogue other than the one in force at the time of his or her original entrance he or she must meet all requirements of the catalogue he or she elects.

Obtaining Transcripts

A transcript is furnished at the *written* request of the student. The student must remit one dollar per transcript in the form of a postal money order or certified check.

NONDISCRIMINATION POLICY

NORTH CAROLINA A&T STATE UNIVERSITY is dedicated to equality of opportunity within its community. Accordingly, NORTH CAROLINA A&T STATE UNIVERSITY does not practice or condone discrimination, in any form, against students, employees, or applicants on the ground of race, color, national origin, religion, sex, age, or handicap. NORTH CAROLINA A&T STATE UNIVERSITY commits itself to positive action to secure equal opportunity regardless of those characteristics.

NORTH CAROLINA A&T STATE UNIVERSITY supports the protections available to members of its community under all applicable Federal laws, including Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 799A and 845 of the Public Health Service Act, the Equal Pay and Age Discrimination Acts, the Rehabilitation Act of 1973, and Executive Order 11246.

STUDENT LIFE

Members of Marching Band

STUDENT LIFE

STUDENT PERSONNEL SERVICES

The board objective of the program of Student Personnel Services is to aid the student in developing the attitudes, understandings, insights and the skills which will enable him or her to express himself or herself as a socially competent person. The program places special emphasis on campus relationships and experiences which complement formal instruction.

More specifically the program of Student Personnel Services is conceived as a continuing exercise of identifying and remedying the daily life problems of the student. Accordingly, very definite efforts are made:

1. To help the student to become better acquainted with himself or herself and the various problems confronting him or her.
2. To help the student to develop the ability to make satisfactory choices and adjustments.
3. To aid the student in making desirable adjustments in group relationships.
4. To provide cultural and social experiences which will help the student to develop an appreciation for the best in his or her culture.
5. To promote the physical, mental, moral and spiritual development of the student.

A number of college officials, faculty, and staff members are responsible for various phases of the program of Student Personnel Services. These include the Vice Chancellor for Student Affairs, Personnel Deans, the Director of Counseling and Testing Services, Food Services, Religious Activities, Housing, Health Services, the Director of Placement Services, University Union, the Advisor to Foreign Students, faculty advisors, and other individuals and agencies.

GUIDANCE AND COUNSELING SERVICES

Provision is made for counseling, testing, and guiding all students through the Counseling and Testing Office. It is located on the ground floor of Dudley Building.

The Counseling and Testing Office conducts a testing program for all freshmen. The results of this program are used to assist freshmen in the planning of their educational and vocational careers. The Office conducts other testing programs that are required or desired by departments of the University, also. In addition to these duties, the Office of Counseling and Testing cooperates with the Director of Placement in the placement of graduates.

HEALTH SERVICES

The Health Service Center maintains a staff of doctors and nurses who are qualified to give professional attention to the health problems of students. The basic components of the health service program are as follows:

1. Medical Services:

   The University maintains a Director of the Health Services who is the University Physician. The University Physician is in attendance in the infirmary daily—morning and evening—and is "on call" for any emergency situations.

2. Nursing Services:

   Registered nurses, under the direction of a head nurse, are in attendance daily on a twenty-four hour basis.

3. Follow-up and Consultation Services:

   Follow-up services are given, and referrals to specialists are made upon recommendation of the University Physician.

4. Physical Examinations:

   a. Athletes, nursing students, advanced ROTC cadets and other special groups of students are given complete physical examinations at the Student Health Center each semester or whenever necessary.

   b. All freshmen and transfer students are required to secure a complete physical examination, a blood test and a chest X-ray and send the examination reports to the Director of Health Services before they are admitted to the college. The blood test and chest X-ray reports must be secured within 60 days prior to the date of enrollment. Follow-up examinations are made at the Health Center when necessary.

HOUSING

The residence halls provide opportunities for personal, social, and intellectual companionship as well as experiences in group living. Each residence hall is organized and it conducts programs for the development of the student.

Housing facilities for women are provided in Cooper, Gibbs, Holland, Morrison, Vanstory and High Rise. Men are housed in Curtis, Scott and Senior Hall.

All students, except those who are Greensboro residents or those who commute daily from nearby communities, are required to live in one of the residence halls as long as space is available, unless given permission to live elsewhere by the Vice Chancellor for Student Affairs. The University reserves the right to approve all off-campus housing.

The University policy on required residence for undergraduate students is as follows:

A. Students who enter the University as FRESHMEN will reside in University Housing through their first two academic years of enrollment.

B. Students who enter the University as TRANSFER STUDENTS CLASSIFIED AS SOPHOMORES OR JUNIORS will reside in University Housing through their first academic year of enrollment.

C. Students who enter the University as SOPHOMORES and JUNIOR TRANSFER STUDENTS will reside in University Housing through their first academic year of enrollment.

D. Exceptions will be made by the Vice Chancellor for Student Affairs in individual cases for compelling reasons such as marriage, residence in the home of the student's parents or daily commuters from nearby communities.

FOOD SERVICES

The University provides food service for students at a reasonable cost. A snack bar is located in the Memorial Student Union Building.

Students who live in the residence halls are required to eat in the cafeterias. Students who live in the city may purchase meals also.

PLACEMENT SERVICES

The Placement Center is a centralized operation and is responsible for placement activity for all schools, divisions, and departments of the University. It provides services to all seniors and graduate students as well as other students seeking employment. The Center offers a continuing service to graduating students and alumni.

Placement services to seniors and graduate students include individual and group conferences, career counseling, arranging interviews between interested students and company representatives on campus. It also provides information to students concerning summer employment and part-time employment. There is no charge to students, alumni, or employers for this service.

VETERANS AFFAIRS AND SERVICES

An information center and clearinghouse services are provided for veterans and war orphans who are admitted and who plan to receive money from the Veterans Administration.

The following are listed for their information and guidance:

1. Report to the Veterans Office as soon as you arrive.
2. Bring any communication you have from the Veterans Administration.
3. Veterans who are enrolling for the first time should bring their separation papers with them.
4. Be prepared to pay all bills and expenses for the first three (3) months.
5. The Veterans Administration requires fourteen hours for full-time student benefits.
6. The Veterans Administration pays no money to the University for veterans training. All money is paid directly to the veteran; therefore each veteran is responsible for meeting all of his or her financial obligations.

THE MEMORIAL UNION

The Memorial Union, dedicated and opened during the Spring Semester, 1966-67, is the "Community Center", serving diverse needs. It embraces a great variety of facilities and it performs a multiplicity of functions. It is a lounge, reading room, student organizations and activities headquarters, workshop, art gallery, theatre, music room, forum, games room, dance and party center, office building, outing and recreation center, cultural center, ticket bureau, bookstore, confidence headquarters, dining room and snack bar, information center, barber shop, public relations agency, refuge for meditation, guest room and meeting room. The physical proximity it provides promotes the sense of community among students, faculty, alumni and publics of the University. The Union facilitates a positive recreational and cultural mission.

STUDENT ORGANIZATIONS AND ACTIVITIES

The University provides a well-balanced program of activities for moral, spiritual, cultural and physical development of the students. Religious, cultural, social and recreational activities are sponsored by various committees, departments, and organizations of the university. Outstanding artists, lecturers and dramatic productions are brought to the campus also.

A listing of student organizations, their purposes, objectives, etc., is provided in the Student Handbook.

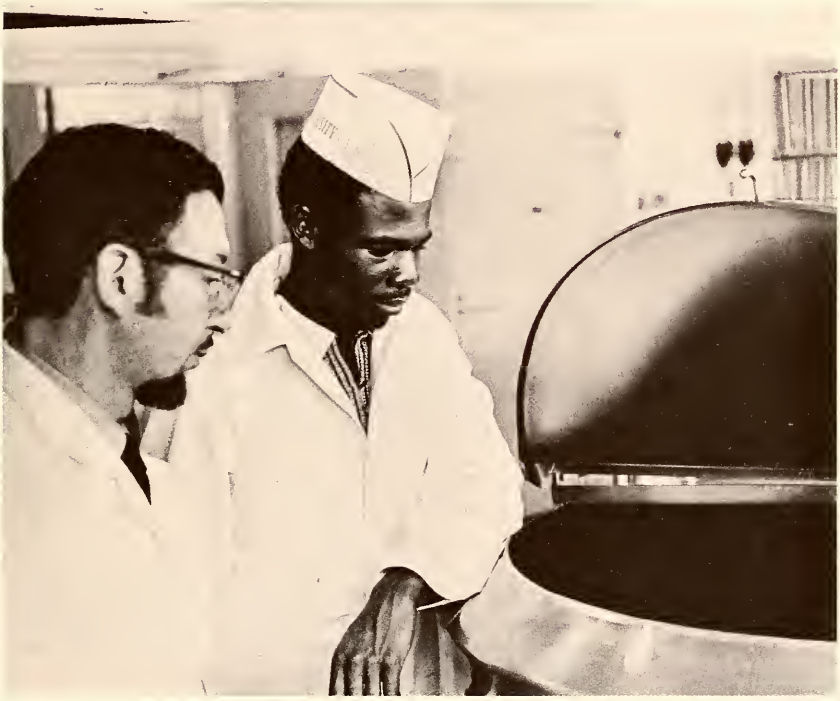
STUDENT CONDUCT

Students enrolled at North Carolina Agricultural and Technical State University are expected to conduct themselves properly at all times. They are expected to observe standards of behavior and integrity that will reflect upon themselves, their families and the university. They are expected to abide by the laws of the city, state, and nation, and by all rules and regulations of the University.

Accordingly any student who demonstrates an unwillingness to adjust to the rules and regulations that are prescribed or that may be prescribed to govern the student body will be suspended or expelled from the institution. Furthermore, any student whose conduct or behavior is not in harmony with the ideals or purposes of the university will be suspended or expelled.

A student may forfeit the privilege of working for the University when, for any reason, he or she is placed on probation because of misconduct.

SCHOOL OF AGRICULTURE



Student in Food Laboratory

SCHOOL OF AGRICULTURE

Burleigh C. Webb, *Dean*

Philosophy and Objectives. The School of Agriculture embraces the fundamental philosophy of the Land-Grant Institution and it accepts the obligation to provide a program of resident and off-campus instruction adequate to meet the needs of those who seek this service. It administers to the general needs of an interdependent rural-urban society and to the special needs of those who desire and benefit from instruction in agriculture, and home economics.

The objectives of the School of Agriculture are two fold: (1) to extend the frontiers of knowledge and the professional competencies of its faculty and the academic proficiency of its students through organized instruction and research and (2) to share its resources with its clientele through organized short courses, conferences, and related activities designed to meet special needs.

Departmental Organization. The School of Agriculture is organized into the following departments: (1) Agricultural Education, (2) Animal Science, (3) Plant Science, (4) Home Economics, (5) Agricultural Economics.

Requirements for Admission. The requirements for admission to the School of Agriculture are the same as the general requirements for admission to the University.

Requirements for Graduation. The requirements for graduation for the Bachelor of Science Degree are as follows:

1. The student must have satisfied the course requirements of an approved curriculum in an organized department administered by the School of Agriculture.
2. The student must have earned a cumulative average quality of at least a "C" in his or her major courses and in his or her overall academic program.

Curricula. The curricula of the School of Agriculture are designed to provide the students who pursue courses of instruction leading to the Bachelor of Science Degree (1) a fundamental understanding of the basic physical and biological sciences which are applied to their respective majors; (2) liberal educational experiences offered by the University; and (3) a knowledge and competency required for specialization in any one of the following major programs.

A. Technical Agriculture

The curricula and courses in Technical Agriculture are related to career opportunities in the various fields: (1) Farm Production and Technology; (2) Off-Farm Business and Industries and government agencies; and (3) Research and Education. In recognition that each of these fields requires a body of knowledge common to all, and that each has a body of knowledge distinctly peculiar to it, the curricula in Technology, Business, and Science are designed to provide certain required courses and at the same time provide a rather wide degree of flexibility which the student may use to his or her advantage by selecting courses in consultation with his or her faculty advisor that will meet his or her particular needs and objectives. These curricula are designed to serve the industry of agriculture specifically and the public in general. They provide educational opportunities for students interested in the many sectors of agricultural industries and the intellectual background on which students can build satisfying lives through service.

F.D. Bluford Library
N.C. A&T State University
Greensboro, NC 27411

Agricultural Business. The Agricultural Business major is designed for those students interested in the business industry phase of Agriculture. The objective of the program of instruction in this major is to equip students for employment in those industries that furnish supplies and services to farmers and those that store, process, distribute, and merchandise the products of the farm. Graduates in this major are specially equipped for employment as salesmen, managers, public relations and technical supervisors with companies dealing with feed, seed, fertilizer, food processing and other such industries.

Agricultural Economics. The curriculum in Agricultural Science with an option in Agricultural Economics is administered jointly by the School of Agriculture and the Department of Economics in the School of Business and Economics.

Agricultural Education. The curriculum in Agricultural Education offers the student a program of study designed to develop competency in teaching and related types of work. The curriculum is especially suited for the student who aspires to become a teacher of Vocational Agriculture or Agricultural Extension.

The student who wishes to major in Agricultural Education should, preferably at the beginning of the sophomore year or before his or her junior year, plan with his faculty advisor a course of study which will meet the certification requirements of teachers of Vocational Agriculture in North Carolina.

Agricultural Science. The objective of this program is to provide an opportunity for the student to develop competency in the scientific disciplines essential to graduate study, scientific agriculture, and research.

SCHOOL OF AGRICULTURE

Agricultural Technology. The curriculum in Agricultural Technology provides an opportunity to develop knowledge and skills in a specialized area of agricultural production. The program of instruction for the student who pursues this program places emphasis on the development of competency in the management and operation of commercial farms or in related industries that require specialized knowledge and technical skills.

B. Home Economics

The curricula leading to the Degree of Bachelor of Science in Home Economics are offered in the area of (1) Clothing, Textiles and Related Arts (2) Food and Nutrition, (3) Home Economics Education, and (4) Child Development.

Clothing Textiles, and Related Arts. This major leads to professional opportunities in clothing, textiles, fashion and business.

Food and Nutrition. The major in food and nutrition provides three options: (1) Food and Nutrition, (2) Therapeutic Dietetics, and (3) Food Administration.

Home Economics Education. The Home Economics Education major is designed to provide the necessary training and skills for teachers of home economics, for graduate study and for a variety of careers with service organizations with concern for individual and family development.

Child Development. The major in Child Development offers two options- (1) Child Development, which prepares students for positions as directors of nursery school and kindergarten programs, and (2) Early Childhood Education, which prepares students for teaching positions in Kindergarten through Grade 3.

C. Cooperative Program in Food Science

The major in Food Science is conducted through a 3-1 plan where by the first three years of prescribed work are done at the A&T State University, an the fourth year is completed in cooperation with North Carolina State University at Raleigh.

INSTITUTE OF ENVIRONMENTAL PLANNING AND NATURAL RESOURCES

The Institute for Environmental Planning and Natural Resources has been organized in the School of agriculture to focus on academic program development and research. It prepares graduates for professional careers related to planning the physical environment and managing renewable natural resources.

The courses are structured to offer a broad base of knowledge which explains man's relationship to the physical environment and techniques for developing use-areas which are compatible with the land resources. They are multi-disciplinary in their approach, systematic in format, broad in content and comprehensive in specific technical areas.

COURSES IN LANDSCAPE ARCHITECTURE

335. Principles of Landscape Design (Also Hort. 335) Credit 3(2-2)

Fundamentals of design of planning the arrangement of small properties, such as homes, schools, small parks and playgrounds. (Prerequisite Ag. Engr. 113)

529. Landscape Design and Construction (Also Hort. 529) Credit 3(0-6)

Problems in design of land areas with emphasis on orientation, arrangement, and circulation. Instruction in planning, presentation, cost accounting, and construction. (Prerequisite Hort. 335 or Landscape Arch. 335)

530. Landscape Design and Construction (Also Hort. 530) Credit 3(0-6)

Continuation of Hort. 530. Problems in design of larger land areas involving more complex features; practice in landscape model construction. (Prerequisite Hort. 529 or Landscape Arch. 529)

Advanced Undergraduate and Graduate

601. Environmental Perception and Design Determinants Credit 3(3-0)

Comprehensive perception of natural forces as design determinants. An assessment of systems and methods of perception, classification, analysis and synthesis of natural forces and elements as they affect physical design and human use. Lecture and workshops will emphasize perception and landscape design.

602. Qualitative Analysis in Landscape Planning Credit 3(3-0)

Evolution and trends of applied physical design in landscape planning. Investigation of actual hypothetical design situations; study of visual and cultural values of landscape resources in planned environments. Lectures and practicums of physical design, site capabilities, scape structuring, and landscape values.

603. Land-Use Planning and Management Credit 3(3-0)

Methods and systems of conservation, management and use of land areas. Lecture and field study course on land surface forming and stabilization, watershed use potentials and use controls, land zoning and ordinances affecting various land uses and community decisions.

604. Factors of Physical Design Credit 3(3-0)

A study of human behavioral responses and use patterns within physical environments, with emphasis on special group needs and compatability with landscape resource areas. Consideration of problems affecting a synthesis of landscape values and design forms, visual and psychological values of planned and unplanned environments and relationships of social functions to architectural forms.

608. Special Problems Credit 3(3-0)

Work along special lines given largely by the project method for advanced undergraduate and graduate students who have the necessary preparation

612. Plant Materials and Landscape Maintenance Credit 3(2-2)

Identification, merits, adaptability, and maintenance of shrubs, trees, and vines used in landscape planting trees, shrubs, bulbs, and perennials. (Prerequisite Hort. 334 and 335)

613. Plant Materials and Planting Design Credit 3(2-2)

Continuation of Hort. 612 with added emphasis on plant combinations and use of plants as design elements. (Prerequisite Hort. 612)

DEPARTMENT OF AGRICULTURAL ECONOMICS

The Agricultural Economics majors may choose to concentrate in either Agricultural Business or Agricultural Science. The former is concerned with the business or industrial phase of agriculture; the latter group would be more interested in graduate study and research.

PROGRAM FOR AGRICULTURAL ECONOMIC MAJORS CONCENTRATING IN AGRI-BUSINESS*

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
History 100, 101	3	3
Mathematics 111, 113	4	4
Physical Science 100	4	—
Biological Science 100	—	4
Air or Military Science or Electives	1	1
Education 100	1	—
	16	15

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Physical Education 200	2	—
Economics 301, 302	3	3
Psychology 323	—	3
Ag. Econ. 330	3	—
Animal Husbandry 301; Dairy Husbandry 302; Plant Sc. 110 or Poultry Husbandry 317	3	3
Ag. Econ. 644	—	3
Air or Military Science or Electives	2	2
	16	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Ag. Econ. 332, 334	3	3
Accounting 221, 222	3	3
Speech 250	—	2
Sociology 203	3	—
Electives (Major Area)	4	6
Electives	3	3
	16	17

*Jointly administered by the Schools of Agriculture and Business and Economics

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Ag. Econ. 436, 646	3	3
Business Administration 451, 452	3	3
Business Administration 572	—	3
Business Administration 578	—	3
Electives (Major Area)		
Ag. Econ. 438	5	3
Electives (Technical Agriculture)	4	—
	15	15

Fifteen (15) hours of major electives—Major electives will be selected from the following courses:

Ag. Econ. 442	(3)	Ag. Econ. 632	(3)
Ag. Econ. 530	(3)	Ag. Econ. 638	(3)
Ag. Econ. 532	(3)	Ag. Econ. 642	(3)
Econ. 410	(3)	Ag. Econ. 646	(3)

PROGRAM FOR AGRICULTURAL ECONOMICS MAJORS CONCENTRATING IN AGRICULTURE SCIENCE*

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Education 100	1	—
English 100, 101	3	3
History 100, 101	3	3
Botany 140, Zoology 160	4	4
Mathematics 111, 112	4	4
Air or Military Science or electives	1	1
	16	15

Sophomore Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
Econ. 302, 301	3	3
Physical Science	4	—
Biological Science	—	4
Agr. Econ. 330	—	3
Sociology 100	3	—
Air or Military Science or elective	2	2
Humanity 200, 201	3	3
	15	15

*Jointly administered by the School of Agriculture and the School of Business and Economics.

Junior Year

Course and Number	Fall Semester Credits	Spring Semester Credits
Economics 305	3	—
Agr. Econ. 334	—	3
Economics 410, 420	3	3
Agr. Econ. 332	—	3
Accounting 221	3	—
Speech 250	—	3
Foreign Language	3	3
Animal Husbandry 301 or Poultry Science 317	3	—
	15	15

Senior Year

Course and Number	Fall Semester Credits	Spring Semester Credits
Ag. Econ. 436, 644	3	3
Ag. Econ. 646	—	3
Business Administration 451, 452	3	3
Electives, major area	9	6
	15	15

Nine (9) hours of major electives—Major electives will be selected from the following courses:

Ag. Econ. 440	(3)	Ag. Econ. 638	(3)
Ag. Econ. 530	(3)	Ag. Econ. 642	(3)
Ag. Econ. 532	(3)	Ag. Econ. 648	(3)
Ag. Econ. 632	(3)	B.A. 572	(3)
Math 240	(3)		

COURSES IN AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

AGRICULTURAL ECONOMICS
Undergraduate

330. Introduction to Agricultural Economics. Credit 3(3-0)
(Formerly Ag. Ec. 1121)

An application of the fundamental principles of economics to agricultural production, marketing, land tenure, leasing arrangements, financing and related economic problems.

332. Elements of Farm Management. Credit 3(2-2)
(Formerly Ag. Ec. 1122)

Principles which govern the effective organization and operation of the farm firm.

334. Marketing Agricultural Products. Credit 3(3-0)
(Formerly Ag. Ec. 1141)

Principles and practices of marketing as applied to farm commodities. Form, place, time and possession utility, the ultimate consumer's market, the agricultural industries market, the middleman system, exchange market operation and futures contracts, price determination, reducing marketing costs. Visits will be made to local markets. Prerequisite: Ag. Econ. 330.

336. Agricultural Prices. Credit 3(2-2)
(Formerly Ag. Ec. 1142)

Information regarding agricultural price changes, index numbers, price determination, seasonal and cyclical price movements, storage problems, and other methods of controlling extreme price fluctuations, government price policy.

440. Resource Economics. Credit 3(3-0)
(Formerly Ag. Ec. 1162)

Analysis of Economic problems of resources use and management. Perception of and definition of problems in terms of allocation mechanism. Analysis of Economic relationships over time and market externalities with emphasis on welfare implications. Prerequisite: Economics 302.

442. Cooperative Marketing. Credit 2(2-0)
(Formerly Ag. Ec. 1163)

Early cooperative movements, principles of cooperatives, importance of cooperatives in the United States, problems of organization, management an operation of cooperative endeavors by farmers in buying and selling. Prerequisites: Ag. Econ. 330, 334.

444. Marketing Dairy Products. Credit 3(2-2)
(Formerly Ag. Ec. 1164)

Economic problems in procuring milk and cream, in processing and distributing fluid milk, cream and manufacturing dairy products; marketing legislation, market news, market methods, including cooperation, consumer demand and price policy. Prerequisite: Ag. Econ. 334.

530. Economics of Food Distribution. Credit 3(3-0)
(Formerly Ag. Ec. 1165)

Description of market structures and operations in the processing, wholesale and retail distribution of food. The effect of industrial organization and government regulations on the efficiency of the market and consumers demand for food.

532. Agricultural Economics Research. Credit 3(3-0)
(Formerly Ag. Ec. 1166)

Review of different types of research methodology used in the field of Agricultural Economics. Prerequisite: Consent of the Department Chairman.

Advanced Undergraduate and Graduate

630. Southern Resources in a Changing Economy—A Seminar. Credit 3(3-0)
(Formerly Ag. Ec. 1170)

Trends and the formulation of economic and social problems in the South and particularly in North Carolina; labor and capital mobility, agricultural as compared with the industrial, the problem of underemployment, and important phases of current economic development. Prerequisite: Economics 301, Sociology 203 or Ag. Econ. 330.

632. Agri-Business Policy. Credit 3(3-0)
(Formerly Ag. Ec. 1171)

The place of Agri-business in the National and International economy; the impact of public policy on the industry. An analysis of policy as it relates to price support programs, finance, trade and resource development. Prerequisite: Ag. Econ. 330.

634. Commodity Marketing Problems. Credit 3(3-0)
(Formerly Ag. Ec. 1172)

Economic problems arising out of the demand, supply and distribution of specific agricultural commodities; the price making mechanism, marketing methods, grades, values, price, cost, and governmental policy. Not more then two commodities will be studied in any one quarter. Selection of commodities and emphasis on problem areas will be made on the basis of current need; commodities studies will be cotton, tobacco, fruits and vegetables, and grains. Prerequisite: Consent of the Department Chairman.

636. Seminar in Marketing Farm Products. Credit 3(3-0)
(Formerly Ag. Ec. 1173)

Discussion, reports, consultation and research efforts which throw light on marketing problems of low income farmers in North Carolina including National and International importance of locally grown products such as tobacco and cotton. Prerequisite: Consent of the Department Chairman.

638. Special Problems in Agricultural Economics. Credit 3(1-2)
(Formerly Ag. Ec. 1174)

Designed for students who desire to work out special problems in the field of agricultural economics; problem definition, formulation and investigation. Prerequisite: Consent of the Department Chairman.

640. Agri-Business Management. Credit 3(2-2)
(Formerly Ag. Ec. 1175)

Methods of research, plans, organization, and the application of management principles. Part of the student's time will be spent in consultation with Agri-business firms. Prerequisite: Consent of Department Chairman.

642. Seminar in Agricultural Economics. Credit 2(2-0)
(Formerly Ag. Ec. 1176)

Discussion reports and an appraisal of current literature on agricultural problems. Prerequisite: Consent of the Department Chairman.

644. Statistical Methods in Agricultural Economics I. Credit 3(2-2)
(Formerly Ag. Ec. 1177)

Statistical methods with special applications to agricultural problems. The statistical table, ratios, percentages, bar charts, line charts, and frequency distribution are used as analytical tools. Prerequisites: Ag. Econ. 330, Econ. 301 or Sociology 203.

646. Statistical Methods in Agricultural Economics II. Credit 3(2-2)
(Formerly Ag. Ec. 1178)

Statistical methods with special applications to agricultural problems. The time series analysis, sampling theory, analysis of variance, and simple coorelation are used as analytical tools. This course is a continuation of Ag. Econ. 644.

648. Appraisal and Finance of Agri-Business Firms. Credit 3(3-0)
(Formerly Ag. Ec. 1179)

Principles of land evaluation, appraisal and taxation. The role of credit in a money economy, classification of credit, principles underlying the economic use of credit. The role of the government in the field of credit.

COURSES IN RURAL SOCIOLOGY

Undergraduate

330. Principles of Rural Sociology. Credit 3(3-0)

Social systems, cultural patterns, and institutional arrangements of people in rural environments.

An interpretation of the structure, functioning and change in rural social systems.

Advanced Undergraduate and Graduate

501. Rural Social Problems. Credit 3(3-0)

A focus on the problems and solutions of population dynamics, education, religion, health, land tenure, parity income, farm labor, mechanization, housing, poverty, and rural development as they affect the growth of the rural community.

502. Rural Leadership and Organization. Credit 3(3-0)

Opportunities and needs for rural leadership; educational and psychological requirements for various types of rural leaders.

Research contribution of social, psychological and cultural Anthropology in developing vialable rural organization and leadership.

503. Rural Family. Credit 3(3-0)

The institutional nature of the rural family, etc., role in the community including its relations to educational, religious, welfare and other community organizations.

505. Rural Standards of Living. Credit 3(3-0)

Consumption behavior in the main community groups of our rural society. The poverty threshold and the plight of the rural poor.

506. Special Problems in Rural Sociology. Credit (2 to 4 hrs.)

Work on problems in the rural society under the guidance of a faculty member.

DEPARTMENT OF AGRICULTURAL EDUCATION

A. P. Bell, *Chairman*

The Department of Agricultural Education prepares students for positions in educational fields in agriculture and related areas including schools and colleges, agricultural extension, business, trade and professional associations, and government agencies. The Department administers a program approved by the State Department of Public Instruction for the preparation of teachers of agriculture in the public school systems. The program includes courses in general education, professional education, and technical education.

PROGRAM FOR AGRICULTURAL EDUCATION MAJORS

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 101, 102	3	3
History 100, 101	3	3
Botany 140	4	—
Zoology 160	—	4
Animal Science 301	—	3
Physical Education	1	1
Air or Military Science (Elective)	(1)	(1)
Agricultural Education 101, 102	1	1
	15	18

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Speech 250	—	2
Psychology 320	3	—
Chemistry 101, 102	4	4
Plant Science 110	—	3
Agricultural Engineering 114	—	3
Dairy Science 311	3	—
Poultry Science 317	3	—
Humanities 200, 201	3	3
Health Education 200	2	—
Agricultural Economics 330	—	3
or Economics 301	—	3
Air or Military Science (Elective)	(2)	(2)
	18	18

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Agricultural Education 400, 402	2	2
Agricultural Education 401, 403	2	2
Technical Agricultural Electives	3	6
Bacteriology 121	4	—
Earth Science 309	—	3
Education 400	3	—
Psychology 431	—	2
Free Electives	3	3
	17	18

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Agricultural Economics 332	3	—
Agricultural Education 501, 502	3	6
Agricultural Education 503	—	3
Agricultural Engineering 525	—	3
Rural Sociology	2	—
Technical Agricultural Electives	3	—
Zoology 468 or Botany 530	3	—
	14	12

Twelve credits must be completed in the subject matter area (Technical Agriculture).

The agricultural education major may follow a program concentration in one of the following subject matter areas of technical agriculture.

Agricultural Communication
Agricultural Economics
Agricultural Engineering
Animal Science
Plant Science
Soil Science
Horticulture

The program will be worked out on individual basis by the student and his adviser. The student will be co-advised by the Agricultural Education Staff and a staff member from the subject matter area in which the student does his concentration. Students may do a concentration in the area of Environmental Science by taking selected courses relating to the Environment in the above subject matter areas and other areas which will prepare them for such teaching in the Agricultural Curriculum of the secondary schools.

COURSE OFFERINGS IN AGRICULTURAL EDUCATION

Undergraduate

101. Agricultural Education. Credit 1(1-0)
(Formerly General Agriculture 1000)

A study of the broad base of modern agriculture with emphasis on current trends and opportunities.

102. Agricultural Education. Credit 1(1-0)
(Formerly General Agriculture 1001)

A continuation of 101 with special emphasis on the development of agriculture as a modern technology and the impact of science on its development.

400. Audio-Visual Aids in Occupational and Technical Education.
(Formerly Ag-Ed 1240) Credit 2(1-2)

Techniques in preparing, using, and evaluating audio-visual aids in occupational and technical education. It includes the use of pictorial materials applied to teaching agriculture and the oepration and adjustment of equipment found in departments of occupational education.

401. Youth Organizations and Leadership in Secondary Schools.
(Formerly Ag-Ed 1241) Credit 2(2-0)

Practices and procedures of Leadership development and the organization of youth groups in secondary schools, agricultural extension, and other community programs.

402. Secondary Education in Agriculture. Credit 2(2-0)
(Formerly Ag-Ed 1242)

Designed to acquaint students with the historical objectives of vocational education and agriculture, the problems in the area of secondary schools, and some solutions.

403. Materials and Methods of Teaching Out-of-School Groups.
(Formerly Ag-Ed 1243) Credit 2(2-0)

Methods and materials used in teaching adults and young farmers. It will include developing and using various teaching devices and aids for out-of-school groups.

501. Materials and Methods of Teaching Agricultural Education.
(Formerly Ag-Ed 1261) Credit 3(3-0)

Principles of teaching as applied to agriculture in secondary schools. Preparing and using lesson plans and organizing teaching aids to meet community needs. Prerequisites: Agricultural Education 400 and 402; Psychology 320.

502. Student Teaching. Credit 6(6-0)
(Formerly Ag-Ed 1262)

Students will be required to spend twelve weeks in an approved teaching center doing observation and directed student teaching. Prerequisite: Agricultural Education 501.

503. Evaluation and Problems in Teaching Agricultural Education.
(Formerly Ag-Ed 1263) Credit 3(3-0)

The process of discovering and analyzing problems in the field; program building, and evaluation of instruction. This will include an appraisal of all phases taught by the teacher of agriculture. Prerequisites: Agricultural Education 501 and 502.

Advanced Undergraduate and Graduate

601. Adult Education in Occupational Education.
(Formerly Ag-Ed 1271) Credit 3(3-0)

A study of the principles and problems of organizing and conducting programs for adults. Emphasis is given to the principles of conducting organized instruction in Agriculture and related industries.

602. The Principles of Agricultural Education. Credit 3(3-0)
(Formerly Ag-Ed 1272)

A study of the principles and practices in agricultural education revealed by research and new trends.

603. Problem Teaching in Occupational Education. Credit 3(3-0)
(Formerly Ag-Ed 1273)

Practices in setting up problems for teaching unit courses in vocational education.

604. Public Relations in Agriculture. Credit 3(3-0)
(Formerly Ag-Ed 1274)

Principles and practices of organizing, developing, and implementing public relations for promoting local programs.

605. Guidance and Group Instruction in Occupational Education.
(Formerly Ag-Ed 1275) Credit 3(3-0)

Guidance and group instruction applied to agricultural occupations and other problems of students in vocational education.

606. Cooperative Work-Study Programs.

Principles, theories, organizations, and administration of cooperative work experience programs.

607. Environmental Education.

Principles and practices of understanding the environment and the interrelated complexities of the environment. The course will include a study of agricultural occupations related to the environment and materials that need to be developed for use by high school teachers of agriculture and other professional workers.

Graduate

These courses are open to graduate students only. See the Bulletin of the Graduate School for course descriptions.

700. Seminar in Agricultural Education.
(Formerly Ag-Ed 1285) Credit 1(1-0)

702. Methods and Techniques of Public Relations.
(Formerly Ag-Ed 1286) Credit 3(3-0)

703. Scientific Method in Research.
(Formerly Ag-Ed 1287) Credit 3(3-0)

704. Philosophy of Occupational Education
(Formerly Ag-Ed 1288) Credit 3(3-0)

705. Recent Developments and Trends in Agricultural Education
(Formerly Ag-Ed 1289) Credit 3(3-0)

706. Comparative Education in Agriculture Credit 3(3-0)

707. Issues in Community Development and Adult Education Credit 3(3-0)

750. Community Problems
(Formerly Ag-Ed 1290) Credit 3(3-0)

751. Methods and Techniques of Supervision in Agricultural Education.
(Formerly Ag-Ed 1291) Credit 3(3-0)

752. Administration and Supervision.
(Formerly Ag-Ed 1292) Credit 3(3-0)

753. Program Planning.
(Formerly Ag-Ed 1293 Credit 3(3-0)

754. History of Agricultural Education.
(Formerly Ag-Ed 1294) Credit 3(3-0)

760. Thesis Research in Agricultural Education.
(Formerly Ag-Ed 1299) Credit 3(3-0)

DEPARTMENT OF ANIMAL SCIENCE

Talmage Brewer, *Acting Chairman*

1. The Department of Animal Science offers courses designed to meet the diverse interests of students by offering a choice of several options of study in which the students may specialize. Students wishing a major in Agricultural Sciences or Agricultural Technology may concentrate in either of the following fields of specialization: Animal Science, Dairy Science, Dairy Manufacturing or Poultry Science.

   The specialized options of the students are particularly well suited for positions as farm managers, professional workers in agricultural industries and government employment.

2. A Pre-Veterinary Science Program, which is an option to the Animal Science curriculum and referred to as the 3-1 plan, is also offered by the Department. The 3-1 designation is given because under the plan, three years of work is done toward the B.S. Degree in Animal Science at A&T, and upon successful completion of the first professional year at Veterinary School the student would be eligible for the Bachelor of Science Degree in Animal Science. One of the main advantages of such a plan is to provide an opportunity for the Animal Science major to obtain both the B.S. and the DVM Degrees without interrupting the continuity of his academic program.

3. The Food Science Program, as outlined provides the opportunity for the student to complete all course requirements for the B.S. degree in Food Science as approved by the Institute of Food Technologists. The program in Food Science relates to the chemical, physical and microbiological changes which occur in foods doing processing, handling and storage. Studies are also designed to develop competencies in sensory evaluation and product development. The first three years of prescribed courses are offered in cooperation with the department of Home Economics.

PROGRAM IN AGRICULTURAL SCIENCE

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
History 100, 101	3	3
Botany 140; Zoology 160	4	4
Mathematics 111, 113	4	4
Agricultural Education 101, 102	1	1
Air or Military Science (Elective)	1	1
	16-17	15-16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Chemistry 101, 102	4	4
Animal Science 301; Poultry Science 317	3	3
Dairy Science 311; Plant Science 110	3	3
Agricultural Economics 330	3	—
Health Education 200	—	2
Air or Military Science (Elective)	2	2
	16-18	15-17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Economics 301; Agricultural Economics 332	3	3
General Microbiology 121	4	—
Agricultural Engineering 114; Soil Science 338	3	4
*Electives (Major Area)	4	7
Electives	3	3
	17	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Animal Science 404; Soil Science 517	3	3
Animal Science 443; Agricultural Engineering 402	2	3
*Electives (Major Area)	9	8
	14	14

Supporting Courses (Electives)

Agricultural Economics 334, 336; Business 440, 458; Speech 250, 251; Agricultural Engineering 303, 522; Industrial Technology 410; Mathematics 240.

*The major electives are to be taken as follows: 12 credits will be selected from supporting courses; 16 credits will be selected from the area of concentration with the approval of the advisor.

PROGRAM IN AGRICULTURAL SCIENCE

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Social Science 100, 101	3	3
Botany 140; Zoology 160	4	4
Mathematics 111, 113	4	4
Agricultural Education 101, 102	1	1
Air or Military Science (optional)	1	1
	16	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Chemistry 101, 102	4	4
Agricultural Engineering 113; Animal Science 301	3	3
Plant Science 110; Poultry Science 317	3	3
Health Education 200	2	—
Air or Military Science (optional)	2	2
	15-17	13-15

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Physics 211, 212	4	4
Soil Science 338	—	4
Chemistry 221; Economics 301	5	3
*Electives (Major Area)	6	3
Electives	3	3
	18	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mathematics 224	—	3
Agricultural Economics 330	3	—
Bacteriology	4	—
*Electives (Major Area)	9	12
	16	15

*The major electives are to be taken as follows: 12 credits will be selected from supporting courses; 16 credits will be selected from the area of concentration with the approval of the advisor.

Supporting Courses (Electives)

Zoology 461, 465, 466, Agricultural Economics 332, 334, 336; Chemistry 222, 251; Speech 250, 251.

PRE-VETERINARY ANIMAL SCIENCE PROGRAM

First Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 111, 113	4	4
History 100, 101	3	3
Botany 140; Zoology 160	4	4
General Agriculture 101, 102	1	1
	15	15

Second Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Chemistry 101, 102	4	4
Animal Science 301; Dairy Science 311	3	3
*Restricted Electives	3	3
Poultry 317	—	3
Health Education 200	2	—
	15	16

Third Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Physics 225, 226	4	4
Animal Science Electives	6	6
Bacteriology 121	—	4
Chemistry 221	5	—
Electives	3	3
	18	17

*See major advisor.

PROGRAM IN FOOD SCIENCE

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Mathematics 111, 113	4	4
English 100, 101	3	3
Chemistry 101, 102	3	3
Chemistry (lab) 111, 112	1	1
Botany 140, Zoology 160	4	4
Agricultural Educ. 101 or Home Econ. 101	1	—
Health Education 200	—	2
	16	17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Electives (Mathematics)a,	3-4	—
Chemistry 221, Elective (Chemistry)b	3	3-5
Chemistry 224 (lab), Bacteriology 121	2	4
Food Science 236, Food Science 337	3	3
History 100, 101, or Economics 301 or 330	3	3
Physical Education 246, 247	1	1
Social Science or Humanities (Elective).	—	3
	15-16	17-19

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Speech 251, Literature (Elective)	3	3
Food Science 401, or 407, or 409 or 505, 631	3	3
Physics 225	4	—
Social Science or Humanities (Elective).	3	3
Electivec	—	3-6
	16	15-18

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Food Science 331, 490	3	1
Food Science 402, 503	3	3
Food Science 405, 511 or 516	3	3
Food Science 521, Food Science (Elective)	3	3
Elective	3	5
	15	15

a Students with interest in graduate school or science emphasis should elect Mathematics 221.

b Students with interest in graduate school or science emphasis should elect Chemistry 222 & 224.

c Students with interest in graduate school or science emphasis should elect Physics 226.

d Senior year for B.S. in Food Science will be completed at North Carolina State University at Raleigh.

COURSES IN ANIMAL SCIENCE

Undergraduate

301. Principles of Animal Science. Credit 3(2-2)
(Formerly 1301)

An introduction to the livestock-meat industry involving the fundamentals of modern livestock production, marketing and processing, including animal nutrition, reproduction, market classes and grades, meat processing and technology and milk production.

302. Judging and Selecting Dairy and Meat Animals. Credit 3(1-4)
(Formerly 1302)

Detailed consideration of factors involved in selection and evaluation of beef cattle, dairy cattle, swine, sheep and horses. Ability to present accurate, clear and concise reasons is stressed.

401. Meat and Meat Products. Credit 3(2-2)
(Formerly 1321)

Slaughtering and cutting carcasses of cattle, sheep and hogs. Factors affecting quality, palatability, and economy in selection of meats.

402. Animal Breeding. Credit 3(2-2)
(Formerly 1322)

A study of the principles of genetics as applied to the improvement of animals and some of the methods and problems of the breeder.

320. Livestock Production. Credit 4(3-2)
(Formerly 1323)

Breeds of beef cattle, swine and sheep—their selection, care and management.

404. Livestock Feeding. Credit 3(3-0)
(Formerly 1324)

Principles of feeding and composition of feeds.

441. Anatomy and Physiology of Farm Animals. Credit 3(2-2)
(Formerly 1341)

Designed to acquaint students with structure and functions of organs, tissues and systems of farm animals.

442. Physiology of Reproduction of Farm Animals. Credit 3(2-2)
(Formerly 1342)

Anatomy of the reproduction organs with detailed coverage of the physiology processes involved and of factors controlling and influencing them.

443. Sanitation and Diseases of Farm Animals. Credit 2(2-0)
(Formerly 1343)

Sanitation and the common diseases of livestock with reference to causes, prevention and treatment and their relation to the environment.

444. Dairy Breeds and Pedigrees. Credit 2(1-2)
(Formerly 1344)

A study of dairy pedigrees and breed families; testing and association methods.

445. Dairy Cattle Judging. Credit 2(1-2)
(Formerly 1345)

Characteristics of dairy breeds and score card requirements; relation of type, form and function to the value of selection. Practice judging.

Advanced Undergraduate and Graduate

604. Dairy Seminar. Credit 1(1-0)
(Formerly 1374)

Assignments of papers on subjects relating to the dairy industry and methods of preparing and presenting such papers.

606. Special Problems. Credit 3(3-0)
(Formerly 1376)

Assignment of work along special lines in which a student may be interested, given largely by project method for individuals either in Diary Manufacturing or Dairy Science. (Prerequisite—three advanced courses in dairying.)

COURSES IN POULTRY SCIENCE

Undergraduate

317. Poultry Production. Credit 3(2-2)
(Formerly 1317)

Practices and principles of poultry production.

330. Fundamentals of Poultry Breeding. Credit 4(3-2)
(Formerly 1338)

Breeding and selection and improvement of stack. (Prerequisite Poultry Sci. 317.)

501. Disease and Parasites of Poultry. Credit 3(2-2)
(Formerly 1356)

Poultry hygiene; causes of diseases; symptoms and control of diseases and parasites. (Prerequisite Poultry Sci. 317.)

503. Incubation and Hatchery Management. Credit 4(2-4)
(Formerly 1357)

Management of poultry farm and hatchery operation. (Prerequisite Poultry Sci. 317.)

505. Processing and Marketing of Poultry Products. Credit 3(2-2)
(Formerly 1358)

Methods of killing, dressing, grading and storage of poultry meats and the grading and storage of eggs; transportation of poultry products and factors influencing price. (Prerequisite Poultry Sci. 317.)

Advanced Undergraduate and Graduate

608. Poultry Seminar. Credit 1(1-0)
(Formerly 1378)

Special articles and reports on subjects relating to the poultry industry will be assigned each student with round table discussion.

609. Poultry Anatomy and Physiology. Credit 3(2-2)
(Formerly 1379)

A course which deals with the structure and function of tissues, organs, and systems of the domestic fowl. (Prerequisite Poultry Sci. 501.)

690. Special Problems in Poultry. Credit 3(3-0)
(Formerly 1380)

Assignment of work along special lines in which a student may be interested, given largely by project method for individuals in Poultry Science. (Prerequisite—Three advanced courses in Poultry Sci.)

GRADUATE COURSES

These courses are open to graduate students only. See the bulletin of the Graduate School for course descriptions.

GRADUATE COURSES IN ANIMAL SCIENCE

690. Selection of Meat and Meat Products. Credit 3(2-2)
(Formerly 1385)

702. Advanced Livestock Marketing. Credit 3(3-0)
(Formerly 1386)

703. Advanced Livestock Production. Credit 3(2-2)

GRADUATE COURSE IN DIARY SCIENCE

705. Advanced Dairy Farm Management. Credit 3(2-2)
(Formerly 1385)

GRADUATE COURSE IN POULTRY SCIENCE

780. Poultry Research. Credit 3(0-6)
(Formerly 1394)

COURSES IN FOOD SCIENCE

Undergraduate

236. Introduction to Food Science. Credit 3(2-2)
(Also Food & Nutrition 236)

An introductory study of the nature of raw foods and behavior of food components during handling and processing. The key methods and principles of food preservation and processing will also be discussed.

Advanced Undergraduate and Graduate

631. Advanced Food Science. Credit 3(2-2)
(Also Food & Nutrition 631)

A study of the chemical and physical properties of components of raw foods and behavior of the food components during processing and storage.

DEPARTMENT OF HOME ECONOMICS

Harold E. Mazyck, *Chairman*

The curricular requirements of the Department of Home Economics have been selected to provide a background for the development of competencies and values which will:

1. Make possible satisfying personal, group, and family relationships as a basis for active participation in a democratic society;
2. Lead to the enrichment of home and family living through the appreciation and use of art and advances in science and technology;
3. Develop understanding and appreciation of varying cultural backgrounds; and
4. Prepare the individual for gainful employment in one of the major areas of the profession.

Home Economics courses are not restricted to majors in the Department. All introductory courses may be taken by any student. Admittance to other courses may be secured upon receiving approval of the instructor.

The Department of Home Economics offers a graduate program leading to the Master of Science degree in Food and Nutrition. This program leads to opportunities as nutrition specialists; food specialists in journalism, radio and television; public health nutritionists; college teachers; and research technicians in food and nutrition.

MAJOR AREAS IN THE DEPARTMENT

The department offers the Bachelor of Science degree with major in the following areas; (1) Child Development—CD; (2) Clothing, Textiles and Related Art—CTA; (3) Food and Nutrition—FN; and (4) Home Economics Education—HEc. The Food and Nutrition major offers options in (1) Food and Nutrition, (2) Therapeutic Dietetics, and (3) Food Administration. Information

concerning the graduation requirements for each of the four areas is given in the following pages. A minimum of 124 semester hours are required to earn a Bachelor of Science degree in Home Economics.

The selection of electives must be approved by the Student's adviser.

PROGRAM FOR THE MAJOR IN CLOTHING, TEXTILES AND RELATED ART

This major leads to professional opportunities in clothing, textiles, fashion and business.

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Home Economics 101	1	—
Mathematics 101, 102	3	3
Art 100	3	—
Clothing, Textiles & Related Art 122, 123, 124	5	3
English 100, 101	3	3
Food and Nutrition 133	—	3
History 100	—	3
Physical Education 101, 102	1	1
	16	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
History 101	3	—
Clothing, Textiles & Related Art 321	—	4
Art 226	3	—
Humanities 200, 201	4	4
Home Economics 400, 401	3	3
Health Education 200	—	2
	16	16

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Clothing, Textiles & Related Art 423	4	—
Clothing, Textiles & Related Art 424, 426	—	7
Psychology 320	3	—
Sociology 100	3	—
French 100	3	—
Anthropology	—	3
Electives	2	5
	15	15

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Clothing, Textiles & Related Art 621, 521, 622	3	6
Electives	13	9
	16	15

In addition to the above schedule CTRA majors are required to complete a minimum of nine (9) semester hours in Related Art courses and Clothing and Textiles courses to complete a minimum of 36 semester hours.

PROGRAM FOR THE MAJOR IN FOOD AND NUTRITION

A major in food and nutrition has two options: Option I: Food and Nutrition and Option II: Dietetics. This program offers preparation for technical laboratory work leading to advanced study and meets the requirements of the American Dietetic Association for approved internships.

PROGRAM FOR THE OPTION IN FOOD AND NUTRITION

The option in food and nutrition provides preparation for a position as an assistant technician in a research laboratory but it is designed primarily for entrance into graduate study. A student desiring to meet the requirements of The American Dietetic Association for an approved internship may qualify by taking courses listed under *Requirements for Areas of Specialization in Dietetics.*

OPTION I: FOOD AND NUTRITION

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Home Economics 101	1	—
Mathematics 111, 112	4	4
Physical Education 101, 101	1	1
History 100, 101	3	3
Chemistry 106, 116 and 107, 117	5	5
	17	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Clothing, Textiles and Related Art 122	2	—
Zoology 160, 461	4	4
Humanities 200, 201	3	3
Bacteriology 121	—	4
Psychology 320	3	—
Chemistry 221, 223 and 222, 224	5	5
	17	16

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Food and Nutrition 337, 338	3	3
Chemistry 231, 232 and 651	5	5
Food and Nutrition 130, 331	4	2
Food and Nutrition 436	—	3
Physics 201	3	—
Electives	2	3
	17	16

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Home Economics 401, 403	3	3
Food and Nutrition 635, 637	3	3
Electives	7	6
	13	12

PROGRAM FOR THE OPTION IN DIETETICS

Minimum Academic Requirements of The American Dietetic Association for Specialization in an Area of Dietetics

The program outlined below meets the *minimum basic requirements* of The American Dietetic Association. Areas of specialization should be selected in consultation with the academic advisor. Completion of the basic plus the area of specialization requirements which follow will prepare a graduate for an approved American Dietetic Association internship.

OPTION 2: DIETETICS

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Zoology 160, 461	4	4
Home Economics 101	1	—
Mathematics 101, 102	3	3
History 100, 101	3	3
Physical Education 101, 101	1	1
Clothing, Textiles and Related Art 122	—	2
	15	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Chemistry 104, 114 and 105, 115	4	4
Humanities 200, 201	3	3
Psychology 320	3	—
Food Administration 344	3	—
Food Administration 345, 346	—	6
Home Economics 401, 403	3	3
	16	16

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 301	3	—
Food and Nutrition 337	3	—
Bacteriology 121	4	—
Psychology 435	3	—
Food Administration 448	—	4
Food and Nutrition 130, 331	4	2
Area of Specialization Requirements and/or Electives	—	11
	17	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Area of Specialization Requirements and/or Electives	14	13
	14	13

REQUIREMENTS FOR AREAS OF SPECIALIZATION IN DIETETICS

General Dietetics

Chemistry 251		Elementary Biochemistry	2
Chemistry 252		Elementary Biochemistry Laboratory	1
Sociology 100		Principles of Sociology	3
Home Economics 338		Diet Therapy	3
			9
Recommended			
Mathematics 224 or Mathematics 240		Introduction to Probability and Statistics	3
		Introduction to the Programming of Digital Computers	3

Clinical and Therapeutic

Chemistry 251	Elementary Biochemistry	2
Chemistry 252	Elementary Biochemistry Laboratory	1
Sociology 100	Principles of Sociology	3
Home Economics 338	Diet Therapy	3
Home Economics 630	Advanced Nutrition	3
Mathematics 224	Introduction to Probability and Statistics	3
		15

Community Nutrition

Chemistry 251	Elementary Biochemistry	2
Chemistry 252	Elementary Biochemistry Laboratory	1
Sociology 100	Principles of Sociology	3
Home Economics 338	Diet Therapy	3
Home Economics 630	Advanced Nutrition	3
Mathematics 224 or	Introduction to Probability and Statistics	3
Sociology 302	Social Statistics I	3
		15

Management

Business Administration 204	Introduction to Business	3
Business Administration 305	Principles of Management	3
Business Administration 569	Personnel Organization and Management	3
Accounting 221	Principles of Accounting I	3
Accounting 222	Principles of Accounting II	3
Accounting 446	Managerial Accounting	3
Mathematics 224 or	Introduction to Probability and Statistics	3
Mathematics 240	Introduction to the Programming of Digital Computers	3
		21

PROGRAM FOR THE MAJOR IN CHILD DEVELOPMENT

This program provides a broad knowledge of children through the study of their growth, development and relationships. Students can select supporting courses in psychology, sociology, food and nutrition or other areas of special interest. A variety of appropriate experiences with young children, their families and community agencies is an integral part of the program. Employment opportunities for students in this curriculum include teachers and/or supervisors of pre-school groups (Head Start, Day Care, Nursery Schools, public and private); Child Care Specialists in Federal, State, and County Service Programs; Child and Family Life Coordinators with Health Services, Public School Programs, Community Service Agencies; and for graduate work in teaching and research.

CHILD DEVELOPMENT CURRICULUM

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 101, 102, or 111	3	3
History 100, 101	3	3
Physical Education 101, 102	1	1
Clothing, Textiles & Related Art 122	2	—
Home Economics 101	1	—
Food and Nutrition 133	3	—
Child Development 315	—	3
Health Education 200	—	2
	16	15

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Psychology 320	3	—
Child Development 311, 312	3	3
Physical Science 100	4	—
Zoology 461	—	4
Art 101 or 226	3	—
Sociology 100	—	3
Speech & Drama 250	—	2
Child Development 414 Materials, Methods & Evaluation I	—	3
	16	18

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Child Development 416 Play-Materials & Equipment	—	*3*
Child Development 415 Materials, Methods & Evaluation II	*3*	—
Child Development 417 Parent Education	2	—
Food and Nutrition 437	3	—
Home Economics 400, 403	3	3
Child Development 413 Day Care Services	—	3
Psychology 434, 435 Abnormal Psychology Educational Psychology	3	3
Music 609 Music in Early Childhood	—	3
Electives	3	—
	17	15

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Child Development 418 Curriculum Planning	3	—
Child Development 519 Practicum in Nursery School	3	—
Child Development 419 Practicum in Community Agencies	3	—
Child Development 612	—	2
Home Economics 401	—	3
Electives	6	7
	15	12

PROGRAM FOR THE MAJOR IN HOME ECONOMICS EDUCATION

The basic program in Home Economics Education is designed for students to develop competencies needed for teaching Consumer-Home Economics in public schools. Focus areas provide opportunities for the student to gain greater depth in subject matter; increased understanding of special groups of learners; preparation for interrelated professional careers with business, industry, and service organizations concerned with individual and family development. The program also served as an exploratory base for graduate study.

FOCUS AREAS

Adult Education	Education for Disadvantaged and/or Handicapped
Child Development & Family Relations	Food and Nutrition
Clothing and Textiles	Middle School Education
Consumer Education & Management	Occupational Education & Career Awareness

The student must seriously assume the responsibility of selecting the focus area and electives to complete requirements of the program based on individual ability, needs, and interests by the end of the freshman year. The selection of electives should be made in consultation with the student's advisor.

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
History 100, 101	3	3
Sociology 100 or 200	—	3
Home Economics 101	1	—
Physical Education 101	1	—
Mathematics 101, 102	3	3
Clothing, Textiles & Related Art 122	2	—
Food and Nutrition 130	4	—
Health Education 200	—	2
Home Economics 200	—	2
	17	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Chemistry 104, 114; 105, 115	4	4
Clothing, Textiles & Related Art 123	3	—
Humanities 200, 201	3	3
Art 226	3	—
Speech 250	—	2
Education 301	—	2
Psychology 320	3	—
Clothing, Textiles & Related Art 321	—	4
Food and Nutrition 331	—	2
	16	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Home Economics 300	—	3
Economics 301	—	3
Child Development 311	3	—
Food and Nutrition 337	3	—
Home Economics 400	3	—
Home Economics 403	—	3
Zoology 461 or 469	—	4
Home Economics 500	—	3
Home Economics 502, 503	4	—
Electives	3	—
	16	16

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Education 400	3	—
Home Economics 401	3	—
Home Economics 505	3	—
Education 528, 560	3	6
Home Economics 604	—	2
Electives	4	2
	16	10

Junior Year Alternate

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Home Economics 300	3	—
Child Development 311	3	—
Food and Nutrition 337	3	—
Home Economics 400	3	—
Education 400	3	—
Home Economics 401	—	3
Home Economics 403	—	3
Zoology 461 or 469	—	4
Home Economics 500	—	3
Education 528	—	3
Electives	3	—
	18	16

Senior Year Alternate

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Economics 301	—	3
Home Economics 502	—	2
Home Economics 504	—	2
Home Economics 505	—	3
Education 560	6	—
Home Economics 604	2	—
Electives	2	4
	10	14

9 - 12 hours—Electives

Hours for graduation 124 - 127

Curriculum—Suggested Courses

I. General Education		53 Semester Hours
Communication Skills		8
212 - 100 Freshman Composition I	3 S.H.	
212 - 101 Freshman Composition II	3 S.H.	
215 - 250 Speech	2 S.H.	
Humanities and Art		9
212 - 200 Survey of Humanities I	3 S.H.	
212 - 201 Survey of Humanities II	3 S.H.	
211 - 101 Design I	3 S.H.	
Social Science		15
223 - 100 History of World Civilization I	3 S.H.	
233 - 101 History of World Civilization II	3 S.H.	

320 - 320 General Psychology 3 S.H.
235 - 100 Principles of Sociology 3 S.H.
or
235 - 200 Introduction to Anthropology 3 S.H.
231 - 301 Principles of Economics 3 S.H.
or
231 - 302 Principles of Economics 3 S.H.

Natural Science 12

223 - 101 General Chemistry I 4 S.H.
or
223 - 104 General Chemistry IV 4 S.H.
223 - 102 General Chemistry II 4 S.H.
or
223 - 105 General Chemistry V 4 S.H.
221 - 461 Human Anatomy & Physiology 4 S.H.
or
221 - 469 Human Anatomy 4 S.H.

Mathematics 6

225 - 101 Freshman Mathematics I 3 S.H.
225 - 102 Freshman Mathematics II 3 S.H.

Physical Education and Health 3

330 - 101 Fundamentals of Physical Education 1 S.H.
330 - 200 Health Education 2 S.H.

II. Technical Education 48 - 49 Semester Hours

Food Nutrition 10-9

170 - 130 Food Preparation 4 S.H.
170 - 133 Family Foods 3 S.H.
(unless exempted by performance test)
or
170 - 331 Meal Planning & Table Service 2 S.H.
170 - 337 Nutrition & Dietetics 3 S.H.
or
170 - 435 Nutrition Education 3 S.H.

Clothing, Textiles and Related Art 9

170 - 122 Clothing for the Family 2 S.H.
(unless exempted by performance test)
170 - 123 Textiles 3 S.H.
170 - 321 Family Clothing Construction 4 S.H.
(unless exempted by performance test)

Housing		7
170 - 400 Contemporary Housing	3 S.H.	
170 - 502 Equipment	2 S.H.	
170 - 503 Interior Design	2 S.H.	
or		
170 - 504 Home Furnishing	2 S.H.	
Child Development and Family Relationship		6
170 - 311 Child Development I	3 S.H.	
170 - 401 Marriage and Family Relationship	3 S.H.	
Consumer Education & Management		6
170 - 403 Consumer Problems	3 S.H.	
170 - 505 Home Management Residence	3 S.H.	
Home Economics Education		11
170 - 101 Introduction to Home Economics	1 S.H.	
170 - 200 Introduction to Home Economics Education	2 S.H.	
170 - 300 Program Planning in Home Economics	3 S.H.	
170 - 500 Occupational Home Economics	3 S.H.	
170 - 604 Seminar	2 S.H.	

III. Professional Education	14 Semester Hours
310 - 301 Philosophical and Sociological Foundations of Education	2 S.H.
310 - 400 Psychological Foundations of Education—Growth and Development	3 S.H.
210 - 528 Methods and Evaluation in Home Economics	3 S.H.
310 - 560 Observation and Student Teaching	6 S.H.
IV. Electives—Focus Areas	9 - 12 Semester Hours

COOPERATIVE PROGRAM IN FOOD SCIENCE

The Departments of Home Economics and Animal Science offer the Bachelor of Science degree in Food Science in cooperation with North Carolina State University at Raleigh. The Food Science Program, as outlined with the offerings of the Department of Animal Science, provides an opportunity for the student to complete all course requirements for the Bachelor of Science degree as approved by the Institute of Food Technologists.

The first three years of prescribed work are completed at North Carolina

Agricultural and Technical State University and the thirty semester hour (30) concentration in Food Science required during the fourth year is completed at North Carolina State University at Raleigh.

COURSES IN CHILD DEVELOPMENT

Undergraduate

311. Child Development I. Credit 3(3-0)

A study of the Child's sequential development at different stages—conception through late childhood. Laboratory observation required.

312. Child Development II. Credit 3(3-0)

A comprehensive study of the physical, mental, and psychological factors of development for the late childhood through adulthood. Observation required. (Prerequisite CD 311)

315. Introduction to Child and Family Development. Credit 3(2-2)

A study of the historical background and present day philosophies of child development and programs for young children. Laboratory observation and participation required.

414. Materials, Methods and Evaluation I. Credit 3(2-2)

Materials, methods, and evaluations used in the development of cognitive, affective, and psychomotor behaviors. Focus areas: Language Arts, Creative and Dramatic Arts. Laboratory experiences required. (Prerequisite CD 311.)

415. Materials, Methods and Evaluation II. Credit 3(2-2)

Materials, methods, and evaluation used in the development of cognitive, affective and psychomotor behaviors. Focus areas: Mathematics, Health and Safety, Science and Social Studies. Laboratory experiences required. Prerequisite CD 311.)

416. Play Materials and Equipment for the Preschool Child. Credit 3(3-0)

The importance of play in all aspects of child development as related to cognitive, affective, and psychomotor behaviors. Materials, equipment, and their uses in a functional school environment will be explored. (Prerequisite CD 414, 415.)

417. Parent Education. Credit 2(2-0)

Parental interaction in the child's development at home, in the school, and in the community. The effective use of assistance and volunteers in the school environment.

418. Curriculum in Preschool Education. Credit 3(3-0)

Curriculum planning, the integrated day, scheduling, room arrangement and the classroom environment. (Prerequisite CD 414, 415, 416.)

419. Practicum in Community Services. Credit 3(1-4)

Practical field experiences in community service agencies concerned with all areas of child care and family development. Emphasis will be placed on services to young children. Field placement required. (Prerequisite CD 413.)

420. Day Care Service. Credit 3(3-0)

A study of the organization, administration, operation and licensing of day care services. Community personnel, services and facilities will be incorporated in the study of current issues related to day care. Field observation required. (Prerequisite CD 311.)

519. Practicum in Nursery School. Credit 3(1-4)

Practice teaching with a group of preschool children. Prerequisite CD 414, 415, 416.) CD 418 may be taken concurrently.

612. Senior Seminar. Credit 2(2-0)

A review of recent research findings and discussions of current trends and information related to young children.

COURSES IN CLOTHING, TEXTILES AND RELATED ART

Undergraduate

122. Clothing for the Family. Credit 2(2-0)
(Formerly CTA 1802)

A study of the individual clothing needs of family members, wardrobe planning; socio-economic and psychological aspects of clothing; buying principles, procedures and practices.

123. Textiles. Credit 3(2-2)
(Formerly CTA 1820)

Textile fibers, their sources, characteristics, merits, limitations and production into fabric; the hygenic aspects, use and care of fabrics.

124. History of Costume. Credit 3(3-0)
(Formerly CTA 1824)

A study of the history of costume from ancient to modern times.

125. History of Textiles.

A study into the historic background of textiles from ancient civilization to present day.

321. Family Clothing Construction. Credit 4(1-6)
(Formerly CTA 1821)

Fundamental principles of clothing construction based on the use of the commercial pattern. A consideration of the clothing needs of family members with laboratory experiences to meet individual needs. Prerequisite: CTA 122.

323. Home Crafts. Credit 3(1-4)

Instruction in crafts and accessories for the home, including draperies, curtains, cornices, valances, swags, covers for chairs, tables, lampshades, bedspreads, rugs, and needlepoint.

422. Dress Design and Pattern Study. Credit 3(1-4)
(Formerly CTA 1822)

A study of flat pattern making and variations in commercial patterns.

423. Advanced Clothing Construction. Credit 4(1-6)
(Formerly CTA 1823)

The application of art principles in creating dress designs by draping methods. Emphasis on the use of new fabrics and trends as creative expression in clothing construction.

424. Tailoring for Women. Credit 4(2-4)
(Formerly CTA 1844)

A study of the principles of custom tailoring as they apply to women's coats and suits. Laboratory experiences in the construction of women's coats and suits. Prerequisite: CAT 423.

426. Problems in Clothing, Textiles and Related Art. Credit 3(0-6)
A or B
(Formerly CTA 1826) Credit 3(0-6)

Independent study on special problems in clothing, textiles or related art.

521. Workroom Techniques in Clothing, Textiles or Related Art.
(Formerly CTA 1861) Credit 6(1-0)

A course designed to give the student practical experiences in one of the areas of clothing, textiles or related art.

522. Millinery. Credit 3(1-4)
(Formerly 1842)

An introduction to the use of various millinery equipment and materials.

Advanced Undergraduate and Graduate

620. Fashion Coordination. Credit 1(1-0)
(Formerly CTA 1870)

A study of the factors which influence the fashion world; trends, designers, centers and promotion. Field trips to fashion centers.

621. Seminar in Clothing, Textiles and Related Art.
A or B Credit 1(1-0)
(Formerly CTA 1871)

A study of the economic aspects of clothing and household textiles as they relate to the needs and resources of families in their quest for maximum satisfaction and serviceability.

622. Economics of Clothing and Textiles. Credit 2(2-0)
(Formerly CTA 1872)

A study of the economic aspects of clothing and household textiles as they relate to the needs and resources of families in their quest for maximum satisfaction and serviceability.

623. Textile Chemistry. Credit 3(1-4)

An introduction to the chemistry of the major classes of natural and man-made fibers, including their structure, properties, and reactions. Laboratory work will include consideration of chemical damage to fabrics, finishes and dyes. Prerequisites: Chemistry 104 and 105, Textiles 123.

624. Advanced Textiles. Credit 3(2-2)
(Formerly CTA 1873)

A study of the physical and chemical properties of textile fibers and fabrics with emphasis on recent scientific and technological developments.

625. Experimental Clothing and Textiles. Credit 3(1-4)

Experimentation with new woven fabrics and non-textiles such as furs, leathers, suedes.

COURSES IN FOOD AND NUTRITION

Undergraduate

130. Food Preparation. Credit 4(2-4)
(Formerly F&N 1830)

The application of scientific principles to food preparation and preservation. Prerequisites: Chemistry 102 or 105, or concurrent.

131. Elementary Food Preparation. Credit 4(2-2)

A course designed to create an understanding of the basic techniques used in food preparation and to develop skill in using these procedures in the production of standard products.

133. Family Food. Credit 3(2-2)

A study of the application of elementary principles of nutrition and cookery to the planning, preparation and serving of simple meals designed to meet the needs of all family members.

331. Meal Management. Credit 2(1-2)

Consideration of the management of human and physical resources in the planning, preparing and serving of meals to meet the needs of families of varying sizes, incomes and ages. Prerequisite: Home Economics 130 or 131.

332. Cultural Aspects of Food. Credit 2(2-0)

A study of the influence of cultural and socio-economics factors on food patterns and nutritional status of selected ethnic groups.

337. Introduction to Human Nutrition. Credit 3(3-2)
(Also Food Science 337)

An introductory approach to the principles of nutrition as they relate to human requirements for food nutrients; significance and mechanism through which nutrients meet these biological needs during the life cycle. Prerequisites: Chemistry 105, 115 or 222, 224 and Biology 461.

338. Diet Therapy. Credit 3(2-2)
(Formerly F&N 1828)

A study of dietary modifications necessary in the treatment of pathologic conditions. Prerequisite: F&N 337.

344. Institution Organization and Management I. Credit 3(3-0)
(Formerly IM 1924)

A study of the organization, management and administration of food service establishments.

345. Institution Organization and Management II. Credit 3(3-0)
(Formerly IM 1925)

A continuation of IM 344 with emphasis on personnel management.

346. Institution Purchasing. Credit 3(2-2)
(Formerly IM 1946)

A study of the problems involved in the purchase of food and other expendable supplies for food service establishments.

436. Introduction to Food Science. Credit 3(2-2)

A study of the chemical and physical properties of components of basic raw foods and behavior of the components during processing and storage. Prerequisites: Chemistry 105, 115, or 222, 224.

439. Child Nutrition. Credit 3(3-0)

A course designed to study the nutritional influence on the growth and development of humans through adolescence with emphasis on the interpretation of relevant research. Prerequisite: Home Economics 337.

447. Institution Equipment. Credit 5(3-4)
(Formerly IM 1947)

A study of the selection, care and use of equipment for quantity food preparation and service. Interpretation of blueprints and specifications will be considered.

448. Quantity Cookery. Credit 4(1-6)
(Formerly IM 1948)

The application of the principles of cookery to the preparation and service of food for group feeding with emphasis on menu planning, work schedules, cost and portion control. Prerequisite: F&N 130.

535. Nutrition Education. Credit 3(3-0)
(Formerly F&N 1845)

A course designed to assist in the development of nutrition education programs in the school and community.

540. Geriatric Nutrition. Credit 2(2-0)

A study of the application of the principles of nutrition in relation to body changes in the elderly citizens. Prerequisite: Home Economics 337.

544. Field Experience in Food Administration. Credit 3(0-6)
(Formerly IM 1964)

Individualized experiences in off-campus food service establishments.

549. Advanced Quantity Cookery. Credit 3(2-2)
(Formerly IM 1949)

Continuation of IM 448.

Advanced Undergraduate and Graduate

630. Advanced Nutrition. Credit 3(3-0)

Intermediate metabolism and interrelationships of organic and inorganic food nutrients in human biochemical functions. Prerequisites: Home Economics 337 and Chemistry 251, 252 or equivalent.

631. Advanced Food Science. Credit 3(2-2)
(Also Food Science 631)

Advanced discussion and experimentation with the chemical and physical changes of food during processing and storage. Prerequisite: Home Economics 436 or equivalent.

632. Food and Nutrition in Early Childhood. Credit 3(3-0)

A study of the elementary principles of nutrition and their influence on the growth and development of children. Special consideration is given to nutrition education techniques to be used with children and parents in preschool centers and elementary schools.

635. Introduction to Research Methods in Food and Nutrition. Credit 3(0-6)

Laboratory experiences in the use of methods applicable to food and nutrition research. Prerequisite: Consent of the Instructor.

636. Food Promotion. Credit 4(1-6)

A course which gives experiences in the development and testing of recipes. Opportunities will be provided for demonstrations, writing and photography with selected businesses.

637. Special Problems in Food and Nutrition. Credit 3(0-6)

Individualized research on a selected problem in food or nutrition. Prerequisite: Home Economics 635.

645. Special Problems in Food Administration. Credit 2(0-4)
(Formerly IM 1975)

Individual work on special problems in food administration.

646. Readings in Food Administration. Credit 1(1-0)

A study of food administration through reports and discussion of articles in current trade periodicals and scientific journals.

647. Seminar in Food Administration. Credit 1(1-0)
(Formerly IM 1977)

Discussion of problems involved in the organization and management of specialized food service areas.

Graduate

730. Nutrition in Health and Disease. Credit 5(3-4)

Significance of nutrition in health and disease. Consideration of: (1) the methods of appraisal of human nutritional status to include clinical, dietary, biochemical, and anthropometric techniques, (2) various biochemical parameters used to diagnose and treatment of the disorders, and (3) the role of diet as a therapeutic tool. (Prerequisite: Home Economics 630 or equivalent.

733. Nutrition During Growth and Development. Credit 3(2-2)

Nutritional, genetical and environmental influences on human growth and development. (Prerequisite: Home Economics 603 or equivalent).

734. Nutrition Education. Credit 3(2-2)
(Formerly F&N 1886)

Interpretation of the results of nutrition research for use with lay groups. Preparation of teaching materials based on research for use in nutrition education programs.

735. Experimental Foods. Credit 4(1-6)
(Formerly F&N 1885)

Objective and subjective evaluation of food; development and testing of recipes; experimentation with food. (Prerequisite: Food and Nutrition 436 or its equivalent.)

736. Research Methods in Food and Nutrition. Credit 4(2-6)
(Formerly 1887)

Experimental procedures in food and nutrition research; care of experimental animals; analysis of food, body fluids, animal tissues. (Prerequisites: Analytical Chemistry and Biochemistry.)

738. Food Testing and Evaluation Credit 3(2-2)

A study of factors affecting the color, flavor, odor and texture of foods through the use of subjective and objective testing methods. (Prerequisite: H.Ec. 436 or equivalent.)

739. Thesis Research. Credit 3(0-6)

Research problems in food or nutrition.

740. Community Nutrition. Credit 3(3-0)

(Individualized work or team teaching or guest speakers)
Application of the principles of nutrition to various community nutrition problems of specific groups (geriatrics, preschoolers, adolescents and expectant mothers). Evaluation of nutrition programs of public health and social welfare agencies at local, state, federal and international levels.

741. Current Trends in Food Science. Credit 3(3-0)

Recent developments in food science and their implications for teachers, nutritionists, extension workers, and dietitions.

742. Cultural and Social Aspects of Food and Nutrition. Credit 3(3-0)

Sociological, psychological, and economical background of ethnic groups and their influence on food consumption patterns, and nutritional status.

743. Food Preservation. Credit 3(2-2)

A study of current methods of preserving foods—canning, freezing, dehydration, radiation and fermentation. (Prerequisite: H.Ec. 436 or equivalent.

744. Seminar in Food & Nutrition. Credit 2(2-0)
(Required of all graduates in Food and Nutrition.)

Lecture and discussion by faculty, students, and guests.

745. Practicum in Food or Nutrition. Credit 3(0-6)

Field experiences with private or public agencies.

746. Internship in Home Economics Education. Credit 6(0-12)

Internship in Home Economics Education is required of any person who has not had previous teaching experience. Internship must include an extended period of involvement in a school's program during a regular school term. Internship will provide opportunity for participation in the total school program including, curriculum, work with teachers, administrators, students and parents.

COURSES IN HOME ECONOMICS

Undergraduate

101. Introduction to Home Economics. Credit 1(1-0)
(Formerly HEc 1801)

A course designed to assist students in making personal adjustments to college living; an introduction to the board areas of home economics; a study of the home economics curricula and professional opportunities in the field.

104. The Individual and His Family. Credit 2(2-0)
(Formerly HEc 1804)

A study of the interrelationships of the individual and his family throughout the life cycle with emphasis on health as it is related to the well-being of the family.

105. Social Usage. Credit 1(1-0)
(Formerly HEc 1805)

A course intended for the person who desires to enrich living with graciousness and accepted standards in our present day society.

200. Introduction to Home Economics Education. Credit 2(2-0)

Historical background, philosophy and objectives of education in the United States; educational, social and political movements affecting Vocational Education in the public schools with emphasis on the requirements of North Carolina.

300. Program Planning In Home Economics K-12. Credit 3(3-0)

Planning home economics programs for occupational education in public schools K-12. (Career awareness, middle school, exploratory, comprehensive occupational home economics, youth and adult programs.)

301. Health and Home Nursing. Credit 2(2-0)

Principles and attitudes in home care of the sick, the handicapped, and the aged; prevention of illness and promotion of health; prenatal care; prevention of home accidents.

400. Contemporary Housing. Credit 3(2-2)
(Formerly HEc 1920)

A study of problems in house planning to meet family needs. Emphasis is placed on the study of house designs, methods of financing and location.

401. Marriage and Family Relations. Credit 3(3-0)
(Formerly HEc 1941)

A study of the interpersonal relationships in contemporary family life; emphasis on the changing nature of family adjustments, goals, values, and roles.

403. Consumer Problems. Credit 3(3-0)
(Formerly HEc 1940)

Basic principles involved in managing personal and family finances with emphasis on buying and consumption practices.

500. Occupational Home Economics. Credit 3(1-4)

Organization and administration of occupational wage-earning programs at the upper high school level—methods and instructional media. Work experience required in at least one area of a home economics occupational cluster.

502. Household Equipment. Credit 2(1-2)
(Formerly HEc 1942)

The application of principles and techniques relating to selection, care and use of household equipment.

503. Interior Design. Credit 2(1-2)
(Formerly HEc 1943)

A study of residential interiors with emphasis on art principles and their relationship to furniture styles and accessories in decorating the home.

504. Home Furnishings. Credit 2(1-2)
(Formerly HEc 1944)

A study of the problems in home furnishings with emphasis on the selection, care, use and practical ways of making the home attractive.

505. Home Management Residence. Credit 3(1-4)
(Formerly HEc 1945)

Designed to give students experiences in applying the principles of management and interpersonal relations to group living. Prerequisites: HEc 403 and F&N 331 or concurrent.

Advanced Undergraduate and Graduate

602. Adult Education in Home Economics. Credit 3(3-0)
(Formerly HEc 1972)

An overview of adult homemaking education: organization, program planning, teaching techniques and evaluation. Laboratory experience will be provided by working with out-of-school groups.

603. Special Problems in Home Economics I. Credit 3(1-4)
(Formerly HEc 1973)

Problems in the various areas of home economics may be chosen for individual study.

604. Seminar in Home Economics Education. Credit 2(2-0)

Consideration of problems resulting from the impact of social change on the various fields of home economics, review of research and professional development.

605. Home Economics Summer Study Abroad. Credit 6(0-12)
(Formerly HEc 1975)

A course designed to provide opportunity for students and specialists to study historic and contemporary points of interest abroad. Exposure to customs, cultures and industries in an international setting will provide the basis for broader background and experience in selected areas of home economics.

Graduate

706. Special Problems in Home Economics II. Credit 3(3-0)
(Formerly HEc 1986)

A study of research and major contemporary issues with consideration of their impact on trends and new directions in home economics.

DEPARTMENT OF PLANT SCIENCE AND TECHNOLOGY

Samuel J. Dunn, *Chairman*

The programs in this department are designed to give the students broad scientific and technical training which will enable them to take advantage of the many job opportunities available in the various areas of concentration. There is considerable flexibility in the programs to allow for a choice of electives which may better serve the individual needs of the students.

The department offers training that is especially attractive to prospective majors who have aptitudes in science and technology and who desire to apply their training in the pursuit of careers in Modern Agricultural Science and Technology or to train further at the graduate level.

Majors in Agricultural Science or Agricultural Technology may elect options in (1) Agronomy with emphasis on Crop Science or Soil Science, (2) Horticulture, or (3) Agricultural Engineering by following the appropriate curriculum outlined in the catalog. The department places a great deal of emphasis on Earth and Environmental Science in order to provide instruction for the general education requirements of students who seek broader understanding of their rather complex surroundings. The department offers an option in Earth and Environmental Science.

PROGRAMS IN AGRICULTURAL TECHNOLOGY

The following options are offered in the department of Plant Science and Technology leading to the B.S. degree in Agricultural Technology.

Option A—(Horticulture, Plant Science and Soil Science)

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 101, 102	3	3
History 100, 101	3	3
Botany 140, 200, 160	4	4
Mathematics 101, 102	3	3
Agricultural Education 101, 102	1	1
Air or Military Science of (Elective)	1	1
	15	15

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Chemistry 106, 107	3	3
Chemistry 116, 117	0	0
Plant Science 110;	2	2
Soil Science 338	3	4
Animal Science 301;		
Poultry Science 317	3	3
Health Education 200;		
Plant Science Seminar 520	2	1
Air or Military Science		
of (Electives)	2	2
	18	18

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Bacteriology 121;		
Plant Pathology 530	4	4
Economics 301;		
Agricultural Economics 330	3	3
Technical Physics 211, & 212	4	4
*Electives (Major Area)	6	6
	17	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Plant Propagation 334,		
Geology 309	3	3
Agricultural Engineering 303 & 304	3	3
Plant Science Seminar 520	1	1
*Electives (Major Area)	10	10
	17	17

OPTIONAL PROGRAMS IN AGRICULTURAL SCIENCE

The following options are offered in the department of Plant Science and Technology leading to the B.S. degree in Agricultural Science:

A. Options in Horticulture, Plant Science, or Soil Science
B. Option in Agricultural Engineering
C. Option in Earth and Environmental Science

*The 30 credits required as major electives in Plant Science and Soil Science are to be taken such that: 12 credits are elected from supporting courses; 18 credits are elected from the area of concentration with approval of the advisor.

OPTION A — Horticulture, Plant Science, Soil Science

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 101, 102	3	3
History 100,101	3	3
Botany 140; Zoology 160	4	4
**Mathematics 111, 113	4	4
Agricultural Education 101, 102	1	1
Air or Military Science or (Elective)	1	1
	16	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Chemistry 106, 107	3	3
Chemistry 116, 117	2	2
Agricultural Engineering 113, Animal Science 301	3	3
Plant Science 110	—	3
Poultry Science 317	3	3
Health Education 200	2	—
Air or Military Science or (Elective)	2	2
	18	19

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
**Physics 211, 212	4	4
Chemistry 221, 222	3	3
Soil Science 338	—	4
Economics 301	—	3
*Electives (Major Area)	7	2
Electives	4	2
	18	18

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mathematics 224	3	—
Agricultural Economics 330	—	—
Bacteriology 121	—	4
*Electives (Major Area)	9	12
	12	16

**Agric. Engr. Majors—Math 110, 116, 117
Physics 221, 222

Supporting Courses

Mathematics 221, 222.
Bacteriology 421; Botany 430, 432, 530; Chemistry 221, 222, 431, 441, 442.
Zoology 466, 468, Agricultural Economics 332; Chemistry 222, 251.
Economics 302, 401, 501, 415, 310.

OPTION B — AGRICULTURAL ENGINEERING

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 101, 102	3	3
History 100, 102	3	3
Botany 140; Zoology 160	4	4
Mathematics 116, 117	5	5
Agricultural Education 101, 102	1	1
	16	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Chemistry 106, 107	3	3
Chemistry 116, 117	2	2
Physics 221, 222	5	5
Plant Science 110; Agric. Eng. 113	3	3
Electives	2	2
	18	18

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Soil Sci. 338; Bacteriology 121	4	4
Economics 301, Agric. Econ., 330	3	3
Mechanical Engr. 335, 336	4	4
Poultry Sci., 317, Animal Sci. 301	3	3
Agric. Engr. 303, 304	3	3
	17	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Agric. Engr. 401, 402	3	3
Mechanical Engr. 337, 361	3	3
Agric. Engr. 523	3	—
Mech. Engr. 441	—	3
Electives	7	7
	16	16

Supporting Courses

Agricultural Engineering 524, 600, 602; Mechanical Engineering 260, 442, 560; Mach. 300.

OPTION C — EARTH AND ENVIRONMENTAL SCIENCE

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Freshman Composition 100, 101	3	3
History of World Civil. 100, 101	3	3
Math 111, 113	4	4
Phys. Ed. 101, 102 Fund. of Phys Ed.	1	1
Air or Military Sci.	(1)	(1)
Plant Sci. 110	3	3
Botany 140 General Bot.	—	4
Zoology 160 Gen. Zoo.	4	—
	18	15

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities	3	3
Chemistry I & II 101, 102	3	3
Chemistry Lab. 111, 112	1	1
Bacteriology 121	—	4
Soil Sci. 338 Fund. of Soil Sci.	4	—
Math 224	3	—
Earth Sci. 309	—	3
Geography 322 Economic Geog.	—	3
Air or Military Sci.	(1)	(1)
Plant Sci. 300	3	—
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Chemistry 221, 222 Organic Chem I & II	3	3
Econ. 301, 302, Prin. of Econ.	3	3
Physics 225, 226 College Phys. I & II	4	4
Earth Sci. 330 Climate & Civil.	3	—
Ag. Eng. 304 Structures & Environ.	—	3
Ag. Eng. 401 Survey, Drainage	—	3
Air or Military Science	(1)	(1)
Math. 240 Intro. to Programming	3	—
Plant Sci. 520 Seminar in Plant Sci.	1	1
	17	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Plant Sci. 520 Seminar in Plt. Sci.	—	1
Earth Sci. 616 Environ. Planning	3	—
Earth Sci. 626 Aquaculture	—	3
Ag. Eng. 524 Water Supply & Sanit.	3	—
Plt. Sci. 618 General Forestry	—	3
*Major Electives	3	3
Electives	3	6
Air or Military Sci.	(1)	(1)
Crop Sci. 607 Research Design & Analy .	3	—
	15	16

COURSES IN PLANT SCIENCE

Undergraduate

110. Plant Science I. Credit 3(2-2)
(Formerly 1400)

An introduction to the basic principles underlying the production of economic crops. Brief introduction to drug and medical plants. (Prerequisite Bot. 140)

300. Plant Science II. Credit 3(2-2)
(Formerly Plant Science 1420)

History, classification, culture and utilization of economic plants; basic physical, economical and social conditions relating to their growth, distribution and improvement. (Prerequisite Pl. Sc. 338.)

520. Seminar in Plant Science and Technology. Credit 1(1-0)
(Formerly 1460)

Current problems in Plant Science and Technology. Designed especially for unifying the three major areas of the department by involving both the staff and junior and senior students.

618. General Forestry. Credit 3(2-2)
(Formerly 1412)

History, classification, culture, and utilization of native trees, with special emphasis on their importance as a conservation resource and the making of national forestry policy. (Prerequisite: Botany 140)

COURSES IN AGRICULTURAL ENGINEERING

Undergraduate

113. Agricultural Drawing. Credit 3(0-6)

Lettering, use of instruments, projection drawing, auxiliaries, dimensioning, isometric drawing, working drawings-structural, and graphics (charts & graphs).

114. Home and Farm Maintenance. Credit 3(4-1)

Selection, sharpening, care and correct use of shop tools and equipment; woodwork and simple carpentry; simple electrical repairs; sheet metal work; electric arc and oxyacetylene welding; pipe fitting and simple plumbing repairs.

303. Field Machinery. Credit 3(1-4)

Principles of operation, selection and the study of field machinery efficiency.

304. Structures and Environment. Credit 3(1-4)

Fundamentals of building construction, applied to location, selection of materials, foundations, planning farm structures, and environmental considerations such as temperature, humidity, condensation and ventilation.

401. Surveying, Drainage, and Soil Conservation. Credit 3(1-4)

Principles of surveying (instrumentation-area computations), drainage, planning of soil erosion and drainage systems, based on topographical and soil requirements.

402. Farm Power. Credit 3(1-4)
(Formerly 1442)

Principles of mechanical power, use, care and adjustment of internal combustion engines. (Prerequisite Physics 225.)

522. Dairy Engineering. Credit 3(1-4)
(Formerly 1462)

The general engineering principles of power selection, installation and maintenance, refrigeration and heat transfer as they apply to equipment used in the dairy industry. Also plant arrangement and management for dairy science majors.

523. Electric Power. Credit 3(1-4)
(Formerly 1463)

The study of electricity, electrical wiring, and electrical devices including motors, with particular emphasis upon the relation of these to the home and farm. (Prerequisite Physics 201, 225.)

524. Water Supply and Sanitation for Farm and Home. Credit 3(1-4)

The planning and installation of farm water, such as source, quantity, quality, treatment and sanitation systems.

525. Farm Shop Organization and Management. Credit 3(1-4)
(Formerly 1465)

A course designed for prospective and in-service teachers of vocational agriculture; includes presentation of purpose, plans and equipment of shops, organization of course of study and methods of teaching. (Prerequisite Ag. Engr. 114; Ag. Ed. 501.)

Advanced Undergraduate and Graduate

600. Conservation, Drainage and Irrigation. Credit 3(1-4)
(Formerly 1475)

Improvement of soil by use and study of conservation practices, engineering structures, and irrigation systems. (Prerequisite Ag. Engr. 401.)

601. Advanced Farm Shop. Credit 3(1-4)
(Formerly 1476)

Care, operation and maintenance of farm shop power equipment. (Prerequisite Ag. Engr. 114.)

602. Special Problems in Agricultural Engineering. Credit 3(0-6)
(Formerly 1477)

Special work in Agricultural Engineering on problems of special interest to the student. Open to seniors in Agricultural Engineering.

COURSES IN CROP SCIENCE

Undergraduate

307. Forage Crops. Credit 3(2-2)
(Formerly 1427)

Grasses, legumes and other plants and their uses as hay, pasture, silage and special purpose of forages, identification of plants and seeds and study of quality in hay, silage and pasture population. (Prerequisite Plant Science 110.)

405. Determining Crop Quality. Credit 4(2-4)
(Formerly 1445)

The recognition of high quality crop products as influenced by growth and maturity factors, weeds and diseases, determination of commercial quality through study, land use and grades; identification of crops, planning crops exhibits. (Prerequisite Plant Science 300.)

Advanced Undergraduate and Graduate

603. Plant Chemicals. Credit 3(2-2)
(Formerly 1478)

A study of the important chemical pesticides and growth regulators used in the production of economic plants. (Prerequisite Chem. 102 and Pl. Sc. 300.)

604. Crop Ecology. Credit 3(3-0)
(Formerly 1479)

The physical environment and its influence on crops; geographical distribution of crops.

605. Breeding of Crop Plants. Credit 3(2-2)
(Formerly 1480)

Significance of crop improvements in the maintenance of crop yields; application of genetic principles and techniques used in the improvement of crops; the place of seed certification in the maintenance of verietal purity.

606. Special Problems in Crops. Credit 3(3-0)
(Formerly 1481)

Designed for students who desire to study special problems in crops. Repeatable for a maximum of six credits. By consent of instructor.

607. Research Design and Analysis. Credit 3(2-2)
(Formerly 1482)

Experimental designs, methods and techniques of experimentation; application of experimental design to plant and animal research; interpretation of experimental data. (Prerequisite Ag. Econ. 644, Math. 224.)

COURSES IN EARTH AND ENVIRONMENTAL SCIENCE

Undergraduate

201. The Earth—Man's Environment. Credit 3(2-2)

A study of the earth's physical environment as related to climate, natural resources and physiography. The interrelationship of man with the earth's environment as revealed in the modification of natural processes. No prerequisite.

309. Elements of Physical Geology. Credit 3(2-2)
(Formerly 1429)

Relation of geological principles in the development of a balanced concept of the earth and earth history; rock and mineral identification, utilization of geological and topography maps, geological processes, resource conservation, urban and environmental problems. (Prerequisite Chem. 101 or consent of instructor.)

330. Elements of Weather and Climate. Credit 3(2-2)
(Formerly 1430)

A study of the fundamental elements of weather conditions as revealed in world patterns of climate types. This course surveys the types of land forms and makes applications to problems in engineering, military science and in planning for agricultural, urban and regional development projects. (Prerequisite E. Sc. 309; Soil Sc. 338, or consent of instructor.)

408. Aerial Photointerpretation. Credit 3(1-4)
(Formerly Earth Science 343)

The interpretation of aerial photography as an aid to the study of terrains of all types. This course surveys the types of land forms and makes applications to problems in engineering, military science and in planning for agricultural, urban and regional developmental projects. (Prerequisites Ea. Sc. 1429; Soil Sc. 1438 or consent of instructor.)

Advanced Undergraduate and Graduate

622. Environmental Sanitation and Waste Management Credit 3(2-2)

Study of traditional and innovative patterns and problems of managing and handling waste products of urban and rural environments, their renovation and reclamation.

624. Earth Science, Geomorphology Credit 3(2-2)

Various land forms and their evolution—the naturally envolved surface features of the Earth's crust and the processes responsible for their evolution, their relation to man's activities and as the foundation for understanding the environment.

625. Earth Resources Credit 3(2-2)

Conservation, management and use of renewable and non-renewable resources. Their impact on the social and economic quality of our environment.

626. Aquaculture Credit 3 (2-2)

Using water as a natural resource in the production of food, for recreation, and wildlife preservation, and its management as it relates to environmental problems affecting water quality, with emphasis on freshwater lakes and ponds.

627. Strategies of Conservation Credit 3(2-2)

An approach to the teaching of environmental conservation as an integral part of the general curriculum.

COURSES IN HORTICULTURE

Undergraduate

118. Amateur Floriculture. Credit 3(2-2)
(Formerly 1408)

General principles of growing flowers on a small scale in small greenhouses, home, school and public buildings; growing flowers outside for landscape effect and cutting.

119. The Functional Usage of Plant Materials. Credit 3(0-6)

The use of plants and related materials to enhance temporary settings with emphasis on the utilization of horticultural plant materials indoor and out-of-doors. Special attention to be given to temporary gardens, planters, interior scenes and designs. (No prerequisite).

334. Plant Propagation. Credit 3(2-2)
(Formerly 1434)

Study of types, construction, and management of propagation structures; fundamentals principles of propagation by seed, cuttage, budding, grafting, and layerage. (Prerequisite Pl. Sc. 110.)

335. Principles of Landscape Design. Credit 3(2-2)
(Formerly 1433)

Fundamentals of design of planning the arrangement of small properties, such as homes, schools, small parks and playgrounds.

514. Nursery Management. Credit 3(2-2)
(Formerly 1454)

Planning, operations and methods used by wholesale, retail, and landscape nurseries. Emphasis on cultural practices, records and selling techniques. (Prerequisite Hort. 334.)

527. Basic Floral Design. Credit 3(1-4)
(Formerly 1467)

Essentials of flower arrangement and plant decorations for the home, office, hospital, school and church.

528. Flower Shop Management. Credit 3(2-2)
(Formerly 1468)

Designing, planning, handling of merchandise, buying and selling methods, and general policies.

529. Landscape Design and Construction. Credit 3(0-6)
(Formerly 1469)

Problems in design of land areas with emphasis on orientation, arrangement, and circulation. Instruction in planning, presentation, cost accounting, and construction. (Prerequisite Hort. 335.)

530. Landscape Design and Construction. Credit 3(0-6)
(Formerly 1470)

Continuation of Hort. 530. Problems in design of larger land areas involving more complex features; practice in landscape model construction. (Prerequisite Hort. 529.)

Advanced Undergraduate and Graduate

608. Special Problems. Credit 3(3-0)
(Formerly 1483)

Work along special lines given largely by the project method for advanced undergraduate and graduate students who have the necessary preparation.

610. Commercial Greenhouse Production. Credit 3(2-2)
(Formerly 1449)

Culture of floriculture crops in the greenhouse out-of-doors with emphasis on cut flowers and outside bedding plants. Special attention given to seasonal production.

611. Commercial Greenhouse Production. Credit 3(2-2)
(Formerly 1450)

Culture of floriculture crops in the greenhouse with emphasis on pot plant and conservatory plants. Special attention given to seasonal production. (Prerequisite Hort. 334.)

612. Plant Materials and Landscape Maintenance. Credit 3(2-2)
(Formerly 1452)

Identification, merits, adaptability, and maintenance of shrubs, trees, and vines used in landscape planting trees, shrubs, bulbs, and perennials.

613. Plant Materials and Planning Design. Credit 3(2-2)
(Formerly 1453)

Continuation of Hort. 612 with added emphasis on plant combinations and use of plants as design elements.

COURSES IN SOIL SCIENCE

Undergraduate

338. Fundamentals of Soil Science. Credit 4(2-4)
(Formerly 1438)

The fundamental nature and properties of soils and introductory treatment of soil genesis, morphology, and classification and land use.

516. Soil Pedology. Credit 3(3-4)

A detailed examination of theories and concepts concerning the processes of soil formation and their relationships to various classification schemes. In depth study of concepts treated in Soil Sci. 338. (Prerequisites Soil Sci. 338 and Chemistry 102.)

517. Soil Fertility. Credit 3(3-0)
(Formerly 1457)

General principles of soil fertility; influence of chemical, physical and microbiological properties of soils on crop production. Application of fertility principles in cropping programs. Limited treatment of impact of agricultural pollutants on the environment. (Prerequisites Soil Sci. 338, Chem. 101 or consent of instructor.)

518. Soil Fertility Laboratory.
(Formerly 1458)

Analytical and diagnostic procedures in studying soil fertility problems. Some treatment of procedures useful for examination of problems resulting from agricultural pollutants. (Prerequisites Chem. 102; Soil Sci. 338 and 517 or consent of instructor.)

532. Soil Physics. Credit 4(2-4)

A study of fundamental physical principles and laws which govern the behavior of soils. Physical constitution soil water, and soil air. The relationship of soil physical conditions to plant growth and engineering usage. (Prerequisite: Soil Sci. 338, Chem. 102, and Math. 113 and consent of instructor. Spring terms of even numbered years.)

533. Soil Genesis and Classification. Credit 4(2-4)
(Formerly 1473)

Soil genesis, morphology and classification of the major soil groups of the United States; techniques of making soil surveys; soil survey interpretation for agricultural and non-agricultural uses. Detailed treatment of the Seventh Approximation in soil classification. (Prerequisites Soil Sci. 338 and 516.)

534. Soil Chemistry. Credit 4(2-4)

Application of physico-chemical principles to soil studies. Consideration of mineral composition, crystal structure, types of bonding, nutrient fixation and ion exchange. The geochemistry of soil pollution. (Prerequisite: Chem. 102, Soil Sci. 338, and consent of instructor. Spring of odd numbered years.)

ADVANCED UNDERGRADUATE AND GRADUATE

609. Special Problems in Soils. Credit 3(3-0)
(Formerly 1484)

Research problems in soils for advanced students. (By consent of instructor.)

GRADUATE COURSE IN CROP SCIENCE

702. Grass Land Ecology. Credit 3(3-0)
(Formerly 1491)

GRADUATE COURSES IN EARTH AND ENVIRONMENTAL SCIENCE

704. Problem Solving in Earth Science. Credit 3(0-6)
(Formerly 1493)

705. The Physical Universe. Credit 3(3-0)
(Formerly 1494)

706. Physical Geology. Credit 3(3-0)
(Formerly 1495)

708. Conservation of Natural Resources. Credit 3(3-0)
(Formerly 1496)

709. Seminar In Earth Science. Credit 3(3-0)
(Formerly 1497)

GRADUATE COURSE IN SOILS

710. Soils of North Carolina.
(Formerly Soils 1499)

SCHOOL OF ARTS AND SCIENCES

Art Instruction

SCHOOL OF ARTS AND SCIENCES

Frank H. White, *Dean*

The School of Arts and Sciences is concerned primarily with providing experiences which seek to develop a student's ability to engage in analytical and critical inquiry, and with the enlargement of a student's understanding of the significant accomplishments of the human mind as they may be viewed in the humanities, the social sciences, and the natural sciences. The objectives of this school are:

1. to provide courses of instruction to all students of the University in general or basic education;
2. to provide formal instruction in breadth and in depth in specific curriculum areas;
3. to provide experiences which seek to develop the student's ability to engage in analytical and critical thought;
4. to provide activities which allow the student to acquire knowledge concerning the significant accomplishments in the humanities, social sciences, natural sciences, and mathematics; and
5. to provide the opportunity for individual creativity and development through undergraduate participation in research activities and special problems.

These objectives are reached via the provision of courses of study which require each student to experience a wide range of general education subjects. The School allows the student to gain in-depth experiences in a specific discipline through specific major sequences. To that end, the School offers majors in Art. Biology, Chemistry, English, French, History, Mathematics, Music, Physics, Political Science, Social Studies, Social Service, Sociology, Psychology and Speech and Dramatic Arts. Degree programs offered in these areas include the Bachelor of Arts and the Bachelor of Science. Many degree programs may be pursued jointly with Professional Education courses (offered by the School of Education) which qualify graduates for certification to teach in the secondary schools. In addition, the Physics and Mathematics Departments provide joint degree curricula in Engineering Physics and Engineering Mathematics, respectively, with the School of Engineering.

The School of Arts and Sciences, together with other Schools of the University, seeks to stimulate and guide young people into constructive intellectual and social maturity. This function is carried through by many associations in the classroom, the laboratory, the seminar, the internship, field instruction and the conference. In addition to its promulgation of the vital process of teaching through dynamic communication, the School of Arts and Sciences places high importance on its role to provide the University with a depository of knowledge. In keeping with this purpose, the School fosters special library collections; it operates the University Art Gallery; it serves as the main fostering source for the Center for African and Afro-American Studies, and it provides significant experiences in the performing arts for students whose talents may be displayed and developed through the several curricula of the School.

In order to stimulate academic excellence in many of the subject matter areas of the School's curricula, honorary societies appropriate to these areas

of concentration exist on the campus. Recognition for academic achievement holds a significant place in the on-going program of the School of Arts and Sciences.

Admission requirements for the School of Arts and Sciences are the same as those for the University. Requirements for graduation vary from department to department so the student must satisfy departmental requirements.

In an effort to afford students more options and flexibility in educational planning, the School has developed a set of general education requirements from which students may choose during the first two years. Sixteen (16) courses may be chosen from among the fields listed below within the limits specified.

I. English Composition (2 courses—Required)

II. Science (Natural and Physical) (4 courses) include Chemistry, Biology, Mathematics, Physics, Botany, Biology, Zoology, and Earth Science.

III. Foreign Languages (2 courses)
These include French, Spanish, German, Russian and Computer Programming.

IV. Science (Social and Behavioral) (4 courses)
These include Anthropology, Economics, Geography, History, Political Science and Sociology.

V. The Humanities (4 courses)
These include Art, English, Humanities, Music, Philosophy and Speech.

Those courses in the catalogue which are preceded by an asterisk may be used to satisfy these requirements:

Certain majors require specific prerequisites, therefore, each student should select courses with this fact in mind.

Individuals planning to enter teaching fields should be aware of the semester hour requirements.

(Satisfactory advanced placement scores or comparable experiential evidence may be used to satisfy any aspect of these requirements.)

COURSE SELECTION LIST—GENERAL EDUCATION REQUIREMENTS

(Sixteen courses may be selected from among the following fields within the limits specified)

I. English (2 courses—Required)
English 100, Freshman Composition
English 101, Freshman Composition

II. Sciences (Physical, Biological, Mathematical) (4 courses)
Chemistry 100, Physical Science
Chemistry 101, General Chemistry I
Chemistry 102, General Chemistry II
Biology 100, Biological Science
Botany 140, General Botany
Mathematics 101, Freshman Mathematics I

Mathematics 102, Freshman Mathematics II
Mathematics 111, College Algebra — Trigonometry
Mathematics 113, Analytical Geometry & Calculus
Physics 200, Introduction to Physics
Physics 201, Survey of Physics
Physics 221, General Physics I
Physics 222, General Physics II
Physics 225, College Physics I
Physics 226, College Physics II
Physics 250, Introduction to Astronomy
Zoology 160, General Zoology
Earth Science 309, Elements of Physical Geology
Earth Science 330, Elements of weather and climate
Earth Science 201, The Earth Man's Environment

III. Foreign Languages (2 courses)
French 100, Elementary French
French 101, Elementary French
French 300, Intermediate French
French 301, Intermediate French
Spanish 104, Elementary Spanish
Spanish 105, Elementary Spanish
Spanish 320, Intermediate Spanish
Spanish 321, Intermediate Spanish

IV. Sciences (Social and Behavioral) (4 courses)
Anthropology 200, Introduction to Anthropology
Economics 301, Principles of Economics I
Economics 302, Principles of Economics II
Geography 210, World Regional
History 100, History of Western Civilization I
History 101, History of Western Civilization II
History 105, History of Africa
History 107, Religions and Civilizations
Political Science 230, Introduction to Political Science
Sociology 200, Principles of Sociology

V. The Humanities (4 courses)
Art 100, Basic Drawing & Composition
Art 101, Lettering and Poster Design
Art 220, Graphic Presentation I
Art 221, Graphic Presentation II
English 220, English Literature I
English 221, English Literature II
English 430, American Literature I
English 431, American Literature II
Humanities 200, Survey of Humanities I
Humanities 201, Survey of Humanities II
Music 404, History & Application of Music
Music 405, Music of the Baroque & Romantic Periods
Music 406, Romantic Music
Philosophy 260, Introduction to Philosophy
Philosophy 261, History of Philosophy
Philosophy 262, Logic

Speech 250, Speech Fundamentals
Speech 251, Public Speaking
Speech 252, Argumentation & Debate
Speech 253, Parliamentary Procedure

Dependent upon career choices students in the School of Arts and Sciences should select combination of courses during the first two years as suggested by the samples below.

Freshman Year

Area	*Number of Courses*
English	2
Mathematics	2
Physical or Biological Science	2
Social Science	2
Physical Education	2

Sophomore Year

Foreign Languages or Computer Languages	2
Humanities	4
Social Sciences	2

DIVISION OF HUMANITIES

- DEPARTMENT OF ART
- DEPARTMENT OF ENGLISH
- DEPARTMENT OF FOREIGN LANGUAGES
- DEPARTMENT OF MUSIC
- DEPARTMENT OF SPEECH COMMUNICATION AND THEATER ARTS

DEPARTMENT OF ART

LeRoy F. Holmes, Jr., *Chairman*

The objectives of the Art Department are to guide the student through classroom, studio, and working experiences; to develop his aesthetic perceptivity, technical competency; and to broaden his general education.

Beginning with the belief that human beings are creative; that this creative impulse can serve human needs, and an art curriculum can motivate and nourish the development of creative ability, the art curricula seek to embrace and utilize both functional and experimental approaches in the development of that creative ability. This philosophy is reflected in three areas of concentration—Art Education, Design, and painting.

The four-year programs leading to the Bachelor of Science Degree in Art integrate studio major and academic courses. The fundamentals of art coupled with courses outside the area of art enrich and broaden the comprehension of creative experience and lay a foundation for the pursuit of graduate study, for careers as creative artists, or teachers.

In the advanced studio courses, students may expect to purchase certain materials which are not supplied by the Art Department. These materials may cost from $5.00 to $45.00 depending on the course taken by the student.

REQUIRED COURSES FOR ART MAJORS

DESIGN OPTION

Major Content Courses

Course Number	*Credit Hours*	*Course Title*
ART 100	3	Basic Drawing and Composition
ART 101	3	Lettering and Poster Design
ART 222	3	Watercolor
ART 224*	2	Art Appreciation
ART 225*	2	An Introduction to the History of Art
ART 226	3	Design I
ART 227	3	Design II
ART 228	3	Color Theory
ART 229	3	Anatomy and Figure Drawing
ART 400*	2	Renaissance Art
ART 401	3	Ceramics
ART 402	3	Basic Sculpture
ART 405	3	Materials and Techniques
ART 406	3	Painting Techniques
ART 455	3	Fabric Design and Basic Weaving
ART 456	3	Fabric Painting and Weaving
ART 459*	2	Baroque and Rococo Art
ART 520*	2	Modern Art
ART 524	3	Introduction to Graphic Arts
ART 525	3	Lithography and Serigraphy
ART 526	3	Senior Project

*Indicates art courses which can satisfy general education requirements.

Other Requirements

Mechanical Engineering 101	3	Engineering Graphics
French or German	6	
Electives	12	

PAINTING OPTION

SAME AS DESIGN EXCEPT ART 528 and 529 ARE SUBSTITUTED FOR ART 455 and 456.

TEACHING OPTION

Major Content Courses

	Credit Hours	*Course Title*
ART 100	3	Basic Drawing and Composition
ART 101	3	Lettering and Poster Design
ART 224	2	Art Appreciation
ART 225	2	An Introduction to the History of Art
ART 226	3	Design I
ART 227	3	Design II
ART 229	3	Anatomy and Figure Drawing
ART 400	2	Renaissance Art
ART 401	3	Ceramics
ART 405	3	Materials and Techniques
ART 454	3	General Crafts
ART 459	2	Baroque and Rococo Art
ART 520	2	Modern Art
ART 524	3	Introduction to Graphic Arts
ART 600	3	Public School Art

Other Requirements—French or German—6 Electives—
Satisfactory completion of general requirements specified for certification

COURSES IN ART

Undergraduate

100. Basic Drawing and Composition. Credit 3(0-6)
(Formerly Art 3200)

A study of the fundamental principles of drawing as a mode of visual expression. Selected problems involving basic consideration of line, form, space and composition are presented for analysis and laboratory practice.

101. Lettering and Poster Design. Credit 3(0-6)
(Formerly Art 3201)

A comprehensive study of the art of lettering. Projects involving the principles of layout, poster construction, and general advertising.

220. Graphic Presentation I. Credit 2(0-4)
(Formerly 3220)

Exercises in various sketching techniques and media, including work with pencil, charcoal, crayon, and ink. Individual instruction is given using forms in nature and still life for art and architectural presentation. Prerequisite: Sophomore Classification.

221. Graphic Presentation II. Credit 2(0-4)
(Formerly 3221)

The theory of color mixture. Individual instruction in the techniques of watercolor painting for architectural presentation. Studies from nature and still-life. Prerequisite: Art 220.

222. Watercolor. Credit 3(0-6)
(Formerly Art 3222)

Experimental exploration of all aqueous media: watercolor, casein, gouache their possibilities and limitations.

224. Art Appreciation. Credit 2(2-0)
(Formerly Art 3224)

An introduction to the study of art. Basic qualities of various forms of artistic expression are explained. Emphasis is placed on the application of art principles in every day life.

225. An Introduction to the History of Art. Credit 2(2-0)
(Formerly Art 3225)

A general introduction to the history of art, beginning with an examination of ancient art in terms of their extant monuments and culminating with the analysis and comparison of representative works of today.

226. Design I. Credit 3(0-6)
(Formerly Art 3226)

An introduction to visual design based upon an analysis of the aims, elements, principles, sources of design and their application in a variety of media.

227. Design II. Credit 3(0-6)
(Formerly Art 3227)

A continuation of Art 226 with consideration given to three dimensional as well as two dimensional problems. Students are encouraged in the experimental use of materials and are required to find individual and complete solutions to problems through various stages of research, planning, and presentation. Emphasis is placed on technical perfection and the development of professional attitudes.

228. Color Theory. Credit 3(0-6)
(Formerly 3228)

Problems directed toward understanding of color through creative experiment and application of color in visual organization. Use of slides, filmstrips, and trips.

229. Anatomy and Figure Drawing. Credit 3(0-6)
(Formerly Art 3229)

A study of the human figure with emphasis on anatomy, body structure and proportions, draped figures at rest and in action. Special emphasis is given to detailed studies, composition, and stylization.

400. Renaissance Art. Credit 2(2-0)
(Formerly Art 3240)

The study of the Renaissance in Italy and in major regions of northern and western Europe from 1300 to 1600.

401. Ceramics. Credit 3(0-6)
(Formerly Art 3241)

Introduction to basic techniques and processes of making ceramics. The student is taught hand building, slip casting, one piece molds, wheel throwing, decorating, glazing, and firing. Supplementary reading is required.

402. Basic Sculpture. Credit 3(0-6)
(Formerly 3242)

Introduction to sculptural form with the use of clay modeling, basic plaster techniques, wood, and metal in relation to the production of sculpture.

403. Jewelry and Metalwork. Credit 3(0-6)
(Formerly 3243)

The design and technical essentials of jewelry making and metalwork. Prerequisites: Art 226, 227.

405. Materials and Techniques. Credit 3(0-6)
(Formerly 3245)

A study of the materials of the artist; supports, grounds, vehicles, binders, and protective covering. Exploration of the possibilities of various techniques of picture construction as a point of departure for individual expression.

406. Painting Techniques. Credit 3(0-6)
(Formerly 3246)

A continuation of 405 with further work in projects that explore the esthetic opportunities and problems implicit in the use of varying media. Work in tempera, gouache, casein, polymers and lacquers.

450. Advertising Design I. Credit 3(0-6)
(Formerly 3250)

The study of basic tools of advertising design. Students are introduced to lettering techniques, layout problems, and reproduction processes for advertising, illustrations, posters, and television.

451. Advertising Design II. Credit 3(0-6)
(Formerly 3251)

Preparation and rendering of art work for reproduction from rough idea layouts to finished illustration. Creative and technical class work is augmented by visits to commercial studios and printing companies. Prerequisite: Art 450.

452. Commercial Art. Credit 3(0-6)
(Formerly Art 3252)

Illustration techniques. Different materials and renderings employed in advertising illustration, such as airbrush, colored inks, scratch board, etc. Attention is given to techniques of printing in as far as they effect graphic design.

453. Typography. Credit 3(0-6)
(Formerly 3253)

The study of typography in relation to lettering, advertising, and design. Prerequisites: Art 101 and 450.

454. General Crafts. Credit 3(0-6)
(Formerly Art 3254)

Introduction to craft processes, weaving, metalwork, leather, etc.

455. Fabric Design and Basic Weaving. Credit 3(0-6)
(Formerly 3255)

Basic principles of design as related to textiles and other flat surface decoration. The warping, threading, and weaving on small looms. History of fabric design and weaving. Prerequisites: Art 226, 227.

456. Fabric Painting and Weaving. Credit 3(0-6)

The emphasis is on printing techniques and designers' tools to achieve effective results and on the use of the large looms for creating interesting fabrics. Study of contemporary trends in weaving. Prerequisites: Art 226, 227, 455.

457. Stage Design and Marionette Production I. Credit 3(0-6)
(Formerly 3257)

Problems in scene design and stage settings with experiments in stage lighting. Attention is given to the designing and construction of marionettes for simple plays. Field trips and attendance at plays are required.

458. Stage Design and Marionette Production II. Credit 3(0-6)

A continuation of 457.

459. Baroque and Rococo Art. Credit 2(2-0)
(Formerly Art 3259)

The study of art in Europe from 1600 to 1800.

520. Modern Art. Credit 2(2-0)
(Formerly Art 3260)

European and American Art from about 1875 to the present.

524. Introduction to Graphic Arts. Credit 3(0-6)
(Formerly Art 3264)

Introduction to printmaking processes. Production of prints in varied media: linoleum, woodcuts, drypoint, etchings, serigraphs, and lithographs.

525. Lithography and Serigraphy. Credit 3(0-6)
(Formerly 3265)

Exploration of the techniques of lithography and serigraphy as a means of contemporary artistic expression. Emphasis of medium determined by individual interest.

526. Senior Project. Credit 3(0-6)
(Formerly 3266)

Students who have given evidence of their ability to do serious individual work on a professional level may plan and carry out a project of their own choosing, subject to approval and supervision of a faculty member.

528. Painting I. Credit 3(0-6)
(Formerly Art 3268)

Creative painting in various media with emphasis on a modern approach and handling of medium. Research and experience in contemporary trends: abstracts, non-objective, and abstract expressionism.

529. Painting II. Credit 3(0-6)
(Formerly Art 3269)

Development of the student as a professional artist; advance research and familiarization with contemporary trends, concepts, forms, and symbols. Emphasis on an original contemporary statement.

Advanced Undergraduate and Graduate

600. Public School Art. Credit 3(3-0)
(Formerly Art 3270)

Study of materials, methods, and procedures in teaching art in public schools. Special emphasis is placed on selection and organization of materials, seasonal projects, lesson plan.

602. Seminar In Art History. Credit 3(3-0)
(Formerly Art 3272)

Investigation in depth of the background influences which condition stylistic changes in art forms by analyzing and interpreting works of representative personalities.

603. Studio Techniques. Credit 2(0-4)
(Formerly Art 3273)

Demonstrations that illustrate and emphasize the technical potentials of varied media. These techniques are analyzed and discussed as a point of departure for individual expression.

604. Ceramic Workshop. Credit 2(0-2)
(Formerly Art 3274)

Advanced studio problems and projects in ceramics with emphasis on independent creative work. The student is given opportunity for original research and is encouraged to work toward the development of a personal style in the perfection of technique.

605. Printmaking. Credit 2(0-4)
(Formerly Art 3275)

Investigation of traditional and experimental methods in printmaking. Advanced studio problems in woodcut etching, lithography, and serigraphy.

606. Sculpture. Credit 2(0-4)
(Formerly Art 3276)

Further study of sculpture with an expansion of techniques. Individual problems for advanced students.

607. Project Seminar. Credit 2(0-4)
(Formerly Art 3277)

Advanced specialized studies in creative painting, design, and sculpture. By means of discussion and suggestions, this seminar intends to solve various problems which might arise in each work. Prerequisite: Consent of the instructor.

608. Arts and Crafts. Credit 2(0-4)
(Formerly 3278)

Creative experimentation with a variety of materials, tools, and processes: projects in wood, metal, jewelry making, wood and metal construction, fabric design, leather craft, puppet making, and paper sculpture.

DEPARTMENT OF ENGLISH

Jimmy L. Williams, *Chairman*

The English Department assumes four major responsibilities in the educational program of the institution. First, by means of composition courses, introductory courses in literature, and laboratory courses, the department attempts to develop among the students the language skills required for intelligent communication. Second, the department provides the necessary information and training for prospective teachers of English. Third, the department offers the English majors a foundation of information and of knowledge of techniques which will enable them to pursue graduate study effectively. Fourth, the department provides basic training for persons wishing to become journalists.

The department offers courses in English language and literature, developmental reading, journalism, and the humanities. A major is offered in English. One may pursue either a teaching or a non-teaching major. A minor in English is also offered.

All English majors are required to study a foreign language through the intermediate courses. If a student has studied a foreign language for two years in high school, he may enroll in the intermediate course when he begins the language study at the University. Such a student would be required to complete only one year of foreign language study at the university.

TEACHER EDUCATION PROGRAM IN ENGLISH

The Department of English offers a Teacher Education program to prepare students to teach English in the secondary schools of North Carolina. Students in the program are expected to take more than the minimum requirements for certification. The department feels that these added courses prepare the student for possible new State requirements and for graduate study.

REQUIRED COURSES FOR ENGLISH MAJORS

	Credit Hours	*Course Name*
Eng. 102	1	Developmental Reading
Eng. 210	3	Intro. to Literary Studies
Eng. 220	3	English Literature I
Eng. 221	3	English Literature II
Eng. 300	3	Advanced Composition
Eng. 401	3	Survey of Dramatic Literature II
Eng. 410	3	Shakespeare
Eng. 430	3	American Literature I
Eng. 431	3	American Literature II
Eng. 435	3	The Novel
Eng. 436	3	Modern Poetry
Eng. 450	3	Advanced English Grammar
Eng. 455	3	Fundamentals of Journalism
Eng. 500	3	Literary Research
Eng. 501	3	Intro. to Hist. of Eng. Language
*Eng. 510	2	Reading Skills
Eng. 500	1	Senior Seminar

REQUIRED COURSES FOR ENGLISH MINORS

(Teaching and Non-Teaching)

Eng. 210	3	Intro. to Literary Studies
Eng. 220	3	English Literature I
Eng. 221	3	English Literature II
Eng. 300	3	Advanced Composition
Eng. 410	3	Shakespeare
Eng. 430	3	American Literature I
Eng. 431	3	American Literature II
Eng. 450	3	Advanced Grammar

CONCENTRATION IN JOURNALISM

A student desiring a concentration in journalism should take the courses listed below. To insure completion of the sequence, the student should begin taking these courses, in the order listed, not later than the second semester of the sophomore year and preferably during the first semester of the sophomore year.

Eng. 455	3	Journalism
Eng. 456	3	Journalism Practicum I
Eng. 457	3	Journalism Practicum II
Eng. 639	4	Media Internship
Eng. 640	3	Writing and Announcing for TV-Radio

*Required only of teaching majors.

RECOMMENDED ELECTIVES

The scope of the English major curriculum often prevents a student from pursuing a minor; consequently, the department recommends "strong electives" which may pattern in some of the following concentrations:

Foreign Language

French 400	Phonetics
French 410	Oral French
French 415	Survey of French Literature I
French 416	Survey of French Literature II
French 505	Advanced Composition

Library Science

Education 410	Organization and Administration of School Libraries
Education 411	Cataloging and Classification
Education 412	School Library Reference Materials
Education 413	Non-Book Material
Education 414	Reading Interest
Education 415	Techniques of Librarianship

Music and Art

Music 216	Music Appreciation I
Music 217	Music Appreciation II
Art 224	Art Appreciation
Art 400	Renaissance Art

Philosophy

Philosophy 260	Introduction to Philosophy
Philosophy 261	History of Philosophy
Philosophy 262	Logic
Philosophy 608	Culture and Value
Philosophy 609	Contemporary Philosophy

Social Science

History 105	History of Africa
History 107	Religions and Civilization
History 204	The United States from 1452-1865
History 205	The United States Since 1865
History 206	The Afro-American in the United States to 1865
History 207	The Afro-American in the United States Since 1865
History 405	History of England
History 416	History of Black Culture in the United States
Sociology 200	Introduction to Anthropology
Sociology 204	Social Problems
Sociology 306	Minority Problems
Sociology 314	Black Experiences
Political Science 230	Introduction to Political Science

Speech

Speech 251	Public Speaking
Speech 252	Argumentation and Debate
Speech 253	Parliamentary Procedure
Speech 636	Persuasive Communication

Reading

Education 637	Teaching Reading in the Secondary School
Education 638	Classroom Diagnosis in Reading Instruction

COURSES IN ENGLISH

***100. Ideas and Their Expression I.** Credit 3(3-0)
(Formerly English 2401)

An introduction to oral and written communication; provides, the student with experience in writing short compositions, outlining written materials, improving reading, speaking skills.

***101. Ideas and Their Expressions II.** Credit 3(3-0)
(Formerly English 2402)

A continuation of English 100 which provides the student with additional experience in expository writing, with intensive instruction in descriptive, argumentative writing, narrative composition; introduces student to the techniques of investigative writing and to the skills of reading different literary genres; provides opportunities for additional experience in oral expression. Prerequisite: English 100.

***102. Developmental Reading.** Credit 1(2-0)
(Formerly English 2403)

Instruction and practice in methods of increasing rate of reading and techniques of comprehending written material; emphasis upon vocabulary study skills. Limited registration.

Language and Composition

***300. Advanced Composition.** Credit 3(3-0)
(Formerly English 2440)

A study of techniques of narrative, descriptive, expository, and argumentative composition. Prerequisite: English 101.

450. Advanced English Grammar. Credit 3(3-0)
(Formerly English 2441)

An intensive study of the structure of the English language with tolerance towards language dialects and levels as effective communication; emphasis placed upon a knowledge of grammar essential to teaching in the junior and senior high school. Prerequisite: English 101.

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*Courses may be taken to satisfy General Education requirements.

455. Journalism. Credit 3(2-2)
(Formerly English 2442)

Theoretical and practical work in gathering, organizing, and writing news; primary attention to the development of journalistic technique. Prerequisite: English 101.

456. Journalism Practicum I. Credit 3(3-0)

A continuation of English 455, with primary emphasis on basic copyediting. Extensive practical work in copyreading, headline writing, principles of typography and makeup. Weekly outside news and feature assignments constitute the laboratory period.

457. Journalism Practicum II. Credit (3-0)

Consists of advanced training in specialized reporting. Extensive practice in reporting news about governmental and legislative agencies; exercises in writing and reporting for radio and television and training in public relations releases.

500. Literary Research. Credit (3-0)
(Formerly English 2461)

OPEN ONLY TO JUNIOR AND SENIOR ENGLISH MAJORS AND MINORS.

Advanced study in the tools and techniques of literary research and investigation; emphasizes independent study and culminates in the completion of a study of a problem in literature.

501. Introduction to the History of the English Language. Credit (3-0)
(Formerly English 2462)

A course designed to develop the student's understanding of modern English syntax, vocabulary, etymology, spelling, pronunciation, and usage and to increase the student's comprehension of English literature of previous centuries through a study of the history of the language.

510. Reading Skills. Credit 2(2-0)
(Formerly English 2463)

Open to senior English majors and minors.

A course designed to orient students to the scope of higher-level reading skills and to the problems involved in promoting increased efficiency in reading and secondary school pupils.

Literature

210. Introduction to Literary Studies. Credit 3(3-0)
Formerly English 2463)

Required of English majors and minors in the sophomore year; open to others only with approval of instructor; the critical analysis, literary criticism, investigative and bibiographical techniques necessary to advanced study in English. This course is a prerequisite for all advanced courses in literature. Prerequisite: English 101.

220. English Literature I. Credit 3(3-0)
(Formerly English 2437)

A survey of the literary movements and major authors of English literature in relation to the cultural history of England, from Beowulf to 1700. Prerequisite: English 101, History 100-101.

221. English Literature II. Credit 3(3-0)
(Formerly English 2438)

A continuation of English 220 from 1700-1914. Prerequisite: English 100, 101.

400. Survey of Dramatic Literature I. Credit 3(3-0)
(Formerly 2450)

A survey course in the history, literature, criticism, and arts of the theatre to the nineteenth century. Prerequisite: English 210.

401. Survey of Dramatic Literature II. Credit 3(3-0)
(Formerly English 2451)

A continuation of English 400, from the nineteenth century to the present. Prerequisite: English 210.

410. Shakespeare. Credit 3(3-0)
(Formerly English 2452)

An introduction to a study of the works of William Shakespeare through a detailed examination of representative works selected from the major periods of his development as a dramatist. Prerequisite: English 210.

430. American Literature I. Credit 3(3-0)
(Formerly English 2455)

A study of the literary movements and major authors of American literature in relation to the cultural history of America from the Colonial Period to 1865. Prerequisite: English 210, Humanities 200-201.

431. American Literature II. Credit 3(3-0)
(Formerly English 2456)

A continuation of English 430, from 1865-1914. Prerequisite English 210, Humanities 200, 201.

435. The Novel. Credit 3(3-0)
(Formerly English 2457)

A study of the novel as an art form, with attention to significant English novelists from 1750 to the present. Prerequisite: English 210.

436. Modern Poetry. Credit 3(3-0)
(Formerly English 2458)

A study of the poetry as an art form, with attention to significant English and American poets of the twentieth century. Prerequisite: English 210.

550. Senior Seminar. Credit 1(1-0)
(Formerly English 2469)

A discussion of problems in literature and composition. Required of senior English majors. Prerequisite: 21 hours of English above English 101 and including English 210.

Advanced Undergraduate and Graduate

603. Introduction to Folklore. Credit 3(3-0)
(Formerly 2498)

Basic introduction to the study and appreciation of folklore. (Cross listed as Anthropology 603.)

620. Elizabethan Drama. Credit 3(3-0)
(Formerly 2471)

Chief Elizabethan plays, tracing the development of dramatic forms from early works to the close of the theaters in 1642. Prerequisite: English 210, 220-221.

621. Grammar and Composition for Teachers. Credit 3(3-0)
(Formerly English 2472)

A course designed to provide a review of the fundamentals of grammar and composition for the elementary or secondary school teacher. (Not accepted for credit toward undergraduate or graduate concentration in English.)

626. Children's Literature. Credit 3(3-0)
(Formerly English 2476)

A study of the types of literature designed especially for students in the upper levels of elementary school and in junior high school. (Not accepted for credit toward undergraduate or graduate concentration in English.) Prerequisite: Graduate standing or English 101, Humanities 200-201.)

628. The American Novel. Credit 3(3-0)
(Formerly English 2478)

A history of the American novel from Copper, to Faulkner. Melville, Twain, Howells, James, Dreiser, Lewis, Hawthorne, Faulkner, and Hemingway will be included. Prerequisite: English 210.

629. The Negro Writer in American Literature. Credit 3(3-0)

The study of prose, poetry, and drama by American Authors of African ancestry. Their works will be studied in relation to the cultural and literary traditions of their times, Dunbar, Chestnutt, Johnson, Cullen, Bontemps, Hughes, Wright, Ellison, Baldwin, and Yerby will be included. Prerequisite: Graduate standing or English 101, Humanities 200-201.

639. Media Internship Credit 4(1-3)

On-the-job training with local news gathering organizations; and a critical analysis of a contemporary communications problem. Prerequisites: English 455 and 456 or 457.

640. Writing and Announcing for TV-Radio. Credit 3(2-2)

Techniques and practices of editing and preparing local and wire news copy for radio and television news broadcasts; laboratory practice in preparation of same for actual broadcasting. Prerequisites: English 455 and 456 or 457.

Graduate

These courses are open only to graduate students.

700. Literary Analysis and Criticism. Credit 3(3-0)
(Formerly 2485)

An introduction to intensive textual analysis of poetry, prose fiction, prose non-fiction, and drama. A study of basic principles and practices in literary criticism and of the various schools of criticism from Plato to Eliot.

702. Milton. Credit 3(3-0)
(Formerly English 2486)

A study of the works of Milton in relation to the cultural and literary trends of seventeenth-century England. Emphasis is placed upon Milton's poetry.

704. Eighteenth Century English Literature. Credit 3(3-0)
(Formerly English 2487)

A study of the major prose and poetry writers of the eighteenth century in relation to the cultural and literary trends. Dryden, Defoe, Swift, Fielding, Addison, Pope, Johnson, and Blake will be included.

710. Language Arts for Elementary Teachers. Credit 3(3-0)
(Formerly English 2488)

A course designed to provide elementary school teachers with an opportunity to discuss problems related to the language arts taught in the elementary school. (Not accepted for credit towards concentration in English.)

720. Studies in American Literature. Credit 3(3-0)
(Formerly English 2489)

A study of major American prose and poetry writers.

750. Romantic Prose and Poetry of England. Credit 3(3-0)
(Formerly English 2490)

A study of nineteenth-century British authors whose works reveal characteristics of Romanticism, Wordsworth, Coleridge, Shelley, Keats, Byron, Lamb, Carlyle, and De Quincey will be included.

751. Modern British and Continental Fiction. Credit 3(3-0)
(Formerly English 2491)

A study of British and European novelists from 1914 until the present. Included in the study are Joyce, Kafka, Gide, Mann, and Camus.

752. Restoration and 18th Century Drama. Credit 3(3-0)
(Formerly English 2492)

A study of the theatre and drama in relation to the cultural trends of the period. Etherege, Farquhar, Vanbrugh, Congreve, Fielding, Gay, Steele, Goldsmith, and Sheridan will be included.

753. Literary Research and Bibliography. Credit 3(3-0)
(Formerly English 2493)

An introduction to tools and techniques used in investigation of literary subjects.

754. History and Structure of the English Language. Credit 3(3-0)
(Formerly English 2494)

A study of the changes in the English language-syntax, vocabulary, spelling, pronunciation, and usage from the fourteenth century through the twentieth century.

755. Contemporary Practices in Grammar and Rhetoric. Credit 3(3-0)
(Formerly English 2495)

A course designed to provide secondary teachers of English with experiences in Linguistics applied to modern grammar and composition.

770. Seminar. Credit 3(3-0)
(Formerly English 2499)

Prerequisite: 15 hours of graduate-level courses in English.

Provides an opportunity for presentation and discussion of thesis, as well as selected library or original research projects from non-thesis candidates.

COURSES IN HUMANITIES

Undergraduate

***200-201. Survey of the Humanities, I, II.** Credit 3(3-0)

A study of the interrelationship of literature, music and the fine arts; a study of master works, philosophical ideas, and artistic movements of Western Civilization. Classicism and Romanticism will be considered in 200. Modern modes of artistic expression will be considered in 201. Prerequisite: English 101.

***420. Humanities III, Great Ideas of World Civilization** Credit 3(3-0)

A seminar devoted to the identification, analysis, and appreciation of some of the basic ideas or conceptions which have underlain world culture in the arts, religion, philosophy and social attitudes from ancient times to the present.

DEPARTMENT OF FOREIGN LANGUAGES

Waverlyn N. Rice, *Chairman*

The program of the Department of Foreign Languages is based on the principle that ability to converse and understand people of other nations as well as a knowledge of one's own language, is basic to a democratic society. In view of this, the objectives are:

1. To develop reasonable facility in the reading, listening, speaking, and writing of modern foreign languages.

*Courses may be taken to satisfy General Education requirements.

2. To develop a better knowledge of modern foreign cultures.
3. To create a spirit of understanding that will result in proper attitudes toward different national groups.
4. To prepare students as teachers of foreign languages for employment in secondary schools.
5. To encourage students who manifest linguistic ability to continue further study and research.

The Department of Foreign Languages offers courses in French, Spanish, Russian, and German. A major is given in French (Teaching and Professional).

Teaching major—The curriculum in this area requires that a student, first of all, complete all courses and regulations as outlined by the Department of Education for certification at the secondary school level. In addition, a student is required to complete a minimum of 36 semester hours of French beyond the elementary level. Courses to be taken are as follows:

REQUIRED COURSES FOR FRENCH MAJORS

Course No.	*Credit Hours*	*Course Name*
*French 300	3	Intermediate French I
*French 301	3	Intermediate French II
French 400	3	French Phonetics
French 410	3	Intermediate Oral French
French 411	3	Advanced Oral French
French 415	3	Survey of French Literature I
French 416	3	Survey of French Literature II
French 508	3	French Civilization

French majors are to select a minimum of twelve (12) hours from the following courses to complete requirements.

Course No.	*Credit Hours*	*Course Name*
French 505	3	Advanced French Composition
French 506	3	Advanced French Grammar and Composition
Rrench 607	3	French Literature of the Seventeenth Century
French 608	3	French Literature of the Eighteenth Century
French 609	3	French Literature of the Nineteenth Century
French 610	3	The French Theatre
French 612	3	The French Novel
French 614	3	French Syntax
French 616	3	Contemporary French Literature

Professional major—This curriculum requires the student to complete the same number of hours as for the teaching program. In addition he is to take as many hours as possible in the other foreign languages offered by the Department. This curriculum is especially recommended for students who wish to follow a career as translators and interpretors as well as advanced ROTC students in Army or Air Intelligence.

*Courses may be taken to satisfy General Education requirements.

A minor may be achieved in French and Spanish by students who complete a minimum of 21 semester hours in Spanish and 24 hours in French.

Students who have completed one unit of high school language or who have no knowledge of a language are to enroll in an elementary language course. For those students presenting two units or more of high school credits, French 300, and French 301, or Spanish 320 and Spanish 321 are required.

COURSES IN FRENCH

Undergraduate

***100. Elementary French I.** Credit 3(3-0)
(Formerly French 101, 102, 2500)

A course for beginners which emphasizes the four language skills—reading, writing, speaking, listening. Prerequisite: none.

***101. Elementary French II.** Credit 3(3-0)
(Formerly French 102, 103, 2501)

A continuation of French 100 with further emphasis placed on the oral-aural approach. Prerequisite: French 100, or equivalent.

***300. Intermediate French I** Credit 3(3-0)
(Formerly French 201, 2520)

A course which consists of a brief review of pronunciation. Grammar is stressed with emphasis on easy cultural reading. Prerequisite: French 100 and 101, or two units of high school French.

***301. Intermediate French II.** Credit 3(3-0)
(Formerly French 202, 2521)

This course is a continuation of French 300. Stress is placed on grammar, cultural reading and conversation. Prerequisite: French 300, or equivalent.

400. Phonetics. Credit 3(3-0)
(Formerly French 203, 2522)

A course in French sounds and diction. Required of all students majoring and minoring in French. Recommended for those who wish to improve pronunciation. Prerequisite: French 300 and 301.

410. Intermediate Oral French. Credit 3(3-0)
(Formerly French 204, 2523)

Intermediate oral French Course which prepares students for French 2524. It is designed to enable students to understand lectures and conversations of average tempo. Prerequisite: French 300 and 301.

411. Advanced Oral French. Credit 3(3-0)
(Formerly French 205, 2524)

A course which offers to students intensive training in self-expression and an opportunity to improve pronunciation, diction, reading and speaking.

*Courses may be taken to satisfy General Education requirements.

415. Survey of French Literature I. Credit 3(3-0)
(Formerly French 301, 2540)

A general introduction to the study of French literature. This course gives a clear idea of the great periods and main tendencies in history of French thought and letters from 842 to the 18th century.

416. Survey of French Literature II. Credit 3(3-0)
(Formerly French 301, 2541)

A continuation of French literature from the 18th century to the present.

505. Advanced French Composition.
(Formerly French 401, 2560)

Advanced course in oral and written self expression in French. Special attention to vocabulary building, free composition and conversation, prepared and improvised, covering the many phases of everyday activities.

506. Advanced French Grammar and Composition. Credit 3(3-0)
(Formerly French 402, 2561)

Course designed to give the students practical training in the use of advanced French grammar and reading. Conducted largely in French.

508. French Civilization. Credit 3(3-0)
(Formerly French 404, 2562)

A general survey of the history of France, with emphasis on the social, political and economic development designed to give the students an understanding of present conditions and events. A detailed study of such French institutions as art, music, and education. Course is also offered in conjunction with reports of collateral readings.

Advanced Undergraduate and Graduate

602. Problems and Trends in Foreign Languages. Credit 3(3-0)
(Formerly French 501, 2571)

Problems encountered by teachers given consideration. Place and purpose of foreign language in the curriculum today.

603. Oral Course for Teachers of Foreign Languages. Credit 3(3-0)
(Formerly French 502)

Designed for teachers of foreign languages to improve pronunciation and spelling.

606. Research in the Teaching of Foreign Languages. Credit 3(3-0)
(Formerly French 503, 2573

Open to students who are interested in undertaking the study of a special problem in the teaching of a foreign language.

607. French Literature of the Seventeenth Century. Credit 3(3-0)
(Formerly French 302, 2574)

Course presents Classicism through masterpieces of Corneille, Racine, Moliere and other authors of the "Golden Period" in French letters.

608. French Literature of the Eighteenth Century. Credit 3(3-0)
(Formerly French 303, 2575)

To study in particular the life and works of Montesquieu, Voltaire, Rousseau, and the Encyclopedists.

609. French Literature of the Nineteenth Century. Credit 3(3-0)
(Formerly French 304, 2576)

Study of the great literary currents of the Nineteenth century Romanticism and Realism.

610. The French Theatre. Credit 3(3-0)
(Formerly French 504, 2577)

A thorough study of the French theatre from the Middle Ages to the present.

612. The French Novel. Credit 3(3-0)
(Formerly French 505, 2578)

A study of the novel from the Seventeenth Century to the present.

614. French Syntax. Credit 3(3-0)
(Formerly French 506, 2579)

Designed to teach grammar on the more advanced level.

616. Contemporary French Literature. Credit 3(3-0)
(Formerly French 305 and 2542, 2580)

Course deals with the chief writers and literary currents from 1900 to the present.

FOR GRADUATE STUDENTS ONLY

For descriptions of these courses, see the bulletin of the Graduate School.

720. Advanced Reading and Composition. Credit 3(3-0)
(Formerly 601 and 2580, 2585)

722. Romantic Movement in France (1820-1848). Credit 3(3-0)
(Formerly 602 and 2581, 2586)

724. Seminar in Foreign Languages. Credit 1(1-0)
(Formerly 603 and 2582, 2587)

726. Contemporary Literary Criticism. Credit 3(3-0)
(Formerly 604 and 2583, 2588)

728. Independent Study in Foreign Languages. Credit 3(3-0)
(Formerly 2584, 2589)

COURSES IN SPANISH

Undergraduate

***104. Elementary Spanish I.** Credit 3(3-0)
(Formerly Spanish 101, 102, 2504)

A course for beginners which consists of grammar, composition, translation, practice in pronunciation and use of the spoken language.

***105. Elementary Spanish II.** Credit 3(3-0)
(Formerly Spanish 102, 103, 2505)

Continuation of Elementary Spanish 104. Attention is given to advanced grammar. Prerequisite: Spanish 2504 or equivalent.

***320. Intermediate Spanish I.** Credit 3(3-0)
(Formerly Spanish 201, 2530)

Review of grammar, composition and conversation. Prerequisite: Spanish 105 or two years of high school Spanish.

***321. Intermediate Spanish II.** Credit 3(3-0)
(Formerly Spanish 202, 2531)

Continuation of Spanish 320. Prerequisite: Spanish 2530 or equivalent.

440. Phonetics. Credit 3(3-0)
(Formerly Spanish 202, 2532)

A systematic analysis of speech sounds, and the operation of phonetic laws. Prerequisite: Spanish 105 or equivalent.

441. Intermediate Conversation. Credit 3(3-0)
(Formerly Spanish 204, 2533)

Practice and drill in oral Spanish based principally on topics of current interest. Prerequisite: Spanish 105 or equivalent.

422. Introduction to Spanish Literature. Credit 3(3-0)
(Formerly Spanish 250, 2534)

Readings of representative authors of Spain. Prerequisite: Spanish 2505 or equivalent.

450. La Cultura Hispanica. Credit 3(3-0)
(Formerly Spanish 301, 2543)

A course which covers the basically significant elements of Hispanic Civilization: geography, history, literature, and economics of the Spanish people. Prerequisite: Spanish 105 or equivalent.

451. Survey of Spanish Literature I. Credit 3(3-0)
(Formerly Spanish 302. 2544)

A survey of Spanish literature from the Cid through the golden age with assigned readings and reports. Prerequisite: Spanish 105 or equivalent.

*Courses may be taken to satisfy General Education requirements.

452. Survey of Spanish Literature II. Credit 3(3-0)
(Formerly Spanish 303, 2545)

A survey of Spanish literature from the seventeenth century to the present. Prerequisite: Spanish 105 or equivalent.

455. Syntax. Credit 3(3-0)
(Formerly Spanish 304, 2546)

Systematic study of Spanish grammar with conversational and other exercises based on contemporary authors. Prerequisite: Spanish 320.

COURSES IN GERMAN

***102. Elementary German I.** Credit 3(3-0)
(Formerly German 101, 102, 2502)

Fundamentals of pronunciation and grammar. Attention given to prepared and sight translations and vocabulary building.

***103. Elementary German II.** Credit 3(3-0)
(Formerly German 102, 103, 2503)

Continuation of emphasis on grammar, vocabulary building, prepared and sight translations. Maximum attention given to graded readings in German prose and drama.

420. Conversational German. Credit 3(3-0)
(Formerly German 201, 2526)

Intensive practice in everyday German is provided. Prerequisites are German 102, 103, or approval of instructor.

422. Intermediate German I. Credit 3(3-0)
(Formerly German 202, 2527)

This course is open to students who have completed German 102 and 103. The students read a cross-section of the simpler writings in German literature and German newspapers.

423. Intermediate German II. Credit 3(3-0)
(Formerly German 203, 2528)

The students continue simple readings from German literature and read also a significant, simplified novel.

425. Intermediate Scientific German. Credit 3(3-0)
(Formerly German 205, 206, 2529)

Works in science on the second-year level.

427. Survey of German Literature. Credit 3(3-0)
(Formerly German 2530)

A general introduction to the study of German literature. This course is intended to give an over-all picture of German literature and an opportunity to read outstanding works not offered in other German courses.

*Courses may be taken to satisfy General Education requirements.

COURSES IN RUSSIAN

***106. Elementary Russian I.**
(Formerly Russian 2506)

An elementary course for beginners which consists of grammar, translation, practice in pronunciation and limited use of the spoken language.

Prerequisite: None.

***107. Elementary Russian II.**
(Formerly Russian 2507)

Continuation of Elementary Russian 2506. Attention is given to more advanced grammar. Reading in Russian is stressed.

Prerequisite: Russian 106.

DEPARTMENT OF MUSIC

J. J. Williams, *Acting Chairman*

The general objectives of the department of music are: (1) to enhance the cultural and aesthetic life of the university student through personal experiences in a well directed program of education in music; (2) to provide the student with basic skills, techniques, pedagogical concepts, and perspective for a career as an artist and as a teacher of music on the elementary and secondary school levels; and (3) to interpret, create, and maintain the highest level in individual and group performance in music. The department of music currently offers two degree programs. One of these is a curriculum leading to the Bachelor of Science Degree with a major in music. The degree program is designed to accommodate students who wish to enter some area of music other than teaching. The other is a teacher-education curriculum leading to the Bachelor of Science degree in music education. Students intending to teach in the public schools are strongly urged to follow this curriculum in order that they may elect certification requirements.

Upon entrance into the music education program, each student must choose either an instrumental or a choral concentration. Those whose principal applied music subject is either voice or piano must select choral concentration; and those whose principal applied music subject is stringed, wind, or percussion instrument must select the instrumental concentration.

Each student with a major or minor in music is required to maintain continuous membership in the principal ensemble related to his area of concentration. Students with a choral concentration must perform in the choir; and students with an instrumental concentration must perform in the band.

With the exception of the piano, every student majoring or minoring in music is required to furnish an instrument for his personal use. University owned instruments are primarily for the use of non-majors who serve in the instrumental ensembles and to complete the necessary instrumentation of those ensembles as need dictates. In as great a quantity as is possible, university owned instruments will be provided for the instruction of music majors and minors in music education classes.

*Courses may be taken to satisfy General Education requirements.

At least one solo performance on a regularly scheduled student recital is required of all music majors during each semester in which the student is enrolled in applied music. These required performances must be performed from memory. Additional solo or chamber performances may or may not be memorized with the decision for such resting solely with the teacher involved. All students should expect that the study of applied music will include the regular use chamber music as well as solo literature. The department expects that all literature used for recital performance will be representative of the finest for the performing medium and that contemporary as well as older compositions will be included.

Concurrent with the last required semester of applied music study and prior to the final examination period during that semester, each music major must present a full public recital. The program of such a performance should usually be made up of the works studied during the several semesters of residence.

Appearances for performance on recitals must be carried through on the date assigned by the instructor. Postponement of a scheduled appearance is allowable only in emergencies and with the concurrence of both the instructor and the department chairman. Any postponed performance must be given on a regularly scheduled student recital Failure to appear will result in a failing grade for the recital and may seriously affect the grade for the course.

Attendance is required for all music majors and minors at student or faculty recitals, band, choir, and chamber ensemble concerts, and lyceum programs that involve musical performance. A systematic method of checking and recording attendance will be used.

An examination by a faculty committee is required of every student upon completion of each semester of applied music. At these examinations, the student must display such competencies, skills, techniques, facility, musicianship, and repertoire as is required by the instructor for his level. These requirements will have been made known to the student and submitted *in writing* to the department office at the beginning of the semester. A minimum level for an acceptable performance which has been previously established by the instructor must be attained to gain a passing grade on the examination. Committee examinations in applied music will be given either immediately before or during the regular semester's examination period. Attendance at these examinations will be subject to the same regulations as all other university finals. A failing grade will seriously jeopardize successful completion of the course.

Admission to the teacher-education program of the university is regulated by the School of Education. The student is evaluated at the end of the sophomore year. The regulations as set forth will be observed strictly; no student will be admitted without having met all requirements. A failure to gain admission to the program will prevent the student from taking professional education courses until he satisfies all conditions, and will thereby cause a possible delay in graduation.

All students will be assigned to a faculty advisor for counseling in matters of curriculum, academic, and personal problems as are appropriate. Each individual should consult regularly with his advisor and take advantage of that person's experience.

BACHELOR OF SCIENCE IN MUSIC EDUCATION

Choral Concentration

I. Applied Music—21 Semester Hours:
100, (Diction)* 113, 213, 413, 513 (Principal Subject)
114, 214 (Secondary Subject); 614 Choral Conducting

II. Music Theory—21 Semester Hours:
101, 102, 200, 201, 400, 401, 402, 501

III. Music History and Literature—9 Semester Hours:
403, 404, and 405 or 406

IV. Music Education—12 Semester Hours:
424, 425, 426, Education 530, 531

V. Music Performance—16 Semester Hours:
301 (Eight Semesters); 307 Student Recital (Eight Semesters)
Total Hours Required: 79 Semester Hours

BACHELOR OF SCIENCE IN MUSIC EDUCATION

Instrumental Concentration

I. Applied Music—21 Semester Hours:
113, 213, 413, 513 (Principal Subject)
114, 214 (Secondary Subject) 503

II. Music Theory—21 Semester Hours:
101, 102, 200, 201, 400, 401, 402, 501

III. Music History and Literature—9 Semester Hours:
403, 404, and 405 or 406

IV. Music Education—13 Semester Hours:
424, 425, 426, 431, and Education 530, 532

V. Performance Organizations—16 Semester Hours:
300 (Eight Semesters), 307 (Eight Semesters)
Total Number of Required Hours: 79 Semester Hours

BACHELOR OF SCIENCE IN MUSIC

Applied Music Concentration

I. Applied Music—31 Semester Hours:
113, 213, 413, 513, Principal Subject; and 114, 214 minor subject; 503 Score Reading and Conducting; 100 (Voice Students Only)

II. Music Theory—23 Semester Hours:
101, 102, 200, 201, 400, 401, 402, 501

III. Music History and Literature—10 Semester Hours:
403, 404, 408, 412 (Wind and Percussion Students Only)
409, 412 (Piano Students Only)

*Instead of Music Diction, piano students should take Music 560—Accompanying—during the Junior year.

IV. Music Performance—20 Semester Hours:
307 (Student Recital—Eight Semesters)
Wind and Percussion:
300 (Eight Semesters); and either 302, 303 or 304 (Four Semesters).
Voice and Piano:
301 (Six Semesters); and either 305, 306 or 500 (Four Semesters)

V. Other—3 Semester Hours:
618 Psychology of Music
Total Required Hours—84 Semester Hours

BACHELOR OF SCIENCE IN MUSIC

History and Literature Concentration

I. Applied Music—23 Semester Hours:
113, 213, 413, 513 Principal Subject; 114, 214 Secondary Subject: 100 (Voice Students Only); 503, Score Reading and Conducting; 450 (Accompanying-Piano Students Only).

II. Music Theory—23 Semester Hours:
101, 102, 119, 200, 201, 400, 401, 402, 501

III. Music History and Literature—18 Semester Hours:
403, 404, 405, 406, 407, 408, 410 and either 409, 411, or 412

IV. Music Performance—16 Semester Hours:
300 Eight Semesters—(Wind and Percussion Students) or
301—Eight Semesters (Voice and Piano Students)
307 (Student Recital—Eight Semesters)

V. Other—Eight Semesters Hours:
618—Psychology of Music; English 210 and English 500
Total Hours Required—88 Semester Hours

COURSES IN MUSIC THEORY

101, 102. Theory I, II. Credit 3(2-2) Each Semester

Review of the fundamentals of music, including the rudiments of music theory; construction and function of scales; intervals, triads and dominant seventh chords in root position and inversions; use of non harmonic tones; correlated analysis, rhythmic, melodic, harmonic, and key board drill.

119. Sight Singing and Ear Training. Credit 1(0-2)

Fundamentals of musicianship; corrected rhythmic, melodic, and harmonic drills.

201, 202. Theory III, IV. Credit 3(2-2) Each Semester

Modulation, construction and function of seventh, ninth, eleventh, and thirteenth chords in root position and inversions; chromatic harmony; advanced modulation; trends of the twentieth century; corrected analysis, sightsinging, ear training, dictation, and keyboard drill. Prerequisites: 101, 102.

400, 401. Counterpoint I, II. Credit 2(2-0) Each Semester

Strict counterpoint in two or more parts; imitation; two and three-part inventions; canon; forms based on the chorale; invertible counterpoint; the fugue. Prerequisites: 200, 201.

402. Form Analysis. Credit 2(1-2)

Harmonic and melodic structure of the phrase; phrases in combination; the analytical methods; theme and variation, ternary, rondo, binary, sonata, concerto and unique forms; the fugue and related genres. Prerequisites: 202, 400.

501. Arranging Credit 3(2-2)

Scoring for chorus, band, orchestra, vocal and instrumental chamber ensembles. Prerequisites: 400, 401.

COURSES IN MUSIC HISTORY AND LITERATURE

216. Music Appreciation I. Credit 3(3-0) Each Semester

A study of melody, harmony, rhythm, simple forms, vocal music, texture and the orchestra. Designed for the general student to provide an introductory survey to the art of music.

217. Music Appreciation II.

A survey of the literature and styles of the several periods of music history from antiquity through the present. Designed for the general student as a continuation of Music Appreciation I. Prerequisite: Music 216.

218. Introduction to Music Literature. Credit 2(2-0)

Familiarization of student with large body of musical material from all branches of musical writing; for vocal and instrumental, solo and ensemble, symphonic and choral groups. Special attention is given to style and structural procedures by principal composers. Designed for students with some musical background.

403. History and Literature of Music I. Credit 3(2-2)

Analysis of main works of music literature presented in historical order; form, harmonic and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic, artistic and cultural developments; Ancient, Medieval, Renaissance and Baroque periods. Prerequisites: 101, 102.

404. History and Literature of Music II. Credit 3(2-2)

Analysis of main works of music literature presented in historical order; form, harmonic and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic, artistic, and cultural developments; Classical, romantic, Postromantic and contemporary periods. Prerequisite: 403.

405. Music of the Baroque Period. Credit 2(1-2)

Analysis of the main works of the principal composers of the early, middle, and late Baroque periods culminating with a more detailed study of the works of Handel and J. S. Bach; vocal, keyboard and other instrumental forms included; emphasis on stylistic characteristics. Prerequisite: 403.

406. Music of the Romantic Period. Credit 2(1-2)

Intensive study of the works of the principal composers of the Romantic era; emphasis on general and individual stylistic characteristics. Prerequisite: 404.

407. Modern Music from 1890 to the Present. Credit 2(1-2)

Music of the so-called Viennese school of the twentieth century against the background of late German romanticism and French impressionism; the dissolution of the tonal system and the development of the serial principle; the music of Bartok, Stravinsky and others in the light of nineteenth and twentieth century investigations of folk or national materials and their influence upon serious artists; the relationship of Bartok and Stravinsky to traditional harmonic principles and to the formal structures of the past; other trends in the twentieth century. Prerequisites: 201, 404.

408. The Symphony. Credit 2(1-2)

The formulation of classical principles of construction by Josef Haydn, with reference to the contributions of Gluck, C.P.E. Bach and the Manheim school; the fulfillment of the classical ideal of the works of Mozart and Beethoven; changing concepts of the symphony after Beethoven; the Romanticists approach to form; study of the major Romantic symphonies by composers from Shubert to Mahler. Prerequisites: 201, 404.

409. Keyboard Music. Credit 2(1-2)

Techniques, musicianship, and stylistic aspects of interpretation; from pre-Bach to the present; intellectual, emotional, and imaginative aspects of performance as exemplified by works from leading composers including Bach, Mozarth, Beethoven, Chopin, Schumann, Debussy, and Moussorgsky; all lectures illustrated at the piano. Prerequisite: 404.

410. Opera. Credit 2(1-2)

Establishment of the opera as a feasible musico-dramatic genre and the various solutions to problems of the opera as suggested by composers from the seventeenth to the twentieth centuries; special emphasis on the works of Monteverdi, Scarlatti, Gluck, Mozart, Wagner, and Verdi. Prerequisites: 201, 404.

411. The Art Song. Credit 2(1-2)

Survey of the art song from seventeenth century Italy to present, with special emphasis on the song literatures of Germany, France, and contemporary America; practice in interpretation with particular attention to style and diction. Prerequisite: 404.

412. Chamber Music. Credit 2(1-2)

Analysis of masterworks of chamber literature for instrumental and vocal ensembles by the main composers for each of the several periods in music history; interpretation. Prerequisite: 404.

COURSES IN MUSIC EDUCATION

424. Percussion Instruments. Credit 2(1-2)

Playing of percussion instruments; basic techniques of snare drum, timpani, xylophone, bells, chimes, and other percussion instruments are presented and practiced.

425. Woodwind Instruments. Credit 2(1-2)

Playing of woodwind instruments; basic techniques for clarinet, flute, oboe, saxophone and bassoon are presented and practiced.

426. Brasswind Instruments. Credit 2(1-2)

Playing of brasswind instruments; basic techniques for trumpet, French horn, Trombone, euphonium and tuba are presented and practiced.

427. Voice Class. Credit 1(0-2)

Use of the singing voice; basic principles of singing, interpretation and musicianship; physiology, breathing; tone production, resonance and diction; application of basic principles to singing voice; pronunciation, articulation, intonation, attack, legato, sostenuto, flexibility and dynamics; ensemble singing; techniques for producing choral tone in accompanied and unaccompanied styles, choral procedure and repertoire.

PERFORMANCE ORGANIZATIONS

The total number of semester hours to be earned through performance organization courses is specified in the outlines of major curricula. Every music major is required to perform in one of the two major organizations (band or choir). If the principle applied subject is a wind or percussion instrument, the student must elect band; if the principal applied subject is voice or piano, the student must elect choir. The organization elected must be repeated each semester as specified until the required number of semester hours has been earned. Other performance organization courses are elected as required by the several curricula and similarly repeated for credit until the necessary semester hours have been earned.

300. University Band. Credit 2(0-5)

The University Marching Band is organized in the fall of the year (first semester) and plays for all football games. It is open to all qualified students, both men and women. The Symphony Band functions after the football season and continues for the rest of the year. Membership in both the Symphony and Marching Bands through audition with the Director of Bands. May be repeated for credit each semester.

301. University Choir. Credit 2(0-4)

An organization designed to perform a wide range of compositions written for mixed voices representing various musical styles and periods.

Numerous appearances throughout the year on campus and for various churches and civic organizations. Tours are planned annually for the southeastern, eastern, and midwestern regions of the country. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

302. Brass Ensemble. Credit 1(0-2)

The study and performance of literature for brass instrument chamber groups from all periods of music history and in all styles. Frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

303. Woodwind Ensemble. Credit 1(0-2)

The study and performance of literature for woodwind chamber music history and in all styles. Frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

304. Percussion Ensemble. Credit 1(0-2)

The study and performance of literature for percussion chamber groups repeating a wide variety of styles. Designed to develop skill in ensemble performance on all of the instruments of percussion used in this growing modern repertoire, membership is open to all qualified students, both mem and women through audition with the director. Frequent public concerts. May be repeated for credit each semester.

305. Opera Workshop. Credit 1(0-2)

Musical and dramatic group study and performance of excerpts from the operatic repertoire. Includes an annual production of a standard opera and/or contemporary chamber work, with staging, costumes, and scenery. Students must secure the approval of their university voice instructor before enrolling. May be repeated for credit each semester.

306. Male Singers. Credit 1(0-2)

A choral organization designed to perform a wide range of compositions written for men's voices and representing various musical styles and periods. Frequent public concerts. Membership is open to all qualified male students through audition with the director. May be repeated for credit each semester.

307. Student Recital. Credit 0(0-1)

A weekly assembly of music students with members of the faculty, providing opportunity for experience in public performance before an audience, lecture and discussion of problems in the general area of performance including ensemble playing and singing, conducting, accompaning, stage department, also performance. (Required of all music majors during each semester of residence; a grade of pass (P) or fail (F) will be assigned on the basis of participation and attendance)

APPLIED MUSIC

503. Score Reading & Conducting. Credit 2(1-2)

Fundamental conducting beat patterns, size of beats, and use of each hand; discussion and study of musical terminology; conducting experience with laboratory group. Transposition; characteristics and ranges of instruments; study of tempos and dynamics; continued conducting experience with both choral and instrumental laboratory groups.

Individual instruction is available in the following branches of applied music as both principal and secondary areas of study:

Piano	Flute	Bassoon	Trombone
Voice	Oboe	French Horn	Baritone Horn
Percussion	Clarinet	Trumpet	Tuba

In the principal area of performance, each student receives a one hour individual lesson each week and must practice for at least (2) hours each day to earn two semester hours credit. To earn three semester hours credit, the student must practice a minimum of three hours each day in addition to his lesson. In the secondary area of performance, each student receives a one hour lesson each week and is required to practice a minimum of one hour each day to earn one semester hour credit. To earn two semester hours credit, each student must practice a minimum of *two* hours each day in addition to his lesson.

PIANO

Requirements for Admission—The applicants who elect piano as their principal instrument should be able to play all major and minor scales and arpeggi at a moderate tempo. They should play with technical ease and musical understanding, compositions equivalent in difficulty to the following: Clementi, *Sonatina*, Op. 36, No. 6; Mozart, *Fantasie in D. Minor*, Bach, *Little Preludes,* or Burgmuller, *Studies,* Op. 100.

113. A three-part invention by Bach. A movement of a Sonata by Haydn, Mozart, or Beethoven. Work of moderate difficulty by a Romantic composer. Scales and arpeggios in parallel or contrary motion at a moderately rapid tempo. Sight reading.

213. A prelude and fugue from the Well-Tempered Calavier by Bach, Completion of the Sonata started in 113. A work from the Romantic school. A work written since 1900. Scales and arpeggios at rapid tempo. Slight reading.

413. Dance forms from French suites or parties by Bach. A sonata by Haydn, Mozart or Beethoven one movement memorized. A work from the Romantic School. A contemporary work. Sight reading.

513. A prelude and fugue from the Well-Tempered Calavier by Bach, a sonata by Haydn, Mozart, or Beethoven, one movement memorized.

560. Accompanying. Credit 2(0-4)

Analysis and practice in piano accompanying of singers and instrumentalists; sight reading and transposition; discussion of style and performance; experience in public performance. May be repeated for credit each semester. Prerequisite: Consent of instructor.

VOICE

Requirements for Admission—The applicant should give evidence of ability to sing simple standard or classic art songs with adequate tone quality and intonation. Some knowledge of piano is highly desirable.

100. Diction for Singers. Credit 1(0-2)

A course designed to familiarize students with the pronunciation of English, Italian, German, and French through the study and use of the International Phonetic Alphabet.

113. 1) Competencies: Correct posture, breathing habits, phrasing, various five-note scales, diction.
2) Studies: Simple English and Italian art songs, folk songs, spirituals.
3) Solos: Six songs in English and Italian to be memorized each semester. Representative composers: Scarlatti, Handel, Purcell.

213. 1) Competencies: Correct posture, breathing habits, phrasing, diction, scales and arpeggios.
2) Studies: English and Italian art songs, German art songs, folk songs, spirituals.
3) Solos: Eight songs in English, Italian, and German to be memorized each semester. Representative composers: Durante, Scarlatti, Schumann.

413. 1) Competencies: Continuation of 213.
2) Studies: English and Italian art songs, German songs, French art songs, folk songs and spirituals.
3) Solos: Nine songs in English, Italian, German, and French to be memorized each semester. Representative composers: Schumann, Schubert, Strauss, Faure, Britten, Mozart.

513. 1) Competencies: Continuation of 413 with emphasis on preparation for senior recital.
2) Studies: Continuation of 413 with more intricate scales and arpeggios.
3) Solos: 10 songs in English, German, Italian and French to be memorized. Representative composers: Wolf, Schumann, Faure, Verdi, Britten, Handel, Debussy.

427. Voice Class. Credit 1(0-2)

Use of the singing voice; basic principles of singing, interpretation and musicianship; psychology, breathing; tone production, resonance and diction; application of basic principles to singing voice; pronunciation, articulation, intonation, attack, legato, sostenuto, flexibility and dynamics; ensemble singing; technique for producing choral tone in accompanied and unaccompanied styles; choral procedure and repertoire.

PERCUSSION

Requirements for Admission: The candidate shall demonstrate satisfactory performing ability in at least one of the following areas of percussion.

Performance: Snare drum, xylophone, marimba and timpani. These competencies will include:

1. The ability to perform a solo.
2. The ability to perform an excerpt from a book in which the applicant has studied that will demonstrate musicianship and technical skill.

3. The ability to play at sight representative literature which is characteristic of the instrument.
4. Previous ensemble experience in band and/or orchestra.

Additional competencies for snare drum:

1. Basic knowledge of rudiments.
2. The performance of a Sawa march or the equivalent.

Additional competencies for xylophone marimba:

The ability to play major scales through 4 flats and 4 sharps in one octave.

Additional competencies for timpani:

1. Basic knowledge of timpani techniques.
2. A thorough knowledge of range of each timpano.

113, 213. Competencies: (a) Snare Drum; Fundamentals, military techniques, reading and control.

Mallets: Fundamentals, reading technique—musical orientation.

Studies: Price, Beginning Snare Drum; Goldenberg, Mallet Instruments; Stone, Stack Control; Bower, Drum Method; Gardner, Modern Method, Book I, Stone, Mallet Control.

Solos: Wilcaxon, Rudimental Solos; Price, Exhibition Drum Solo; Colgrass, Advanced Snare Drum Solo; Brever Easy—Medium Mallet Solos; Stone, Military Drum Beats.

413, 513. Competencies: (a) Snare Drum; Fine control, orchestra techniques. (b) Mallets; Reading, advanced techniques, 3 and 4 hammer work: (c) Percussion, "Trap" techniques, tambourine, castanents, brass drum, and cymbals. (d) Timpani: Kettle technique, tuning exercises and control. (e) Latin-American Instruments: Basic skills on each.

Studies: Price, Techniques and Exercises for Triangle, Tambourine and Castanets; Brewer, Daily Studies: Goldenberg, Mallet Instruments. Goodman, Timpani Method: Fresia, Timpani Method; Tourte, Snare Drum Technique; Gardner, Modern Method, Book II, Mallets; Chopin, Advanced Techniques for the Modern Drummer.

Solos: McKenzie, Graded Timpani Solos; Britton, Timpani Solo; Hart, Timpani Solos; Price, Unaccompanied Timpani Solos; Brewer, 3 and 4 Mallet Solos, Quick 3 and 4 Mallet Solos; Stone Rudimental Drum Solos; Duets and Quintets.

WIND INSTRUMENTS

Requirements for Admission: The candidate shall show evidence:

1. Basic development in embouchure and articulation.
2. Knowledge of fingering and alternates.
3. Satisfactory tone quality and control.
4. Ability to play major scales through 4 flats and 4 sharps, in eight notes (M.M.d-72) and the chromatic scale both slurred and articulated.
5. Minimum—Two octave range.
6. Ability to play a simple song demonstrating musicianship which includes phrasing and expression.
7. Previous study in the equivalent of the Rubank Advanced Method.

8. Previous ensemble experience in hand and/or orchestra.
9. Ability to play at sight representative literature which is characteristic of the instrument.

TRUMPET

113, 213. Competencies: Breathing; elementary embouchure and tone production; tonguing as applied to various instruments; coordination of tone production habits through progressive major and minor scales; practical problems of artistic performance.

Studies: Cornet and Trumpet—Complete teaching for cornet—Beeler, Walter Boosey and Hawkins; 1952, Second Book of Practical Studies for Cornet and Trumpet—Robert Getchell; Hovey, Nilo, Belwin, Inc. 1948.

Literature: Selected from NIMAC—Music Educator's National Conference.

413, 513. Competencies: Intonation; embouchure techniques; breath control and tone quality; articulation; reading; style; performance techniques.

Studies: Ruband Advance Method:

Literature: Selected from NIMAC—Music Educator's National Conference.

FRENCH HORN

113, 213. Competencies: Breathing, embouchure and tone production; tonguing; progressive major and minor scale technique; practical problems of artistic performance.

Studies: Rubank, *Intermediate Method for French Horn; Moddern Pares Foundation.*

Studies: Whistler, *Daily Exercises for French Horn,* Pottag.

Literature: Selected from NIMAC—Music Educator's National Conference.

413, 513. Competencies: Intonation, embouchure techniques, breath control and tone quality; articulations; reading; style; performance techniques.

Studies: Rubank, *Advanced Method for French Horn.*

Literature: Selected from NIMAC—Music Educator's National Conference.

TROMBONE—BARITONE

113, 213. Competencies: Breathing, elementary embouchure and tone production; tonguing as applied to various instruments; coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.

Studies: Trombone and Baritone.

Arbans-Prescott Method for Trombone-Baritone—Carl Fisher, Inc.

Rubank—Intermediate Method for Trombone-Baritone. Skornicka and Boltz, Rubank, Rubank, Inc. Modern Pares Foundation Studies for Trombone & Baritone—Whistler.

Literature: Selected from NIMAC—Music Educator's National Conference.

413, 513. **Competencies:** Intonation, embouchure techniques; breath control and tone quality; articulations, reading; style; performance techniques.

Studies: Rubank, *Advanced Method for Trombone and Baritone.*

Literature: Selected from NIMAC—Music Educator's National Conference.

TUBA

113, 213. **Competencies:** Breathing, elementary embouchure and tone production; tonguing as applied to various instruments; coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.

Studies: Tuba

Rubank Intermediate Method for Brass—Skornicka and Boltz. Rubank, Inc. First Book of Practical Studies for Tuba—Hovey N. Belwin, Inc. Vandercook Etudes for Bass—Rubank, Inc.

Literature: Selected from NIMAC list Music Education National Educator's Conference.

413, 513. *Competencies:* Intonation, embouchure techniques; breath control and tone quality; articulation; reading; style; performance techniques.

Studies: Rubank, *Advanced Method for Tuba.*

Literature: Selected from NIMAC list—Music Educator's National Conference.

FLUTE

113. **Competencies:** Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development.

Studies: Soussmann, Complete Method for Flute; Anderson, *24 Progressive Studies, Op. 33.*

Literature: Bizet, *Minuet;* Mozart, *Adagio*

213. **Competencies:** All Major and Minor Scales throughout the practical performing range. Emphasis on sight reading.

Studies: Caually, *Melodious and Progressive Studies for Flute* Soussmann

Literature: Bach, *Suite in B. Minor;* Handel, *Sonatas*

413. **Competencies:** Continued scale study, emphasis on performing literature

Studies: Soussmann—Moyse, *Flute Studies*

Literature: Bach, *Sonatas;* Debussy, *Syrinx*

513. **Competencies:** Continued emphasis on performing literature

Studies: Schmitd, Orchestral Studies

Literature: Chaminade, *Concertino* Hindemith, *Sonata*

OBOE

113. **Competencies:** Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development.

Studies: Ferling, *144 Preludes and Studies:* Barret, *Complete Method For Oboe*

Literature: Franck, *Piece V; Piece in G. Minor*

213. **Competencies:** All Major and Minor Scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment

Studies: Barret, *Method:* Tustin, *Technical Studies*

Literature: Schumann, *Three Romances;* Telemann; *Concerto in F. Minor*

413. **Competencies:** Continued scale study, emphasis on performing literature. Reed making.

Studies: Tustin, *Studies;* Prestin, *Studies*

Literature: Handel, *Sonata in G. Minor.* Goosens, *Concerto*

513. **Competencies:** Continued emphasis on performing literature.

Studies: Orchestral Literature

CLARINET

113. *Competencies:* Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.

Studies: Klose Celebrated Method for Clarinet and Rose 32 Etudes.

Literature: Stubbins, *Recital Literature for the Clarinet,* Vol. II

213. **Competencies:** All Major and Minor Scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment.

Studies: Klose, Rose 40 Etudes

Literature: Stubbins, *Recital Literature,* Vols I and II

413. **Competencies:** Continued scale study, emphasis on performing literature.

Studies: Baermann, *Method for Clarinet;* Jean Jean, 18 Etudes de Perfectionnemen.

Literature: Stubbins, *Recital Literature,* Vol III (The Concertos)

513. **Competencies:** Continued emphasis on performing literature.

Studies: Baermann; Jean Jean; Orchestral Studies

Literature: Bernstein, *Sonata;* Debussy, *Rapsodie*

SAXOPHONE

113. **Competencies:** Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.

Studies: DeVille, *Universal Method;* Endrejen, *Supplementary Studies*

Literature: Benson, *Cantilena;* Gretchaninof, *Phantasme*

213. **Competencies:** All Major and Minor Scales through the practical performing range. Emphasis on sight reading. Reed adjustment.

Studies: DeVille; Rascher, *Top Tones for Saxophone*

Literature: Bozza, *Aria;* Casadesus, *Romance*

413. **Competencies:** Continued scale study, emphasis on performing literature. Introduction to jazz improvising.

Studies: DeVille; Rascher, *158 Saxophone Exercises*

Literature: Creston, *Sonata;* Debussy, *Rapsodie,* Fasch, *Sonata;* Music Minus one Saxophone.

513. **Competencies:** Continued emphasis on performing literature.

Studies: Traxler-Lazarus, *Virtuoso Studies*

Literature: Bozza, *Scaramouche*

BASSOON

113. **Competencies:** Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.

Studies: McDowell, *Practical Studies, Bk. I;* Kovar, *24 Daily*

Exercises; Wessenborn, *Practical Method Bassoon.*

Literature: Bakalenikoff, *Three;* Weinberger, *Sonatine*

213. **Competencies:** All Major and Minor Scales throughout the practical playing range, Emphasis on sight reading. Reed adjustment and *Making.*

Studies: Wesseborn, *Method for Bassoon;* Kovar, *24 Daily Exercises;* McDowell, *Practical Studies,* Bk. II

Rep. Literature: Telemann, *Sonata in F Minor;* Weber, *Concerto in F* (Slow Movement)

413. **Competencies:** Continued scale study, emphasis on performing literature.

Studies: Pierne, *Concert Piece;* Galliard, *Sonatas;* Mozart, *Concerto*

510. **Competencies:** Continued emphasis on performing literature. Orchestral Studies.

Studies: Orchestral Passages

Literature: Hindemith, *Sonata*

COURSES FOR ADVANCED UNDERGRADUATES AND GRADUATES

609. Music in Early Childhood. Credit 3(2-2)

A conceptual approach to the understanding of musical elements; an understanding of the basic activities in music in early childhood; modern trends in music education; Kodaly and Orff methods.

610. Music in Elementary Schools Today. Credit 3(2-2)

Music in the elementary school curriculum; creating a musical environment in the classroom; child voice in singing, selection and presentation of rote songs; development of rhythmic and melodic expressions; directed listening; experimentation with percussion and simple melodic instruments; criteria for utilization of notational elements; analysis of instrumental materials.

611. Music in the Secondary Schools Today. Credit 3(3-0)

Techniques of vocal and instrumental music instruction in the junior and senior high schools; the general music class; the organization, administration and supervision of music programs, as well as music in the humanities. This course includes the adolescent's voice and its care; the testing and classification of voices; operetta production; the instrumental program; and training glee clubs, choirs, bands, and instrumental ensembles.

614. Choral Conducting of School Music Groups. Credit 2(0-4)

Rehearsal techniques; balance; blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school at all levels of ability; conducting experience with laboratory group.

616. Instrumental Conducting of School Music Groups. Credit 2(0-4)

Rehearsal technique; balance, blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school groups at all levels of ability; conducting experience with laboratory group.

681. Psychology of Music. Credit 3(3-0)

The use of psychology in the learning and teaching of music.

620. Advanced Music Appreciation. Credit 3(2-2)

Analytic studies of larger forms from all branches of music writing; Special emphasis on style and structural procedures by principal composers; words taken from all periods in music history. Designed for students with previous study of music appreciation.

DEPARTMENT OF SPEECH COMMUNICATION AND THEATER ARTS

The Department of Speech Communication and Theatre Arts is designed to accomplish the following general aims: First, through the offering of a speech fundamentals course implemented by a voice and diction laboratory course, it seeks to develop standard oral-verbal skills needed for interpersonal communication and public communication. Second, through courses in theatre production, acting and dramatic literature; through courses in speech science such as speech pathology (speech therapy) and phonetics; through courses in public communication and rhetoric, it aims to provide the teaching/learning experiences needed for both prospective teachers and directors of speech and theatre co-curricular activities at the secondary school level. Third, the Department provides pre-professional studies that prepare the student for graduate study in Speech and/or Theatre Arts. Fourth, through courses in theatre production, acting, dramatic literature, along with extensive co-curricular theatre activities, the Department prepares those students with creative and aesthetic ability for careers in acting-directing.

MAJOR CONCENTRATIONS

The student will select one of three concentrations of study in the Department of Speech Communication and Theater Arts: Speech Communication and Theatre Education, Professional Theatre, and Speech Communication and Theatre Arts.

SPEECH COMMUNICATION AND THEATER EDUCATION

Bachelor of Science 125 Hours **31 Hours Major**

Successful completion of this program leads to North Carolina teacher certification.

The Speech and Theatre Education program which meets the approval of the N. C. State Evaluation Committee on Teacher Education is aimed at developing effective instructors of speech and theatre at the secondary school level. Its specific aims are: (1) To develop teachers with personal competence in speech communication; (2) To develop critical analysis and creative thinking; and (3) To prepare teachers who can offer instruction in both the curricular and co-curricular activities at the secondary level in the areas of speech and theatre.

REQUIRED COURSES FOR SPEECH COMMUNICATION AND THEATER EDUCATION MAJORS

Course No.	*Credit Hour*	*Course Name*
*Speech 250	2	Speech Fundamentals
Speech 251 or Speech 252	3	Public Speaking or Argumentation & Debate
Speech 610	3	Phonetics
Speech 510	3	Intro. to Speech Correction
Theater 301	3	Elements of Acting
Theater 302	3	Elements of Play Production
Theater 500	3	History of the Theater I
Theater 501	3	History of the Theater II

Electives are listed among the course offerings from which at least 10 hours must be selected to complete the major requirements of 30 semester hours.

PROFESSIONAL THEATER

Bachelor of Science 120 Hours 50 Hours Major

Students who wish to prepare for careers in the Professional Theater must audition before the theater arts faculty and be approved before enrolling in the professional curriculum. Only those students whose backgrounds and abilities give evidence of probable success in their field are encouraged to enter this curriculum. The Department reserves the right to students a change from the professional program to the teaching program.

Studies in theater for the undergraduate major are considered to be a part of the newly acquired Liberal Arts orientation of the University. Students who elect this concentration do not specialize in any one aspect of theater, but receive a liberally oriented theater background which will permit sound specialization after graduation. The concentration emphasizes, first, a substantial background in dramatic literature; second, classroom and directed study of performing arts; and third, presentation of various artistic endeavors in public performance.

The newly constructed A. & T. State University Theater offers laboratories for participation in directing, scene design, playwriting, audience reaction, costuming, and makeup.

Majors in professional theater may elect one year of study in two different languages through intermediate levels.

Students may elect an additional 15 hours from among departmental course offerings to complete the major requirements of 50 semester hours.

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*This course meets General Education requirements.

REQUIRED COURSES FOR PROFESSIONAL THEATER MAJORS

Course No.	*Credit Hours*	*Course Name*
Speech 250	2	Speech Fundamentals
Speech 610	3	Phonetics
Theater 301	3	Acting
Theater 302	3	Elements of Play Production
Theater 500	3	History of Theater I
Theater 501	3	History of Theater II
Theater 400	3	Scenic Design
Theater 441	3	Stagecraft & Lighting
Theater 440	3	Play Directing
Theater 650	6	Acting or Technical Workshop
Theater 656	3	Advance Play Directing

SPEECH COMMUNICATION AND THEATER ARTS

Bachelor of Science 124 Hours 39 Major Hours

The Speech Communication and Theatre Arts degree, non-teaching is designed for the student who wants to pursue graduate study in preparation for professions requiring professional competence in speech communication such as law, government, the ministry, public relations (business, industry), mass media communications, or speech pathology.

This degree, less structured, not only offers the student greater option in choosing a large number of major electives but also in choosing a larger concentration of free electives that are allied with his major area. The student can choose from 24-29 hours of free electives and from 16-21 hours of major electives.

A. REQUIRED COURSES FOR THE SPEECH AND THEATRE ARTS MAJOR

(Non-Teaching)

Course No.	*Credit Hours*	*Course Name*
*Speech 250	2	Speech Fundamentals
Speech 251 or 252	3	Public Speaking or Argumentation & Debate
Theater 302	3	Play Production
Theater 500	3	History of the Theater I
Theater 501	3	History of the Theater II
Speech 610	3	Phonetics
Speech 510	3	Introduction to Speech Correction

Total No. Major Hours 18
Total No. Major Electives 21
Total No. Hours 39

*This course counts as a General Education requirement.

B. REQUIREMENTS OF THE SPEECH PATHOLOGY OPTION

The Speech and Theatre Arts major, may choose the option (pre-professional sequence) in the area of Speech Pathology. This sequence provides preparatory course work for the graduate study in Speech Pathology.

In the Speech Pathology Option, the student must complete: Phonetics 610, Introduction to Speech Correction 510, Speech Pathology I 404, Methods in Speech Pathology 405. He must in addition, complete the following courses in the general speech area: Speech Fundamentals 250, Public Speaking 251 or Group Discussion 420, Persuasive Communication 636, and Oral Reading and Interpretation 421. To complete the requirements of the Speech Pathology Option, the student should select 16 hours of major electives from Speech and/or Theatre offerings in the Department. A total of 39 hours is required in the Speech Pathology Option.

OFFERINGS IN MASS MEDIA COMMUNICATION

The A. & T. State University operates its own closed circuit radio station and closed circuit television studio. The Department of Speech and Theatre, one of several departments, scheduling courses in mass media communications, offers three courses in this area—637 *Television Production;* 638 *Television in Education;* and 460 *Radio Production.*

THE SPEECH LABORATORY

The Speech Laboratory provides facilities and equipment for the evaluation and the improvement of the student's voice and diction. The Speech Laboratory implements the Department's Speech Improvement Program.

THE SPEECH IMPROVEMENT PROGRAM is designed to provide supervised laboratory practice to develop accepted or standard pronunciation patterns and a communicative speaking voice. Students benefitting from this program may use non-standard dialect or vocal quality that stems from cultural disadvantage. Students planning to enter professions or vocations that require professional competence in voice and diction could benefit from the enrichment phase of this program. Such professions include teaching, law, the ministry, the theater, singing, and mass media broadcasting.

SPEECH

216. Voice and Diction Laboratory. Credit 1(0-2)

Supervised practice with the aid of an electronic laboratory in the development of speech intelligibility and an adequate speaking voice. For students whose professional pursuits require above average proficiency in articulation, pronunciation, and voice management; or for students whose substandard speech and voice patterns may come from cultural disadvantages; and for foreign students who wish to increase the intelligibility of their spoken American English. Prerequisite: consent of the instructor.

***250. Speech Fundamentals** Credit 2(2-0)

An introduction to the rhetorical, psychological, physiological, phonetic, linguistic, and communication bases of oral discourse. Preparation and practice in public communication and interpersonal communication.

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*These courses meet the General Education requirements.

***251. Public Speaking.** Credit 3(3-0)

A study of the methods by which public speeches are made clear, interesting and forceful; practice in writing and delivering speeches according to the audience and occasion. Prerequisite: Speech 250.

***252. Argumentation and Debate.** Credit 3(3-0)

Study and practice in analysis, gathering of material, briefing, ordering of arguments and evidence, refutation, and delivery. Prerequisite: Speech 250.

***253. Parliamentary Procedures** Credit 2(0-2)

Theory and practice in the rules and customs governing the organization and proceedings of deliberative bodies. Prerequisite: Speech 250.

335. Rhetoric of American Thought. Credit 3(3-0)

A critical study of selected American orators—their speech making on controversial social and political issues from 1830-1960, as well as the impact upon their audiences. Black American orators included. Prerequisite: Speech 250.

404. Speech Pathology I Credit 3(2-2)

Definition, classification, etiology and treatment of articulation disorders. Supervised observation and report writing of clinical therapy. Prerequisites: Speech 510 and 610.

405. Methods in Speech Pathology. Credit 3(2-2)

Definition, classification, etiology and treatment of voice disorders, language disorders, stuttering and cluttering. Prerequisite: Speech 404, supervised observation and report writing of clinical therapy.

407. Introduction to Audiology. Credit 3(2-2)

An introduction to hearing sciences, hearing evaluation, hearing conservation and aural rehabilitation. Prerequisite: Speech 404.

420. Group Discussion. Credit 3(3-0)

A study of the forms of discussion and the principles and methods underlying them. Practice in leading and participating in discussion situations. Prerequisite: Speech 250.

421. Oral Reading and Interpretation. Credit 2(2-0)

A study of the analysis and the oral interpretation, of the forms of classical and modern literature, e.g. poetry, narrative prose, the essay, and dramatic literature. Oral practice in individual and group projects.

510. Introduction to Speech Correction. Credit 3(2-2)

A study of the causes, symptoms, and treatment of minor speech disorders, basic theories underlying speech correction. Aimed at preparing the classroom teacher to identify common speech disorders and to make referrals to speech therapists. Observation of speech clinics.

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*This course counts as a General Education requirement.

539. Methods of Teaching Speech. Credit 3(3-0)

A study of the aims, objectives, problems and difficulties experienced in teaching speech in the modern school. Special attention is given to the organization and coordination of both speech and theater curriculums, to planning courses of study, its presentation, and to the selection of materials and equipment required of all Speech and Theater Education majors. Prerequisites: 27 hours of Speech and 15 hours of Education and Psychology.

610. Phonetics.

Broad transcription: The International Phonetic Alphabet; Standards of pronunciation; dialectal variations in America; physiological and accoustical bases of speech sounds. Prerequisite: Speech 250 or Consent of Instructor.

THEATER

300. Theatre Practice. Credit 1(0-2)

Practical experience in staging and setting up technical designs; backstage work in costume, makeup, stagecraft, lighting, etc., is required.

301. Acting. Credit 3(3-0)

A laboratory course designed to develop skill in voice, diction, and Pantomime by means of readings, monologues, skits, and short plays for school and community; practical experience in the major A. and T. production. Prerequisite: Speech 250.

302. Elements of Play Production. Credit 3(2-2)

Study of basic principles in all aspects of production and application of these principles to particular situations; affords opportunities for practical experience in acting, directing, lighting, scenery design, and construction. Prerequisite: Speech 250.

400. Scene Design. Credit 3(3-0)

A course in perspective, dealing with the representation of common objects, interiors, buildings, and landscapes as they appear to the eye. One hour lecture and two hours laboratory each week. Prerequisite: Theater 302.

440. Play Directing. Credit 3(3-0)

Elementary principles of staging plays; practical work in the directing of the one-act play; attention is given to the principles of selecting, casting, and rehearsing of plays. Exercises, lectures, and demonstrations. Prerequisite: Theater 301, 302.

441. Stagecraft and Lighting. Credit 3(3-0)

Study of principles of scenery construction and painting; practice in mounting productions for major shows. Prerequisite: Theatre 302.

457. Essentials of Playwriting. Credit 3(3-0)

Emphasis on creative work and class criticism; structure, characterization and dialogue are studied with reference to standard plays. Prerequisite: consent of instructor.

460. Radio Production. Credit 3(3-0)

Practical experience in radio broadcasting techniques and conventional studio practices; projects in radio announcing and acting, creative dramatics, commercial announcements, variety shows, and verse reading. Programs planned and executed by the students. Prerequisite: Speech 250.

500. History of the Theater I. Credit 3(3-0)

A study of theatre architecture, scenery, costume, methods of staging and production in Europe as well as a study of representative playwrights from Ancient Greece to Russia. Prerequisite: Theater 302 or consent of instructor.

501. History of the Theater II. Credit 3(3-0)

A continuation of Theatre I beginning with Realism, Naturalism, Symbolism, Expressionism, and neo-Romanticism in Theatre down to the Avant-Garde Theatre in Europe. Prerequisite: Theater 302 or consent of the instructor.

SPEECH

633. Speech for Teachers. Credit 2(2-0)

Study and application of the fundamental principles of oral communication related to teaching and learning; speech activities and interpersonal relations identified with teaching and learning and the teaching profession; exercises for self-improvement in the various speech processes.

634. Introduction to Rhetorical Criticism. Credit 3(3-0)

A study of the principles and methods underlying the rhetorical analysis and evaluation of public speeches.

635. Great Speeches of the Western World. Credit 3(3-0)

A study of the role of public address in the social, political, and intellectual history of Western man. A reading and critical analysis of selected speeches from Greco-Roman times to the present.

636. Persuasive Communication. Credit 3(3-0)

A study of the theory and practice of persuasive speaking in the democratic society, including formal and informal persuasive speaking, types of proof, and the ethics of persuasion. Practice in the preparation and presentation of persuasive messages.

637. Television Production. Credit 3(2-2)

Methods and techniques in television production, directing and announcing; program design, lighting, audio, camera, and electronic techniques. Laboratory practice. (Junior and Senior standing required)

638. Television in Education Credit 3(2-2)

The uses of television for instructional purposes. Production and preparation of television educational programs. Laboratory practice. (Junior and Senior standing required.)

736. British Public Address. Credit 3(3-0)

A study of the history and criticism of British public address through analysis of speeches on political and social issues of the 18th and 19th centuries.

737. Communication Theories. Credit 3(3-0)

The role of spoken communication in social adaptation. Relationships of thought, language, and expression; verbal perception and cognition; communication models and their characteristics.

740. Seminar in Speech Education. Credit 3(3-0)

Methods and materials for teaching speech courses and directing or supervising dramatic, forensic, and speech activities.

THEATER

620. Community and Creative Dramatics. Credit 3(3-0)

Theory and function of creative dramatics and applications in elementary education; demonstrations with children; special problems for graduate students.

630. Early American Drama and Theatre to 1900. Credit 3(3-0)

A study of significant developments in the American Theatre since 1900 as reflected through her major playwrights and theatre organization.

650. Theater Workshop. Credit 3-6 (0-6)

A particum involving the total theatrical experience. Involves units in acting, directing, stagecraft, designing and other such activities. Approximately 90 clock hours are devoted to technical production. Prerequisite: Senior standing or consent of instructor.

653. Principles and Practice of Stage Costume. Credit 3(2-2)

The function of costumes for the stage and for television, and their relationship to other elements of dramatic production. Includes research in construction of authentic period forms. Prerequisite: consent of instructor.

654. Problems in Acting. Credit 3(2-2)

Acting problems arising from differences in the types and style of dramatic production; emphasis on individual and group performance. Prerequisite: Theater 301.

655. Advanced Play Production. Credit 3(3-0)

A study of modern methods of staging and lighting plays. Directing on a multiple set; arena staging, intellectual values; script analysis. Prerequisite: Theater 302 and 440.

656. Advanced Directing. Credit 3(2-2)

A consideration of rehearsal problems and techniques as may be reflected in the 3-act play. In conjunction with the acting classes and the Richard B. Harrison Players, students direct projects selected from a variety of genres. Prerequisite: Theater 440.

Recommended Electives

The Department of Speech Communication and Theater Arts recommends the following electives to its majors who are pursuing either the teaching curriculum or the professional curriculum.

Music and Art

Music 404	History and Appreciation
Music 405	Baroque and Romantic Periods
Art 224	Art Appreciation
Art 400	Renaissance Art

Social Science

History 205	United States Since 1865
History 206	History of Africa
History 207	History of the Negro
History 107	Religions and Civilization
Sociology 204	Social Problems
Sociology 306	Minority Problems
Sociology 401	Origins of Social Thought

English

English 300	Advanced Composition
English 221	English Literature II
English 431	American Literature II
English 410	Shakespeare
English 620	Elizabethan Drama
English 752	Restoration and 18th Century British Drama
English 455	Journalism

Physical Education

Phy. Ed. 229	Dance
Phy. Ed. 451	Dance Composition
Phy. Ed. 452	Applied Dance

DEPARTMENTAL ACTIVITIES

Alpha Psi Omega National Dramatic Honor Fraternity (Phi Epsilon Chapter) was chartered at New York University and installed on campus during the Fall semester, 1970. Students of high ability and who are nominated by the department are eligible for membership. See Student Handbook for details.

Black Arts Repertory Company is dedicated to the production of plays and musicals concerned with the experience of the black man in Africa and in the Western Hemisphere. Membership is not restricted to any race or group. Each year's calender will schedule special productions from the repertoire of black playwrights and other cultural artists.

Richard B. Harrison Players is the regular dramatics organization which is open to all interested students enrolled in the University. The organization presents' its plays regularly in the Little Theater which is one of the more efficient facilities for theatrical productions in the nation. The theater seats 371 persons.

The Forensic Association provides training and numerous practical experiences in public communication and addresses, i.e., debate, discussion, original oratory (persuasive speaking), informative speaking, extemporized speaking and "rap" sessions. Students belonging to this group also have the opportunity to engage in intercollegiate debates and speech festivals, both regional and national.

DIVISION OF NATURAL SCIENCE AND MATHEMATICS

- DEPARTMENT OF BIOLOGY
- DEPARTMENT OF CHEMISTRY
- DEPARTMENT OF MATHEMATICS
- DEPARTMENT OF PHYSICS

DEPARTMENT OF BIOLOGY

Artis P. Graves, *Chairman*

The program of the Biology Department is designed to serve the needs of the University as a whole in the area of biological sciences. The undergraduate courses of instruction are organized to provide training necessary for specialization in agricultural sciences, home economics, nursing, horticulture, and the teaching of Biology. The Department offers courses designed to meet the general education requirement of the university and a professional program for entrance into graduate, medical, dental and veterinary schools. A Master of Science degree in Education with concentration in Biology is also offered by the Biology Department.

A student may earn the Bachelor of Science degree in Biology by pursuing either of the two curricula offered by the department. The professional major is designed to meet the needs of students planning a vocation in industry, dentistry, medicine, veterinary medicine, or further graduate studies. The teaching major is designed for Biology majors who desire to meet the requirements for certification as secondary school teachers in North Carolina.

The curricula of the two programs are similarly structured in the freshman and sophomore years. The course requirements of the upper level of these programs vary in that each is geared toward its specific goal.

The Master of Science in Education. A graduate student may earn the Master of Science degree in Education with concentration in Biology by pursuing the thesis or the non-thesis program.

The thesis plan requires a minimum of thirty hours of graduate credit including research for the thesis. Thirty semester hours of graduate credit are also required in the non-thesis plan.

In each of these procedures the minimum required courses in professional education are identical, namely six semester hours. The academic program in each prescribes a minimum of 18 semester hours in subject matter courses for certification in a specific area of concentration. The two programs require six semester hours of free electives that are recommended in the areas of chemistry, physics, mathematics or biology.

In the pursuance of the M.S. in Education Degree with a major in Biology under the non-thesis program, the candidate is required to complete 18 semester hours in biological science. Six semester hours of electives can be selected in the area of chemistry, mathematics, biology or physics. Of the above required 24 hours, 18 are applied to subject matter requirement of the degree and six are prescribed as electives. Six semester hours of professional education courses are also required.

Participants who wish to pursue the degree under the non-thesis plan could receive it by successfully meeting the following requirements:

Major (Biology)	18 semester hours
Education	6 semester hours
Electives	6 semester hours
	30 semester hours

Professional Major—In the Professional Major, the student is required to complete a minimum of 38 semester hours of Biology. There is also a further requirement of 45 semester hours of supporting courses. The program requires a minimum of 124 semester hours for graduation.

Teaching Major—In the Teaching Major, students are required to complete a minimum of 35 semester hours in Biology. Required supporting courses in this curriculum are 66 semester hours. This program requires a minimum of 124 semester hours for graduation.

REQUIRED COURSES for BIOLOGY MAJORS

1. REQUIRED COURSES IN BIOLOGY FOR PROFESSIONAL MAJORS

Course No.	*Credit Hours*	*Course Title*
Biol. 140	4	General Botany
Biol. 160	4	General Zoology
Biol. 121	4	General Microbiology
Biol. 260	4	Comparative Evolution of the Vertebrates
Biol. 465, or	4	Histology
Biol. 664	3	Histo-Chemical Technique
Biol. 466	3	Principles of Genetics
Biol. 561	4	Vertebrate Embryology
Biol. 562	4	Introductory Cell Physiology
Biol. 568	1	Seminar in Biology
Biol. 569	1	Seminar in Biology

SIX CREDIT HOURS TO BE SELECTED FROM THE FOLLOWING COURSES:

Course No.	*Credit Hours*	*Course Title*
Biol. 467	3	General Entomology
Biol. 600	3	General Science for Elementary Teachers
Biol. 640	3	Plant Biology
Biol. 642	3	Special Problems in Botany
Biol. 660	3	Special Problems in Zoology
Biol. 661	3	Mammalian Biology
Biol. 662	3	Biology of Sex
Biol. 663	3	Cytology
Biol. 665	3	Nature Study
Biol. 666	3	Experimental Biology
Biol. 667	3	Animal Biology

2. REQUIRED COURSES IN BIOLOGY FOR TEACHING MAJORS

Course No.	*Credit Hours*	*Course Title*
Biol. 140	4	General Botany
Biol. 160	4	General Zoology
Biol. 121	4	General Microbiology
Biol. 260	4	Comparative Evolution of the Vertebrates
Biol. 400	3	Field Biology
Biol. 466	3	Principles of Genetics
Biol. 561	4	Vertebrate Embryology
Biol. 562	4	Introductory Cell Physiology
Biol. 568	1	Seminar in Biology
Biol. 569	1	Seminar in Biology

THREE CREDIT HOURS TO BE SELECTED FROM THE FOLLOWING COURSES:

Course No.	*Credit Hours*	*Course Title*
Biol. 467	3	General Entomology
Biol. 600	3	General Science for Elementary Teachers
Biol. 640	3	Plant Biology
Biol. 642	3	Special Problems in Botany
Biol. 660	3	Special Problems in Zoology
Biol. 661	3	Mammalian Biology
Biol. 662	3	Biology of Sex
Biol. 663	3	Cytology
Biol. 665	3	Nature Study
Biol. 666	3	Experimental Biology
Biol. 667	3	Animal Biology

3. REQUIRED SUPPORTING COURSES FOR PROFESSIONAL MAJORS

Course No.	*Credit Hours*	*Course Title*
Chem. 106-116	5	General Chemistry I
Chem. 107-117	5	General Chemistry II
Chem. 221-223	5	Organic Chemistry I
Chem. 222-224	5	Organic Chemistry II
Phy. 225	4	College Physics I
Phy. 226	4	College Physics II
Math. 111	4	College Algebra and Trigonometry
Math. 113	4	Analytic Geometry and Calculus
Fr 100 or Gr 102	3	Elem. French I or Elem. German I
Fr 101 or Gr 103	3	Elem. French II or Elem. German II
Psy 320	3	General Psychology

4. REQUIRED SUPPORTING COURSES FOR TEACHING MAJORS

Course No.	*Credit Hours*	*Course Title*
Chem. 106-116	5	General Chemistry I
Chem. 107-117	5	General Chemistry II
Chem. 221-223	5	Organic Chemistry I
Phy. 225	4	College Physics I
Phy. 226	4	College Physics II
Math. 111	4	College Algebra and Trigonometry
Math. 113	4	Analytical Geometry and Calculus
Fr 100, Gr 102, or Sp 104	3	Elem. French I, Elem. German I, or Elem. Spanish I
Fr 101, Gr 103, or Sp 105	3	Elem. French II, Elem. German II or Elem. Spanish II
H. Ed 200	2	Personal Hygiene
Eng. 250	2	Speech Fundamentals
Psy 320	3	General Psychology
Ed 300	2	Introduction to Education
Ed 301	2	Phil. and Soc. Found. of Education
Ed 400	3	Psy. Found. of Education
Psy 436	3	Tests and Measurements
Ed 500	3	Prin. and Curricula of Sec. Schools
Ed 535	3	Methods of Teaching Science
Ed 560	6	Observation and Student Teaching

COURSES IN BIOLOGY

Undergraduate

100. Biological Science.* Credit 4(3-2)
(Formerly Biol. Sc. 1501)

This is a general education course that stresses the objectives presented under the general education program of the School of Education and General Studies. It is structured to meet the needs of students who plan to teach (a) at the pre-school level, (b) at the elementary school level, (c) at the secondary level in a non-science mathematics area, and (d) in the area of music. In addition this course is designed for freshmen who plan to concentrate in the divisions of the Humanities or the Social Sciences.

400. Field Biology. Credit 3(1-4)
(Formerly Biol. 1540)

This course is designed to give a more detailed understanding of the ecological requirements of organisms, their distribution and their way of life. Emphasis is placed on the method of collecting, classification, and preserving samples of organisms, where and when to find them and the sources of pertinent information regarding them.

*General Education course for non-majors.

COURSES IN BACTERIOLOGY

Undergraduate

120. Microbiology. Credit 4(2-4)
(Formerly Bact. 1523)

A survey of the principles and techniques of microbiology and immunology with special emphasis on their application to nursing.

121. General Microbiology. Credit 4(2-4)
(Formerly Gen. Bact. 1524)

A general course designed to orient the student within the world of microscopic living things, including yeasts, molds, bacteria, rickettsiae, and viruses. Detailed study is given to bacteria as prototypes of all microorganisms. Relationships among microorganisms and selected microorganisms (higher plants, animals, man) are emphasized. Prerequisites: Biology 160, 140; Chemistry 106-116 and 107-117.

420. Dairy Bacteriology. Credit 4(2-4)
(Formerly Bact. 1543)

A general course which considers some of the common organisms associated with normal, and abnormal fermentations of milk; the role of microorganisms in the production and decomposition of various dairy products is also considered. Prerequisite: Biology 121.

421. Soil Bacteriology. Credit 4(2-4)
(Formerly Bact. 1544)

The role of microorganisms in soil fertility. Special emphasis is on the activity of the nitrogen-fixing bacteria and also those concerned in the decomposition of organic waste materials. Prerequisite: Biology 121.

COURSES IN BOTANY

Undergraduate

140. General Botany.* Credit 4(2-4)
(Formerly Bot. 1507)

Plants as living organisms constituting an integrated part of man's environment. Emphasis is placed on cellular function, plant structure and function, evolutionary tendencies, and living processes.

430. Plant Taxonomy. Credit 4(2-4)
(Formerly Bot. 1527)

Systematic botany, and taxonomic system, botanical nomenclature, and herbarium techniques are combined in this study of selected orders, families, and genera of seed plants. Prerequisite: Botany 140.

432. Plant Physiology. Credit 4(2-4)
(Formerly Bot. 1528)

An elementary course designed to develop a clear understanding of the basic physiological process related to the structure, growth, and function of the seed plants. Prerequisites: Biology 140, Chemistry 106 and 107.

*General Education course for majors.

530. Plant Pathology. Credit 4(2-4)
(Formerly Bot. 1547)

Basic factors governing the development of plant diseases including host-parasite relationships, effect of environment on disease development and the nature of disease resistance. Prerequisite: Botany 140.

Advanced Undergraduate and Graduate

640. Plant Biology. Credit 3(2-2)
(Formerly Bot. 1572)

A presentation of fundamental botancial concepts to broaden the background of high school biology teachers. Bacteria, fungi, and other microscopic plants will be considered as well as certain higher forms of plants. The course will consist of lectures, laboratory projects, and field trips.

642. Special Problems in Botany. Credit 3(2-2)
(Formerly Bot. 1573)

Open to advanced students in botany for investigation of specific problems. Prerequisite: Biology 140 or 640.

COURSE IN GENERAL SCIENCE

600. General Science for Elementary Teachers. Credit 3(3-0)
(Formerly Gen. Sci. 1570)

This course will consider some of the fundamental principles of the life and physical sciences in an integrated manner in the light of present society needs.

COURSES IN ZOOLOGY

Undergraduate

160. General Zoology.* Credit 4(2-4)
(Formerly Zool. 1512)

An introduction to the study of invertebrates and vertebrates with emphasis on cellular physiology and the morphology, and physiology of representative forms.

260. Comparative Evolution of the Vertebrates. Credit 4(2-4)
(Formerly Zool. 1531)

A comparative study of chordate organ systems with rather detailed emphasis on the evolution and organogenesis of primitive chordates, dogfish shark and the cat. Prerequisite: Biology 160.

261. Sociobiology Credit 3(3-0)

An introductory interdisciplinary course treating with the social behavior in non-human animals. Concentration will be made on the evolution of social behavior with especial emphasis on the formation, maintenance, and disruption of social bonds. Prerequisite: An introductory course in Animal Biology.

*General Education course for majors.

460. Advanced Invertebrate Zoology. Credit 4(2-4)
(Formerly Zool. 1532)

Comprehensive consideration of the morphology, function, phylogeny, classification and the life histories of representative forms of lower and higher invertebrate groups exclusive of insects. Prerequisite: Biology 160.

461. Human Anatomy and Physiology. Credit 4(2-4)
(Formerly Zool. 1533)

A study of general structure and function of the human body. Not open to Biology majors.

465. Histology. Credit 4(2-4)
(Formerly Zool. 1551)

The microscopic anatomy of cells, tissues and organs with special emphasis on histogenesis, histochemistry and histophysiology. Prerequisite: Biology 160.

466. Principles of Genetics. Credit 3(2-2)
(Formerly Zool. 1552)

Chromosomal mechanisms and the molecular basis of heredity; concept of template surfaces and the replication and genetic organization of DNA. Gene action at the molecular level; gene structure and function; the genetic code; regulation of protein synthesis; cell differentiation and development. Prerequisite: Biology 160.

467. General Entomology. Credit 3(1-4)
(Formerly Zool. 1553)

Elementary structure, description, and habits of the principal orders of insects. Laboratory work will consist of collecting, mounting, preserving, and classification of principal insect representatives. Recommended for general science and biological science majors. Prerequisite: Biology 160.

468. Economic Entomology. Credit 3(2-2)
(Formerly Zool. 1554)

Elementary structure, life histories, classification, and control of insect pests and related arthropods. Recommended for students majoring in one of the agricultural sciences. Prerequisite: Biology 160.

469. Human Anatomy. Credit 3(2-2)
(Formerly Zool. 1556)

Lectures, demonstrations and laboratory study emphasizing basic facts and principles of body structure. Not open to Biology majors.

560. Human Physiology. Credit 3(2-3)
(Formerly Zool. 1565)

An introductory course with emphasis placed on basic principles and mechanisms of physiological functioning of body cells, tissues and systems. Required of majors in Physical Education. Not open to Biology majors. Prerequisite: Biology 469.

561. Vertebrate Embryology. Credit 4(2-4)
(Formerly Zool. 1566)

Study of the developmental stages of selected vertebrates. The materials are treated comparatively and consist of amphibian, bird, rodent, and references to other mammalian forms. Prerequisite: Biology 260.

562. Introductory Cell Physiology. Credit 4(2-4)
(Formerly Zool. 1567)

A treatment at the molecular level of the fundamental processes in living cells. The biochemistry of cellular constituents, bioenergetics, intermediary metabolism, and the regulatory mechanisms of the cell will be discussed. Prerequisite: Chemistry 221.

568. Seminar in Biology. Credit 1(1-0)
(Formerly Zool. 1568)

A seminar on selected topic and recent advances in the field of plant and animal biology. This course is required of all seniors.

569. Seminar in Biology. Credit 1(1-0)
(Formerly Zool. 1569)

A continuation of Zoology 568.

Advanced Undergraduate and Graduate

660. Special Problems in Zoology. Credit 3(2-2)
(Formerly Zool. 1574)

Open to students qualified to do research in Zoology.

661. Mammalian Biology. Credit 3(3-0)
(Formerly Zool. 1575)

Study of the evolutionary history, classification, adaptation and variation of representative mammals. Prerequisite: Biology 160.

662. Biology of Sex. Credit 3(3-0)
(Formerly Zool. 1576)

Lectures on the origin and development of the germ cells and reproductive systems in selected animal forms. Prerequisites: Biology 140, 160, and 260.

663. Cytology. Credit 3(3-0)
(Formerly Zool. 1577)

Study of the cell with lectures and periodic student reports on modern advances in cellular biology. Prerequisites: Biology 140, 160 and 465.

664. Histo-Chemical Technique. Credit 3(1-4)
(Formerly Zool. 1578)

Designed to develop skills in the preparation of cells, tissues and organs for microscopic observation and study. Prerequisites: Biology 160 and 260.

665. Nature Study. Credit 3(3-0)
(Formerly Zool. 1579)

A study of diversified organisms, their habits, life histories, defenses, sex relationships, periodic activities and economic values designed to acquaint the student with fundamental knowledge that should lead to a fuller appreciation of nature.

666. Experimental Embryology. Credit 3(1-4)
(Formerly Zool. 1580)

A comprehensive lecture-seminar course covering the more recent literature on experimental embryology and development physiology. Experimental studies treating with fish, amphibian, chick and rodent development are designed as laboratory projects. Prerequisite: Biology 561 or equivalent.

667. Animal Biology. Credit 3(2-2)
(Formerly Zool. 1581)

A lecture-laboratory course stressing fundamental concepts and principles of biology with the aim of strengthening the background of high school teachers. Emphasis is placed on the principles of animal origin, structure, function, development, and ecological relationships.

668. Animal Behavior Credit 3(3-0)

A study of the qualitative and quantitative difference between behavioral characteristics at different evolutionary levels, adaptiveness of differences in behavior and the development of behavior will be emphasized. Prerequisites: Biology 260, 466 and 561.

669. Recent Advances in Cell Biology Credit 3(3-0)

A course designed to meet the needs of advanced undergraduate and graduate students desirous of the more recent trends concerning functions of organized cellular and sub-cellular systems. Current research as it relates to the molecular and fine structure basis of cell function, replication, and differentiation will be discussed. Prerequisites: Biology 466, 562, credit or concurrent registration in Chemistry 224.

GRADUATE COURSES IN BOTANY

740. Essentials of Plant Anatomy. Credit 3(2-2)
(Formerly Botany 1585)

741. Applied Plant Ecology. Credit 3(2-2)
(Formerly Botany 1586)

742. Physiology of Vascular Plants. Credit 3(2-2)
(Formerly Botany 1587)

743. Developmental Plant Morphology. Credit 3(2-2)
(Formerly Botany 5586)

744. Plant Nutrition. Credit 3(2-2)
(Formerly Botany 5587)

GRADUATE COURSES IN ZOOLOGY

760. Projects in Biology. Credit 2(0-4)
(Formerly Zoology 1588)

761. Seminar in Biology. Credit 1(1-0)
(Formerly Zoology 1589)

762. Applied Invertebrate Zoology. Credit 3(2-2)
(Formerly Zoology 1590)

763. Fundamentals of Vertebrate Morphology. Credit 3(2-2)
(Formerly Zoology 1591).

764. Basic Protozoology. Credit 3(2-2)
(Formerly Zoology 1592)

765. Introductory Experimental Zoology. Credit 3(2-2)
(Formerly Zoology 1593)

766. Invertebrate Biology for Elementary and Secondary School Teachers. Credit 3(3-0)
(Formerly Zoology 1594)

767. Genetics and Inheritance for the Secondary School Teacher. Credit 3(2-2)
(Formerly Zoology 1595)

768. Functional Invertebrate Zoology. Credit 3(2-2)
(Formerly Zoology 1596)

769. Cellular Physiology. Credit 4(2-4)
(Formerly Zoology 1598)

860. Parasitology. Credit 3(2-2)
(Formerly Zoology 5585)

861. Advanced Genetics. Credit 3(2-2)
(Formerly Zoology 5588)

862. Research in Botany. 3 Credit Hours
(Formerly Zoology 5592) or

863. Research in Zoology. 3 Credit Hours
(Formerly Zoology 5593)

GRADUATE COURSES IN BIOLOGY

703. Experimental Methods in Biology. Credit 3(1-4)
(Formerly Zoology 1597)

704. Seminar in Biology. Credit 3(2-2)
(Formerly Zoology 1599)

700. Environmental Biology. Credit 3(2-2)
(Formerly Zoology 1589)

701. Biological Seminar. Credit 1(1-0)
(Formerly Zoology 1590)

702. Biological Seminar. Credit 1(1-0)
(Formerly Zoology 1591)

DEPARTMENT OF CHEMISTRY

William DeLauder, *Chairman*

The Department of Chemistry offers two major curricula leading to the Bachelor of Science degree—Professional Major—Teaching Major. The curriculum of the professional major is designed to meet the needs of students planning to begin professional careers in chemistry upon graduation, to engage in further study in the field at the graduate level, or planning to enter medical, dental, or other professional schools. The student may select one or two options in order to complete this major. The options are: The American Chemical Society (ACS) Certified Program or the Pre-Health Program. The ACS program requires that the student complete 43 semester hours in basic chemistry courses and four to eight semester hours in advanced chemistry courses. The Pre-Health program requires the student to complete 37 semester hours in basic chemistry courses and 16 semester hours of basic biology courses. The teaching major is designed to give the student a thorough foundation in chemistry while meeting the requirements for certification as a teacher at the secondary school level. It requires a minimum of 37 semester hours credit in chemistry. This curriculum differs from the customary teaching major in that it provides sufficient training for a professional career in chemistry or in teaching at the secondary school level. One who follows this curriculum could subsequently do bona fide work at the graduate school level in chemistry.

It is intended that the two curricula would be identical in the freshman and sophomore years so that a student need not reach a final decision regarding his choice of a profession until the beginning of the third year. The professional curriculum has been accredited by the American Chemical Society.

The department offers a combined Bachelor of Science/Master of Science degree program. This curricula is identical in the first two years to the professional major's program leading to the Bachelor of Science degree. It is designed to enable talented undergraduate students to obtain the B.S. and M.S. degrees, in Chemistry, during a five year period of study and research. Any student, who is a rising junior in chemistry, with a grade-point average of 3.0 in chemistry and an overall average of 2.7 will be eligible for this program.

PROFESSIONAL MAJOR CURRICULUM

I. American Chemical Society Certified Program

A. Required Courses in Chemistry

Course No.	*Credit Hours*	*Course Title*
Chem. 106	3	General Chemistry VI
Chem. 107	3	General Chemistry VII
Chem. 108	1	Chemistry Orientation
Chem. 116	2	General Chemistry VI Laboratory
Chem. 117	2	General Chemistry VII Laboratory
Chem. 231	2	Quantitative Analysis I
Chem. 232	2	Quantitative Analysis I Laboratory
Chem. 221	3	Organic Chemistry I
Chem. 222	3	Organic Chemistry II
Chem. 223	2	Organic Chemistry I Laboratory
Chem. 224	2	Organic Chemistry II Laboratory
Chem. 441	3	Physical Chemistry I
Chem. 442	3	Physical Chemistry II
Chem. 443	1	Physical Chemistry I Laboratory
Chem. 444	1	Physical Chemistry II Laboratory
Chem. 431	2	Quantitative Analysis II
Chem. 432	2	Quantitative Analysis II Laboratory
Chem. 611	4	Advanced Inorganic Chemistry
Chem. 403	2	Introduction to Chemical Research

B. Required Supporting Courses

Course No.	*Credit Hours*	*Course Title*
Math. 116	5	Engineering Mathematics I
Math. 117	5	Engineering Mathematics II
Math. 300	4	Ordinary Differential Equations
Physics 221	5	General Physics I
Physics 222	5	General Physics II
German 102	3	Elementary German I
German 103	3	Elementary German II
Zoology 160	4	General Zoology
Botany 140*	4	General Botany

C. Other required courses from which 4 to 8 hours must be selected to complete the major requirements.

Course No.	*Credit Hours*	*Course Title*
Chem. 301	2	Current Trends in Chemistry
Chem. 610	2	Inorganic Synthesis
Chem. 624	5	Qualitative Organic Chemistry
Chem. 631	3	Electroanalytical Chemistry
Chem. 641	4	Radiochemistry
Chem. 643	2	Introduction to Quantum Mechanics
Chem. 651	5	General Biochemistry

II. Pre-Health Program

A. Required Courses in Chemistry

Course No.	*Credit Hours*	*Course Title*
Chem. 106	3	General Chemistry VI
Chem. 107	3	General Chemistry VII
Chem. 108	1	Chemistry Orientation
Chem. 116	2	General Chemistry VI Laboratory
Chem. 117	2	General Chemistry VII Laboratory
Chem. 231	2	Quantitative Analysis I
Chem. 232	2	Quantitative Analysis I Laboratory
Chem. 221	3	Organic Chemistry I
Chem. 222	3	Organic Chemistry II
Chem. 223	2	Organic Chemistry I Laboratory
Chem. 224	2	Organic Chemistry II Laboratory
Chem. 441	3	Physical Chemistry I
Chem. 442	3	Physical Chemistry II
Chem. 443	1	Physical Chemistry I Laboratory
Chem. 444	1	Physical Chemistry II Laboratory
Chem. 431	2	Quantitative Analysis II
Chem. 432	2	Quantitative Analysis II Laboratory
Chem. 611	4	Advanced Inorganic Chemistry
Chem. 403	2	Introduction to Chemical Research

B. Required Supporting Courses

Course No.	*Credit Hours*	*Course Title*
Math. 116	5	Engineering Mathematics I
Math. 117	5	Engineering Mathematics II
Math. 300	4	Ordinary Differential Equations
Physics 221	5	General Physics I
Physics 222	5	General Physics II
German 102	3	Elementary German I
German 103	3	Elementary German II
Zoology 160	4	General Zoology
Zoology 260	4	Comparative Anatomy
Zoology 561	4	Embrology
Zoology 562	4	Physiology

TEACHING MAJOR CURRICULUM

A. Required Courses in Chemistry

Course No.	*Credit Hours*	*Course Title*
Chem. 106	3	General Chemistry VI
Chem. 107	3	General Chemistry VII
Chem. 108	1	Chemistry Orientation
Chem. 116	2	General Chemistry VI Laboratory
Chem. 117	2	General Chemistry VII Laboratory
Chem. 231	2	Quantitative Analysis I
Chem. 232	2	Quantitative Analysis I Laboratory
Chem. 221	3	Organic Chemistry I
Chem. 222	3	Organic Chemistry II

Chem. 223	2	Organic Chemistry I Laboratory
Chem. 224	2	Organic Chemistry II Laboratory
Chem. 441	3	Physical Chemistry I
Chem. 442	3	Physical Chemistry II
Chem. 443	1	Physical Chemistry I Laboratory
Chem. 444	1	Physical Chemistry II Laboratory
Chem. 431	2	Quantitative Analysis II
Chem. 432	2	Quantitative Analysis II Laboratory

B. Required Supporting Courses

Course No.	*Credit Hours*	*Course Title*
Math. 116	5	Engineering Mathematics I
Math. 117	5	Engineering Mathematics II
Math. 300	4	Ordinary Differential Equations
Physics 221	5	General Physics I
Physics 222	5	General Physics II
German 102	3	Elementary German I
German 103	3	Elementary German II
German 425	3	Intermediate Scientific German
Zoology 160	4	General Zoology
Botany 140*	4	General Botany

C. Required Education Courses

Course No.	*Credit Hours*	*Course Title*
Health Ed. 200	2	Personal Hygiene
Education 300	2	Introduction to Education
Education 301	2	Philosophical & Sociological Foundations of Education
Education 400	3	Psychological Foundations of Education —Growth and Development
Education 500	3	Principles and Curricula of Secondary Schools
Education 535	3	Methods of Teaching Science
Education 560	6	Observation and Student Teaching
Psychology 320	3	General Psychology
Education 436	3	Tests and Measurements
English 250	2	Speech Fundamentals
Earth Science 309	3	Elements of Physical Geology

BACHELOR OF SCIENCE—MASTER OF SCIENCE

A. Required Courses in Chemistry

Course No.	*Credit Hours*	*Course Title*
Chem. 106	3	General Chemistry VI
Chem. 107	3	General Chemistry VII
Chem. 108	1	Chemistry Orientation
Chem. 116	2	General Chemistry VI Laboratory
Chem. 117	2	General Chemistry VII Laboratory

*A biology course for which Zoology 160 is a prerequisite may be substituted for Botany 140.

Chem. 231	2	Quantitative Analysis I
Chem. 232	2	Quantitative Analysis I Laboratory
Chem. 221	3	Organic Chemistry I
Chem. 222	3	Organic Chemistry II
Chem. 223	2	Organic Chemistry I Laboratory
Chem. 224	2	Organic Chemistry II laboratory
Chem. 441	3	Physical Chemistry I
Chem. 442	3	Physical Chemistry II
Chem. 443	1	Physical Chemistry I Laborabory

Course No.	*Credit Hours*	*Course Title*
Chem. 444	1	Physical Chemistry II Laboratory
Chem. 431	2	Quantitative Analysis II
Chem. 432	2	Quantitative Analysis II Laboratory
Chem. 611	4	Advanced Inorganic Chemistry
Chem. 732	4	Advanced Analytical Chemistry
Chem. 722	4	Advanced Organic Chemistry
Chem. 641	4	Radiochemistry
Chem. 701	1	Seminar
Chem. 743 or 749	4	Chemical Thermodynamics or Chemical Kinetics
Chem. 799	3	Thesis Research
Chem. 702	5	Chemical Research

B. Required Supporting Courses

Course No.	*Credit Hours*	*Course Title*
Math. 116	5	Engineering Mathematics I
Math. 117	5	Engineering Mathematics II
Math. 300	4	Ordinary Differential Equations
Physics 221	5	General Physics I
Physics 222	5	General Physics II
German 102	3	Elementary German I
German 103	3	Elementary German II
German 425	3	Intermediate Scientific German
Zoology 160	4	General Zoology
Botany 140 or	4	General Botany
Zoology 260	4	Comparative Evolution of the Vertebrates

C. The student must select 5 hours from among 600 and 700 level chemistry courses.

COURSES IN CHEMISTRY

Students are required to wear safety glasses in all laboratories.

Undergraduate

†*100. Physical Science. Credit 3(3-0)
(Formerly Phy. Sc. 1601)

A one semester introductory course designed to make clear the nature of science as an enterprise and illustrate by numerous examples how science really proceeds. Learning experiences are constructed so that they closely approximate real life situations where one has to search for clues and insights from a variety of sources.

This course is not open to students who have received credit for Chemistry 101, 102, 104, 105, 106 or 107.

***101. General Chemistry I.** Credit 3(3-0)
(Formerly Chem. 1611)

Introduction to the study of chemistry, atomic structure and periodicity, chemical bonding, states of matter and phase transitions, solutions, and electrolytes. This course is designed for majors in engineering, and other sciences. Chemistry majors may register for this course with departmental approval.

†*102. General Chemistry II. Credit 3(3-0)
(Formerly Chem. 1612)

A continuation of general chemistry including an introduction to qualitative inorganic analysis. Prerequisite: Chemistry 101.

†*104. General Chemistry IV. Credit 3(3-0)
(Formerly Chem. 1615)

Introduction to fundamental techniques and concepts in chemistry; including writing and interpretation of symbols, formulas, equations, atomic structure, composition, and reactions of inorganic compounds. This course is not open to majors in chemistry, physics, biology, mathematics and engineering.

†*105. General Chemistry V. Credit 3(3-0)
(Formerly Chem. 1616)

A study of elementary organic chemistry and the chemical changes which take place during life processes. Prerequisite: Chemistry 104 or equivalent.

†*106. General Chemistry VI. Credit 3(3-0)
(Formerly Chem. 1618)

A course which emphasizes basic principles and important theoretical concepts of chemistry. Topics will include atomic structure, electronic configuration, the wave mechanical model of the atom, chemical bonding, states of matter, chemical equilibria, systems of acids and bases, and electrochemistry.

†*107. General Chemistry VII. Credit 3(3-0)
(Formerly Chem. 1619)

A continuation of Chemistry 106. Includes chemistry of important metals and nonmetals and a rigorous treatment of qualitative inorganic analysis.

108. Chemistry Orientation. Credit 1(1-0)
(Formerly Chem. 1617)

A series of lectures and discussions on the nature and requirements of the chemical profession; the application of ehcmistry to modern living; and other selected topics.

†*110. Physical Science Laboratory. Credit 1(0-2)

A laboratory course designed to bring students into working contact with the essential aspects of scientific experiences. It is in this course that the student develops concrete ideas about the operational meaning of the scientific method and problem solving. Corequisite: Physical Science 100.

This course is not open to students who have received credit for Chemistry 111, 112, 114, 115, 116, or 117.

†*111. General Chemistry I Laboratory. Credit 1(0-3)

An introduction to quantitative studies of substances and chemical reactions. Emphasis is also placed on the development of manipulative skills. Corequisite: Chemistry 101.

†*112. General Chemistry II Laboratory. Credit 1(0-3)

Continuation of Chemistry 111 with an introduction to qualitative analysis. Corequisite: Chemistry 102. Prerequisite: Chemistry 111.

†*114. General Chemistry IV Laboratory. Credit 1(0-3)

A study of inorganic reactions and substances and their relation to life processes. Corequisite: Chemistry 104.

†*115. General Chemistry V Laboratory. Credit 1(0-3)

A study of organic reactions and substances and their relation to life processes. Corequisite: Chemistry 105. Prerequisite: Chemistry 114.

†*116. General Chemistry VI Laboratory. Credit 2(0-6)

A course which emphasizes quantitative studies of chemical reactions such as acid-base studies, redox reactions, and equilibrium reactions. Emphasis is also placed on the development of manipulative skills in the laboratory. Corequisite: Chemistry 106.

†*117. General Chemistry VII Laboratory. Credit 2(0-6)

A continuation of Chemistry 116 with an introduction to qualitative analysis. Corequisite: Chemistry 107. Prerequisite: Chemistry 116.

210. Cooperative Experience I Credit 2(2-0)

A supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University.

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*Students are required to purchase supplemental materials for this course.
†General Education courses.

†221. Organic Chemistry I. Credit 3(3-0)
(Formerly Chem. 1621)

A study of the hydrocarbons (aliphatic and aromatic) and introduction to their derivatives. Prerequisite: Chemistry 102, 105, or 107.

***222. Organic Chemistry II.** Credit 3(3-0)
(Formerly Chem. 1622)

Continuation of the study of derivatives of hydrocarbons and more complex compounds. Prerequisite: Chemistry 221.

***223. Organic Chemistry I Laboratory.** Credit 2(0-6)

This laboratory course emphasizes the study of physical and chemical properties of aliphatic and aromatic compounds. Modern instrumentation such as gas and column chromatography, infrared and ultraviolet analyses are used. Corequisite: Chemistry 221.

***224. Organic Chemistry II Laboratory.** Credit 2(0-6)

A continuation of Chemistry 223. However, more emphasis is placed on syntheses and qualitative analysis of organic compounds. Corequisite: Chemistry 222. Prerequisite: Chemistry 223.

231. Quantitative Analysis I. Credit 2(2-0)
(Formerly Chem. 331)

Titrimetric and gravimetric analyses including theory and calculations associated with acid-base equilibria, oxidation-reduction, nucleation, and precipitation-complexation processes. Prerequisite: Chemistry 102 or 107. Corequisite: Mathematics 116.

***232. Quantitative Analysis I Laboratory.** Credit 2(0-6)

This laboratory course emphasizes the basic principles of chemical separations. Laboratory studies of gravimetric and titrimetric analyses are also encountered. Corequisite: Chemistry 117, 231.

251. Elementary Biochemistry. Credit 2(2-0)
(Formerly Chem. 1624)

A study of fundamental cellular constituents. Emphasis is placed on physiological applications and analyses. Prerequisites: Chemistry 105 or 222. This course is open to non-chemistry majors only.

***252. Elementary Biochemistry Laboratory.** Credit 1(0-3)

Elementary biochemical reactions are studied with emphasis placed on applications to biology, home economics and nursing. Prerequisite: Chemistry 115 or 224. Corequisite: Chemistry 251.

301. Current Trends in Chemistry. Credit 2(2-0)
(Formerly Chem. 1641)

A series of lectures and discussions on special problems in chemistry and of the chemical profession not covered in formal courses.

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*Students are required to purchase supplemental materials for the course.
†General Education courses.

310. Cooperative Experience II Credit 3(3-0)

A supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University.

403. Introduction to Chemical Research. Credit 4(0-10)
(Formerly Chem. 1661)

Makes use of the laboratory and library facilities in studying minor problems of research. Prerequisite: Advanced standing and permission of the Department.

404. Independent Study Credit 4(0-10)

Independent study or reserach in a particular area of chemistry. Prerequisite: Permission of the department and advanced standing.

410. Cooperative Experience III Credit 4(4-0)

A supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University.

431. Quantitative Analysis II. Credit 2(2-0)
(Formerly Chem. 1662)

A study of the theory and the operational features of some of the more important instruments that are currently being used as analytical tools such as ultraviolet, visible-light, and infrared spectrophotometers, electroanalytical instruments, thermometric titrators, fluorimeters, etc. Prerequisite: Chemistry 441. Corequisite: Chemistry 442.

***432. Quantitative Analysis II Laboratory.** Credit 2(0-6)

This laboratory course features the utilization of modern instruments such as ultraviolet, visible, and infrared spectrophotometers. The student will also utilize electroanalytical instruments and thermometric titrators. Corequisite: Chemistry 431.

441. Physical Chemistry I. Credit 3(3-0)
(Formerly Chem. 1663)

Atomic and nuclear structure, gaseous and crystalline states, physical properties and molecular structure, the laws of thermodynamics, studies of the liquid state, and solutions. Prerequisites: Physics 221, Math. 117, and Chemistry 231. Corequisite: Physics 222.

442. Physical Chemistry II. Credit 3(3-0)
(Formerly Chem. 1664)

A study of chemical kinetics, electric conductance, ionic equilibria, chemical equilibria, phase diagrams, and colloids. Prerequisite: Chemistry 441.

*Students are required to purchase supplemental materials for this course.

***443. Physical Chemistry I Laboratory.** Credit 1(0-3)

Thermodynamic and kinetic studies are emphasized in this course. Corequisite: Chemistry 441.

***444. Physical Chemistry II Laboratory.** Credit 1(0-3)

A continuation of Chemistry 443. Corequisite: Chemistry 442.

501. Intermediate Organic Chemistry Credit 3(3-0)

An indepth examination of various organic mechanisms, reactions, structures, and kinetics. Prerequisite: Chemistry 223.

502. Intermediate Physical Chemistry Credit 3(3-0)

An introduction to advanced theoretical physical chemistry. Prerequisite: Chemistry 442.

Advanced Undergraduate and Graduate

610. Inorganic Synthesis. Credit 2(1-3)
(Formerly 1670)

Discussion of theoretical principles of synthesis and development of manipulative skills in the synthesis of inorganic substances. Prerequisites: One year of organic chemistry; one semester of quantitative analysis.

611. Advanced Inorganic Chemistry. Credit 4(4-0)
(Formerly 1671)

A course in the theoretical approach to the systematization of inorganic chemistry. Prerequisite: Chemistry 441. Corequisite: Chemistry 442.

***624. Qualitative Organic Chemistry.** Credit 5(3-6)
(Formerly 1776)

A course in the systematic identification of organic compounds. Prerequisite: One year of Organic Chemistry.

631. Electroanalytical Chemistry. Credit 3(3-0)
(Formerly 1781)

A study of the theory and practice of polarography, chronopotentiometry, potential sweep chronoampereometry and electrodeposition. The theory of diffusion and electrode kinetics will also be discussed along with the factors which influence rate processes, the double layer, adsorption and catalytic reactions. Prerequisite: Chemistry 431 or equivalent.

641. Radiochemistry. Credit 3(3-0)
(Formerly 1782)

A study of the fundamental concepts, processes, and applications of nuclear chemistry, including natural and artificial radioactivity, sources, and chemistry of the radioelements. Open to advanced majors and others with sufficient background in chemistry and physics. Prerequisites: Chemistry 442 or Physics 406.

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*Students are required to purchase supplemental materials for the course.

642. Radioisotope Techniques and Applications. Credit 2(1-3)
(Formerly 1783)

The techniques of measuring and handling radioisotopes and their use in chemistry, biology, and other fields. Open to majors and non-majors. Prerequisite: Chemistry 102 or 105 or 107.

643. Introduction to Quantum Mechanics. Credit 4(4-0)
(Formerly 1784)

Non-relativistic wave mechanics and its application to simple systems by means of the operator formulation. Prerequisites: Chemistry 442, and Physics 222. Corequisite: Mathematics 300.

651. General Biochemistry. Credit 5(3-6)
(Formerly 1780)

A study of modern biochemistry. The course emphasizes chemical kinetics and energetics associated with biological reactions and includes a study of carbohydrates, lipids, proteins, vitamins, nucleic acids, hormones, photosynthesis, and respiration. Prerequisites: Chemistry 431 and 442.

GRADUATE COURSES

These courses are open to graduate students only. See the bulletin of the Graduate School for course descriptions.

701. Seminar. Credit 1(1-0)
(Formerly Chem. 1098)

702. Chemical Research. Credit 2-5(0-4 to 10)
(Formerly Chem. 1085, 1086 & 1087)

711. Structural Inorganic Chemistry. Credit 2(2-0)
(Formerly Chem. 1685)

715. Special Problems in Inorganic Chemistry. Credit 2-5(0-4 to 10)
(Formerly Chem. 1088 & 1089)

716. Selected Topics in Inorganic Chemistry. Credit 2(2-0)
(Formerly Chem. 1686)

721. Elements of Organic Chemistry Credit 3(2-3)
(Formerly Chem. 1690)

722. Advanced Organic Chemistry Credit 4(4-0)
(Formerly Chem. 1691)

723. Organic Reactions. Credit 2(2-0)
(Formerly Chem. 1692)

725. Special Problems in Organic Chemistry. Credit 2-5(0-4 to 10)
(Formerly Chem. 1090 & 1091)

726. Selected Topics in Organic Chemistry. Credit 2(2-0)
(Formerly Chem. 1693)

727. Organic Preparations. Credit 1-3(0-2 to 6)
(Formerly Chem. 1694)

731. Modern Analytical Chemistry. Credit 3(2-3)
(Formerly Chem. 1787)

732. Advanced Analytical Chemistry. Credit 4(4-0)
(Formerly Chem. 1788)

735. Special Problems in Analytical Chemistry. Credit 2-5(0-4 to 10)
(Formerly Chem. 1092 & 1093)

736. Selected Topics in Analytical Chemistry. Credit 2(2-0)
(Formerly Chem. 1786)

741. Principles of Physical Chemistry I. Credit 4(3-3)
(Formerly Chem. 1789)

742. Principles of Physical Chemistry II. Credit 4(3-3)
(Formerly Chem. 1790)

743. Chemical Thermodynamics. Credit 4(4-0)
(Formerly Chem. 1791)

744. Chemical Spectroscopy. Credit 3(2-3)
(Formerly Chem. 1792)

745. Special Problems in Physical Chemistry. Credit 2-5(0-4 to 10)
(Formerly Chem. 1094 & 1095)

746. Selected Topics in Physical Chemistry. Credit 2(2-0)
(Formerly Chem. 1795)

748. Colloid Chemistry. Credit 2(2-0)
(Formerly Chem. 1794)

749. Chemical Kinetics. Credit 4(4-0)
(Formerly Chem. 1793)

755. Special Problems in Biochemistry. Credit 2-5(0-4 to 10)
(Formerly Chem. 1096 & 1097)

756. Selected Topics in Biochemistry. Credit 2(2-0)
(Formerly Chem. 1695)

799. Thesis Research. Credit 3
(Formerly Chem. 1799)

DEPARTMENT OF MATHEMATICS

Wendell P. Jones, *Chairman*

PURPOSE

In conjunction with the overall purpose and philosophy of the University, the Department of Mathematics believes that its program should be geared to provide training in mathematics that will prepare the student for living and will meet the demands of a democratic and complex society. Its graduates can emerge as capable, well adjusted citizens with a high degree of achievement and intellectual curiosity to cope with the dynamics of any mathematical environment into which they are placed.

PROGRAMS AND OBJECTIVES

The Department of Mathematics offers three programs leading to the Bachelor of Science degree.

The three programs are: the baccalaureate degree in engineering mathematics, the baccalaureate degree in mathematics and the baccalaureate degree in mathematics (teacher education).

Students enrolled in either program must pass a comprehensive examination in mathematics.

OBJECTIVES OF THE ENGINEERING MATHEMATICS PROGRAM

1. To prepare the student to do graduate study in applied mathematics.
2. To prepare the student for service in industry and government.
3. To prepare the student for independent investigations in the areas of science and mathematics.
4. To inspire the student with the desire for continued growth in areas of mathematical inquiry.

OBJECTIVES OF MATHEMATICS PROGRAM

1. To prepare the student to do graduate work in the area of mathematics.
2. To prepare the student for independent investigation in the area of mathematics.
3. To inspire the student with the desire for continued growth in areas of mathematical inquiry.

OBJECTIVES OF THE MATHEMATICS PROGRAM (TEACHER EDUCATION)

1. To prepare the student for graduate study in the area of mathematics and professional education.
2. To prepare the teacher of mathematics to present mathematics in a modern, meaningful, stimulating manner at the secondary level.
3. To prepare the teacher with sufficient quantity and quality of mathematics to provide competent counseling in the several opportunities available in mathematics.
4. To develop in the teacher an appreciation for mathematical rigor, and an appreciation of mathematics as an art as well as a tool.

5. To develop in the teacher an understanding of and an appreciation for the development of mathematics from antiquity to the present.
6. To inspire in the prospective teacher a desire for continued growth in areas of mathematical inquiry.

THE ENGINEERING MATHEMATICS PROGRAM*

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mathematics 116, 117	5	5
Chemistry 101, 102	4	4
English 100, 101	3	3
Mechanical Engineering 101, 102	2	2
Electives or Air or Military Science	1	1
	15	15

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mathematics 300, 500	4	4
Mathematics 240, 440	3	3
Physics 221, 222	5	5
History 100, 101	3	3
Electives or Air or Military Science	2	2
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mathematics 511, 512	3	3
Mathematics 507, 508	3	3
Mechanical Engineering 441, 442	3	3
English 250	2	—
Physics 406	—	3
Humanities 200, 201	3	3
Health Education 200	—	2
Electives	3	3
	17	20

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Physics 400, 600	3	3
Mathematics 224, Elective	3	3
Mathematics 350, 520	3	3
Economics 301, 302	3	3
Foreign Language (French or German)	3	3
Electives	3	3
	18	18

REQUIRED COURSES FOR MATHEMATICS MAJORS

The 16 courses required for General Education

Course No.	*Course Title*	*Credit Hours*
Ed. 100	Orientation	1
Phy. Ed. 200	Personal Hygiene	2
*Physics 221	General Physics I	5
*Physics 222	General Physics II	5
Physics 406	Introduction to Modern Physics	3
Math. 111	College Algebra and Trigonometry	4
Math. 113	Analytic Geometry and Calculus	4
Math. 221	Analytic Geometry and Calculus	4
Math. 222	Analytic Geometry and Calculus	4
Math. 242	College Geometry	3
Math. 350	Linear Albegra and Matrix Theory I	3
Math. 505	Seminar in Mathematics	1
Math. 507	Intermediate Analysis I	3
Math. 511	Abstract Algebra I	3
Math. (15 hours beyond Math. 507. Must include Math. 508 or Math. 512).		15
Electives		22

REQUIRED COURSES FOR MATHEMATICS MAJORS (TEACHER EDUCATION)

The 16 courses required for General Education

Course No.	*Course Title*	*Credit Hours*
Phy. Ed. 200	Personal Hygiene	2
Ed. 100	Orientation	1
Ed. 300	Introduction to Education	2
Ed. 301	Philosophical and Sociological Foundations of Education	2
Ed. 400	Psychological Foundations of Education—Growth and Development	3
Ed. 500	Principles and Curricula of Secondary Schools	
Ed. 529	Methods of Teaching Mathematics	
Ed. 560	Observation and Student Teaching	12
*Physics 225	College Physics I	4
*Physics 226	College Physics II	4
Psychology 320	General Psychology	3
Psychology 436	Tests and Measurements	3
*Foreign language	(French or German)	6
Math. 111	College Algebra and Trigonometry	4
Math. 113	Analytic Geometry and Calculus	4
Math. 221	Analytic Geometry and Calculus	4
Math. 222	Analytic Geometry and Calculus	4
Math. 224	Introduction to Probability and Statistics	3
Math. 240	Introduction to the Programming of Digital Computers	3
Math. 242	College Geometry	3

*Offered in cooperation with the School of Engineering.

Math. 350	Linear Algebra and Matrix Theory I	3
Math. 505	Seminar in Mathematics	1
Math. 507	Intermediate Analysis I	3
Math. 511	Abstract Algebra I	3
Math.	(3 hours beyond Math. 507)	3

COURSES IN MATHEMATICS

Undergraduate

100. Intermediate Mathematics. Credit 3(3-0)
(Formerly Math. 3600)

Elementary properties of the real number system, basic algebra through quadratics. Required of students who fail the mathematics entrance examination.

***101. Freshman Mathematics I.** Credit 3(3-0)
(Formerly Math. 3610)

Axiomatic systems, algebraic structure of the real number system, basic algebra and trigonometry, introduction to analytic geometry and calculus. A passing score on the mathematics entrance examination.

***102. Freshman Mathematics II.** Credit 3(3-0)
(Formerly Math. 3602)

Continuation of Mathematics 101. Prerequisite: Math. 101.

110. Preparatory Engineering Mathematics. Credit 4(4-2)
(Formerly Math. 3610)

Algebraic properties of the number systems, fundamental operations, exponents and radicals, functions and graphs, solutions of equations and systems of equations, trigonometric functions and identities, inequalities logarithms, progressions, mathematical induction, binomial theorem, permutations and combination and determinants. Prerequisites: 1 unit of high school algebra and 1 unit of high school geometry.

***111. College Algebra and Trigonometry.** Credit 4(4-0)
(Formerly Math. 3611)

Elementary logic and the abstract nature of mathematics; structure of the real number system, polynomials and rational functions; linear systems and matrices, inequalities; sets, relations functions; trigonometric, logarithmic, expontential functions. Prerequisites: 1 Unit Plan Geometry and 2 Units of High School Algebra.

112. Calculus for Non-Mathematics Majors. Credit 4(4-0)

Basic ideas and concepts of calculus. Methods and techniques in differential and integral calculus. Applications of calculus. Prerequisite: Mathematics 102, 110 or 111. No credit towards a degree in mathematics.

***113. Analytic Geometry and Calculus.** Credit 4(4-0)
(Formerly Math. 3613)

Analytic geometry of lines and circles; functions, limits and derivatives and applications, integrals and applications, infinite series, general analytic geometry of two and three dimension, functions of several variables, multiple integration, line and surface integral. Prerequisite: Math. 111 or Math. 110.

115. Mathematics of Business and Finance. Credit 3(3-0)
(Formerly Math. 3615)

Simple interest, discount, partial payments, payroll, wages and commission accounts, discounts and mark-ups, retailing, taxes, distribution of ownership, transactions in corporate securities, insurance, compound interest, annuities, amortization and sinking funds. Prerequisites: Math. 111 or Math. 101, or Math. 110.

116. Engineering Mathematics I. Credit 5(4-2)
(Formerly Math. 3616)

A review of the basic principles of preparatory engineering mathematics, analytic geometry of two and three space, differentiation coordinates, infinite sequences and series, partial differentiation and multiple integrals. Prerequisites: Mathematics 110 or two units algebra, one unit geometry, one-half unit trigonometry and a passing score on the placement examination.

117. Engineering Mathematics II. Credit 5(4-2)
(Formerly Math. 3617)

Continuation of Math. 116. Prerequisite: Math. 116.

221. Analytic Geometry and Calculus. Credit 4(4-0)
(Formerly Math. 3621)

Continuation of Math. 113. Prerequisite: 113.

222. Analytic Geometry and Calculus. Credit 4(4-0)
(Formerly Math. 3622)

Continuation of Math. 221. Prerequisite: 221.

224. Introduction to Probability and Statistics. Credit 3(3-0)
(Formerly Math. 3624)

A general course covering fundamentals of statistics, central tendencies, variabilities, graphic methods, frequency distributions, correlations, reliability of measures, theory and methods of sampling, and the descriptive and analytical measures of statistics. Prerequisites: Math. 111.

*General Education courses.

240. Introduction to the Programming of Digital Computers. Credit 3(2-2)
(Formerly Math. 3641)

Flow charts, machine language, eg., FORTRAN, preparation of cards and tapes, number systems, typical programs for solution on standard computers. Mathematical essentials for computer programming; e.g. approximation methods, error functions, iteration schemes, and numerical solutions of equations. Prerequisite: Math. 111 or 102, 110.

242. College Geometry. Credit 3(3-0)
(Formerly Math. 3643)

Postulational Systems. Euclid's Parallel Postulate. A brief study of non-Euclidean geometrics. Euclidean Geometry as a special case of other geometrics. Defects of Euclid's system. Prerequisite: High School Geometry and Math. 113 or Math. 116.

300. Ordinary Differential Equations. Credit 4(4-0)
(Formerly Math. 3645)

Solution of linear n'th order equations, matrices and linear algebra, systems of linear differential equations, applications to mechanical vibrations and electrical circuits, power series solutions. Prerequisite: Math. 117 or Math. 222.

350. Linear Algebra and Matrix Theory I. Credit 3(3-0)
(Formerly Math. 3667)

Real and complex finite dimensional vector spaces, conjugate spaces, theory of linear transformation, linear operations, matrices, canonical representations, infinite dimensional space with an introduction to functional analysis. Prerequisite: Math. 221 or Math. 116.

420. History of Mathematics. Credit 3(3-0)
(Formerly Math. 3620)

A survey of the development of mathematics by chronological periods, with biographical references, illustrations of national and racial achievements, and discussion of the evolution of certain important topics of elementary mathematics. Prerequisite: Math. 221.

423. Theory of Equations. Credit 3(3-0)
(Formerly Math. 3623)

Methods of solving cubics, quartics and other higher algebraic equations. Methods of approximating roots, systems of equations, elements of determinations. Prerequisite: Math. 222.

440. Numerical Methods. Credit 3(2-2)
(Formerly Math. 3642)

Study of numerical methods as related to programming techniques covering the following topics, interpolation and extrapolation, approximate solutions of algebraic and transcendental equations, simultaneous linear equations initial-value, characteristic-value, and boundary-value problems, partial differential equations of the hyperbolic, parabolic, and elliptic types. Corequisite: Math. 240.

500. Introduction to Applied Mathematics. Credit 4(4-0)

Introduction to applied mathematics, Fourier series, Laplace transforms, line and surface integrals, introduction to partial differential equations, complex variables. Prerequisite: Math. 300.

505. Seminar in Mathematics. Credit 1(1-0)
(Formerly Math. 3660)

Methods of preparing and presenting seminars, presentation of seminars in current developments in mathematics and/or topics of interest which are not included in formal courses. Required of mathematics majors. Prerequisite: Math. 507 or 511.

507. Intermediate Analysis I Credit 3(3-0)
(Formerly Math. 3662)

A rigorous treatment of the fundamental principles of analysis, limits, continuity, sequences, series, differentiability and integrability and functions of several variables. Prerequisite: Math. 117 or Math. 222.

508. Intermediate Analysis II. Credit 3(3-0)
(Formerly Math. 3663)

Continuation of Math. 507. Prerequisite: Math. 507.

511. Abstract Algebra I. Credit 3(3-0)
(Formerly Math. 3664)

Elementary properties of sets, Peano axioms and the construction of the natural number system, properties of the integers, integral domains, groups, rings, fields, vector spaces, lattices and partially ordered sets. Prerequisite: Twenty hours of college mathematics.

512. Abstract Algebra II. Credit 3(3-0)
(Formerly Math. 3665)

Continuation of Math. 511. Prerequisite: Math. 511.

520. Linear Algebra and Matrix Theory II. Credit 3(3-0)
(Formerly Math. 3668)

Prerequisite: Math. 350.

550. Vector Analysis. Credit 3(3-0)
(Formerly Math. 3669)

A study of the processes of vector analysis, with a treatment of the vector functions and operations as applied in theoretical work. Prerequisite: Math. 500.

Advanced Undergraduate and Graduate

600. Introduction to Modern Mathematics for Secondary School Teachers. Credit 3(3-0)
(Formerly Math. 3670)

Elementary theory of sets, elementary logic and postulational systems, nature and methods of mathematical proofs, structure of the real number system. Open only to inservice teachers, or by permission of Department of Mathematics.

601. Algebraic Equations for Secondary School Teachers Credit 3(3-0)
(Formerly Math. 3671)

Algebra of sets, algebraic equations, systems of equations, matrices and determinants with applications and the elements of vector spaces. Prerequisite: Math. 600 or the consent of the Department of Mathematics.

602. Modern Algebra for Secondary School Teachers Credit 3(3-0)
(Formerly Math. 3672)

Sets and mappings, properties of binary operations, groups, rings, integral domains, vector spaces and fields. Prerequisite: Math. 600 or the consent of the Department of Mathematics.

603. Modern Analysis for Secondary School Teachers Credit 3(3-0)
(Formerly Math. 3673)

Properties of the real number system, function, limits, sequencies, continuity, differentiation and differentiability, integration and integrability. Prerequisite: Math. 600 or the consent of the Department of Mathematics.

604. Modern Geometry for Secondary School Teachers Credit 3(3-0)
(Formerly Math. 3674)

Re-examination of Euclidean geometry, axiomatic systems and the Hilbert axioms, introduction to projective geometry, other non-euclidean geometrics. Prerequisite: Math. 600 or the consent of the Department of Mathematics.

606. Mathematics for Chemists. Credit 3(3-0)
(Formerly Math. 3676)

This course will review those principles of mathematics which are involved in chemical computations and derivations from general through physical chemistry. It will include a study of significant figures, methods of expressing large and small numbers, algebraic operations, trigonometric functions, and an introduction to calculus.

607. Theory of Numbers. Credit 3(3-0)
(Formerly Math. 3677)

Divisibility properties of the integers, Euclid algorithm, congruences, diophantine equations, number-theoretic functions, and continued fractions. Prerequisite: Twenty hours of college mathematics.

608. Mathematics of Life Insurance. Credit 3(3-0)
(Formerly Math. 3678)

Probability, mortality table, life insurance, annuities, endowments, computation of net premiums, evaluation of policies, construction and use of tables. Prerequisite: Math. 224.

620. Elements of Set Theory and Topology. Credit 3(3-0)
(Formerly Math. 3682)

Operations on sets, relations, correspondences, comparison of sets, functions, ordered sets, general topological spaces, metric spaces, continuity, connectivity, compactness, hormeomorphic spaces, general properties of T-spaces. Prerequisite: Math. 222.

623. Advanced Probability and Statistics. Credit 3(3-0)
(Formerly Math. 3683)

Introduction to probability, distribution functions and movement-generating functions, frequency distribution of two variables, development of chisquare, student's "t" and "F" distributions. Prerequisite: Math. 224 and 117 or 222.

624. Methods of Applied Statistics. Credit 3(3-0)
(Formerly Math. 3684)

Presents the bases of various statistical procedures. Applications of normal, binomial, Poisson, Chi-square, student's "t" and "F" distributions. Tests of hypotheses, power of tests, statistical inference, regression and correlation analysis and analysis of variance. Prerequisite: Math. 224.

625. Modern Mathematics for Elementary Teachers I Credit 3(3-0)
(Formerly Math. 3685)

This course provides background in number and counting concepts, bases, fundamental processes and a variety of applications to problem solving. This course cannot be used to obtain credit toward a degree in mathematics.

626. Modern Mathematics for Elementary Teachers II. Credit 3(3-0)

Continuation of Math. 625. Prerequisite: Math. 625.

651. Methods in Applied Mathematics I. Credit 3(3-0)

An introduction to complex variables and residue calculus, transform calculus (Fourier, Laplace, Hankel, Mellin, etc. Transforms), higher order partial differential equations governing various physical phenomena, non-homogeneous boundary value problems, orthogonal expansions, Green's functions and variational principles. Prerequisite: Mathematics 300.

652. Methods in Applied Mathematics II. Credit 3(3-0)

An introduction to integral equations and conversion of differential problems into integral equations of Volterra and Fredholm types, solution by iteration and other methods, existence theory, eigenvalue problems, Hibert-Schmidt theory of symmetric kernels and topics in the calculus of variation, including optimization of integrals involving functions of more than one variable, Hamilton's principles, Sturm-Liouville theory, Rayleigh-Ritz methods, etc. Prerequisite: Mathematics 300.

Graduate

These courses are open only to graduate students. For descriptions of them, see the bulletin of the Graduate School.

700. Theory of Functions of A Real Variable I. Credit 3(3-0)
(Formerly Math. 3690)

701. Theory of Functions of A Real Variable II. Credit 3(3-0)
(Formerly Math. 3691)

710. Theory of Functions of A Complex Variable I. Credit 3(3-0)
(Formerly Math. 3692)

711. Theory of Functions of A Complex Variable II. Credit 3(3-0)
(Formerly Math. 3693)

715. Projective Geometry. Credit 3(3-0)
(Formerly Math. 3694)

717. Special Topics in Algebra. Credit 3(3-0)
(Formerly Math. 3695)

720. Special Topics in Analysis. Credit 3(3-0)
(Formerly Math. 3696)

DEPARTMENT OF PHYSICS

Jason Gilchrist, *Chairman*

The specific objectives of the department are as follows:

1. To prepare majors for graduate study and careers in Physics, medicine and other professional fields.
2. To prepare majors for work in research and development laboratories.
3. To prepare majors to teach physics and mathematics in high school, who also have a competency in chemistry and biology.
4. To provide majors in other departments with a clear understanding of the laws of physics and their applications.
5. To provide all students with the ability to make meaningful observations, to convert these observations into mathematical language, and to reach logical conclusions.

Three options in physics are provided for our majors. The professional option is designed for students who plan to go to graduate school in physics or medicine. The Engineering Option is for the student who plans to begin work with a bachelors degree. The Teaching Option is designed for the student who plans to teach in high school.

Professional Option Program

The required physics courses in the professional option curriculum are: Physics 221, 222, 400, 401, 402, 403, 406, 420, 421, 555, 556, 600, 603, 604, 605, 606.

Other required courses include Chemistry 101, 102, 111, and 112; Mathematics 116, 117, 240, 300, 500. Two semesters of French, German, or Russian are also required.

A student can complete requirements for a professional physics degree and also fulfill requirements for admission to medical school by taking the following courses as electives: Biology 160, 140, 260 and chemistry 221, 222. Many medical schools will also accept students after the completion of the third year of study.

Engineering Physics Option Program

The required physics courses in the engineering physics option curriculum are Physics 221, 222, 400, 402, 403, 406, 420, 421, 555, 556. Two additional physics courses are also required.

Other required courses include Chemistry 101, 102; Mathematics 116, 117, 240, 300, 500; Mechanical Engineering 101, 200, 335, 337, 361; Electrical Engineering 337, 452.

Teaching Option Program

The required physics courses in the teaching option curriculum are: Physics 221, 222, 400, 403, 406, 420, 421, 557. Two additional elective physics courses are also required.

Other required courses include Chemistry 101, 102; Mathematics 111, 113, 221, 222, 240, 300; Biology 140; Zoology 160.

PROFESSIONAL OPTION
Suggested Schedule of Courses

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Physics 102	1	—
English 102	1	—
English 100, 101	4	4
Physics 221, 222	5	5
Math 116, 117	5	5
History 100	—	3
	16	17

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
History 101	3	—
Humanities 200	—	3
Math 300, 500	4	4
Physics 406	—	3
Math 240	3	—
Chemistry 101, 102	4	4
Physics 400, 600	3	3
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 201	3	—
Physics 555, 556	3	3
Physics 403, 602	3	5
Physics 420, 421	1	1
Physics 401	3	—
Electives	3	6
	16	15

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Physics 605, 606	3	3
French, German or Russian	3	3
Physics Electives	3	—
Electives	6	9
	15	15

Minimum for Graduation—128 hours

ENGINEERING PHYSICS OPTION

Suggested Schedule of Courses

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Physics 221	—	5
Physics 102	1	1
English 100, 101	4	4
Mathematics 116, 117	5	5
History 100, 101	3	3
*Engineering Graphics 101	2	—
	15	17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Mathematics 300, 500	4	4
Physics 222	5	—
Mathematics 240	—	3
Chemistry 101, 102	4	4
Humanities 200, 201	3	3
M. E. 200	—	3
	16	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Physics 400, 402	3	3
Physics 403	—	3
Humanities-social studies	3	—
M. E. 335, 337	3	3
Physics 406	3	—
Electives in physics	—	3
E.E. 337, 452	4	4
	16	16

*May be replaced by a physics course if department deems it necessary, but 101 must be taken later and as soon as possible.

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Electives, free	3	6
Physics 555, 556	3	3
Physics 420, 421	1	1
M.E. 361	—	2
Electives in physics	3	—
Electives in engineering	4	3
Humanities-social studies	3	—
	17	15

Minimum for Graduation—129 hours

TEACHING OPTION

Suggested Schedule of Courses

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	4	4
History 100, 101	3	3
Chemistry 101, 102	4	4
Mathematics 111, 113	4	4
Physical Education	1	1
Physics 102	1	—
	17	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Psychology 320	3	—
Education 300	—	2
Humanities 200, 201	3	3
Mathematics 221, 222	4	4
Physics 221, 222	5	5
English 250	2	—
Health Education 200	—	2
	17	16

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mathematics 300	4	—
Physics 400, 403	3	3
Physics 406	3	—
Physics 420, 421	1	1
Education 301, 400	2	3
Biology 140	—	4
Electives	—	6
Zoology 160	4	—
	17	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Education 560	—	6
Education 500	—	3
Physics 557	3	—
Psychology 436	3	—
Education 535	—	3
Physics electives	6	—
Mathematics 240	3	—
	15	12

Minimum for Graduation—127 hours

COURSES IN PHYSICS

***101. Introduction to Astronomy.** Credit 3(3-0)

Fundamentals of astronomy with emphasis on methods of observation and the solar system. Astronomical instruments, including optical and radio telescopes. The nature of the sun, moon, planets and other objects of the solar system.

102. Physics Orientation. Credit 1(1-0)

Lectures, seminars and laboratory demonstrations. Orientation to the Physics Department. Presentation of selected topics, student participation and discussions.

***200. Introductory Physics.** Credit 2(2-0)

A non-laboratory course involving the study of mechanics, heat, electricity, wave motion, and atomic and nuclear phenomena. Recommended for students with poor high school preparation in physics who should prepare for College Physics or General Physics.

201. Survey of Physics. Credit 3(2-2)
(Formerly Physics 3801)

A one-semester study of selected topics in physics including simple machines, heat, sound, electricity, and light. Prerequisite: Math 111 or 102.

***211. Technical Physics I.** Credit 4(2-4)

A study of basic principles of mechanics, heat, wave motion, and sound. Emphasis is placed on applications of physics in modern technology. Prerequisite: Math 111. Corequisite: Math 112.

212. Technical Physics II. Credit 4(2-4)

A continuation of Physics 211. Magnetism, electricity, light, and modern physics. Prerequisite: Physics 211.

***221. General Physics I.** Credit 5(3-4)
(Formerly Physics 3821)

A study of the usual topics of physics with special emphasis on depth of understanding of basic principles. Includes one two-hour period per week for questions, problems, films, demonstrations, etc. Calculus used. Corequisite: Math 117 or 221.

***222. General Physics II.** Credit 5(3-4)
(Formerly 3822)

A continuation of Physics 221. Prerequisite: Physics 221.

***225. College Physics I.** Credit 4(3-2)
(Formerly Physics 3822)

A study of the fundamental principles of mechanics, properties of matter, heat and thermometry, magnetism, electricity, wave motion, sound, light, and atomic physics. Calculus not required. Prerequisite: Math 113 or 116.

***226. College Physics II.** Credit 4(3-2)
(Formerly Physics 3826)

A continuation of Physics 225. Prerequisite: Physics 225.

400. Physical Mechanics I. Credit 3(3-0)
(Formerly Physics 3840)

An application of mathematical methods to motion of a particle, damped harmonic oscillator, central field motion, rotating coordinate systems, Fourier series, Lagrange's equations. Vector methods used. Prerequisite: Physics 222. Corequisite: Math 300.

401. Mathematical Physics. Credit 3(3-0)

Applications of mathematics to solution of physical problems. Selected topics in vector analysis, differential equations, special functions, calculus of variations, eigen-values and functions, matrices. Prerequisite: Math 500.

402. Thermodynamics. Credit 3(3-0)
(Formerly Physics 3842)

Includes equations of state, laws of thermodynamics, entropy, fluid flow, heat transfer, single and two-phas mixtures, and statistical mechanics. Prerequisite: Physics 222. Corequisite: Math 300.

403. Electromagnetism I. Credit 3(3-0)
(Formerly Physics 3843)

Includes DC and AC circuitry theory, Gauss' Law, Poisson and Laplace equations, dielectric and magnetic materials, Maxwell's equations. Prerequisites: Physics 222, Math 300.

*These courses may be used to satisfy the general education Science requirement.

404. Physical Optics. Credit 3(3-0)
(Formerly Physics 3844)

Emphasis on wave phenomena. Includes propagation, reflection, refraction of light, lenses and optical instruments, interference, diffraction, polarization, line spectra, thermal radiation. Prerequisites: Physics 222, Math 117 or 222.

405. X-Ray Diffraction. Credit 3(3-0)
(Formerly Physics 3845)

An introductory course with emphasis upon the power method, including x-ray sources, crystal shapes, and determination of unit cell parameters and atomic positions. Prerequisite: Physics 405 or special permission.

406. Introduction to Modern Physics. Credit 3(3-0)
(Formerly Physics 3846)

Quantization of mass, charge, radiation; atomic structure, relativity, theory of solids, natural and artificial radioactivity. Prerequisites: Physics 222 or 226, Math 222 or 117.

408. Solid State Physics. Credit 3(3-0)
(Formerly Physics 3848)

Structure and imperfections in crystals and metals, energy levels of metals, semi-conductors and their applications, insulators. Prerequisite: Physics 222 and preferably 406.

410. Introduction to Special Relativity. Credit 2(2-0)

A study of the relativistic concepts of space and time. Relativistic kinematics, dynamics, and electromagnetic theory. Prerequisite: Physics 406.

420. Physics Seminar I. Credit 1(1-0)
(Formerly Physics 3851)

A study of current developments in physics.

421. Physics Seminar II. Credit 1(1-0)
(Formerly Physics 3852)

A study of current developments in physics.

430. Physics Research I. Variable 1-3
(Formerly Physics 3853)

Involves student participation in research conducted by staff. Prerequisite: Consent of staff.

431. Physics Research II. Variable 1-3
(Formerly Physics 3854)

Involves student participation in research conducted by staff. Prerequisite: Consent of staff.

555. Advanced Laboratory I. Credit 3(0-6)
(Formerly Physics 3865)

A junior-senior level course with groups of experiments involving vacuum systems, magnetic resonance, x-ray diffraction, spectroscopy and quantization of charge. Prerequisite: Consent of instructor and Physics 406, 403.

556. Advanced Laboratory II. Credit 3(0-6)
(Formerly Physics 3866)

A continuation of Advanced Laboratory I. Prerequisite: Consent of instructor.

557. Advanced Laboratory III. Credit 3(0-6)

A junior-senior level course involving the study and careful performance of a group of experiments in electronic devices as applied to physics. Prerequisite: Junior Classification.

Advanced Undergraduate and Graduate

600. Physical Mechanics II. Credit 3(3-0)
(Formerly Physics 3841)

A continuation of Physics 400. Prerequisites: Physics 400, Math 500.

602. Electromagnetism II. Credit 5(5-0)
(Formerly Physics 3872)

A continuation of Physics 403. Prerequisites: Physics 403, Math 500.

605. Quantum Mechanics I. Credit 3(3-0)
(Formerly Physics 3874)

Postulates of wave mechanics and Schrondinger equation. Solutions of the Schrodinger equation for the harmonic oscillator, the square well, and the hydrogen atom. Concepts of spin and angular momentum. Approximate solutions of the Schrodinger equation, perturbation theory. Stark and Zeeman effects. Prerequisites: Physics 406 and Math 500.

606. Nuclear Physics. Credit 3(3-0)
(Formerly Physics 3875)

Nuclear structure, nuclear interactions, radioactive decay, reactions and cross-sections, nuclear forces, and scattering theory. Prerequisites: Physics 406, Math 500.

615. Quantum Mechanics II. Credit 3(3-0)

The problem of one and two electron atoms. Hydrogen atom and the alkalis. The hydrogen molecule and the molecular bond. The deuteron problem in nuclear physics. Alpha decay. Scattering theory and the nature of the nuclear force. The motion of a particle in a periodic potential and the role of Quantum Mechanics in solids. Operator formalism. Prerequisite: Physics 605.

705. General Physics for Science Teachers I. Credit 3(2-2)
(Formerly Physics 3885)

For persons engaged in teaching. Includes two hours of lecture demonstration and one two-hour laboratory period per week. Emphasis is placed upon understanding the basic principles of physics. Both courses may be combined during a single semester for double credit. For teachers only. Prerequisite: College degree.

706. General Physics for Science Teacher II. Credit 3(2-2)
(Formerly Physics 3886)

A continuation of Physics 705.

707. Electricity for Science Teachers. Credit 2(2-0)
(Formerly Physics 3887)

Includes electric fields potentials, direct current circuits, chemical and thermal emf's electric meters, and alternating currents. For teachers. Prerequisite: College Physics.

708. Modern Physics for Science Teachers I. Credit 2(2-0)
(Formerly Physics 3888)

An introductory course covering the usual areas of modern physics. Both courses may be combined during a single semester for double credit. For teachers only. Prerequisite: College Physics.

709. Modern Physics for Science Teachers II. Credit 2(2-0)
(Formerly Physics 3880)

A continuation of Physics 708.

DIVISION OF SOCIAL SCIENCES

- DEPARTMENT OF HISTORY
- DEPARTMENT OF POLITICAL SCIENCE
- DEPARTMENT OF SOCIOLOGY AND SOCIAL SERVICE
- DEPARTMENT OF PSYCHOLOGY

DEPARTMENT OF HISTORY

Frank C. Bell, *Acting Chairman*

The Department of History is organized to help students develop the abilities for analysis and critical judgment in dealing with matters of an historical nature. It aims further to encourage students to express themselves in constructive and meaningful ways as members of the society in which they live.

The objectives of the Department of History are to: (1) contribute to the general education of students by providing an historical, geographical, and philosophical background for the study of the arts, sciences and technical studies; (2) provide historical content for students preparing for careers in fields such as education, law, religion, social service, journalism, history and government service; (3) provide a course of study leading to the Baccalaureate degree in history or social sciences; (4) provide a course of study leading to the Master of Science degree in Education with a concentration in History or Social Sciences, and provide graduate education for career historians for entrance into doctoral programs.

Major Programs

The Department of History offers preparation leading to the Baccalaureate degree in: (1) History; (2) Teaching Major in History; (3) Teaching Major in Social Sciences; and (4) the Master of Education degree with concentrations in History or Social Sciences*. The program for history majors is designed to provide basic educational preparation for students interested in careers as historians and related fields. These students are prepared to continue in graduate and professional school programs.

The programs for teacher preparation are designed for those students who desire careers as teachers in history or social sciences in secondary schools.

History Major

The major in history must complete 124 semester hours of University courses. Included in the 124 semester hours are thirty hours of history in courses at the 200 level or above. A minimum grade of "C" must be achieved in these courses and the students must take History 150, 204, 205, 303, 304, and a research course or history seminar. Other courses which must be completed by history majors are as follow:

Eighteen semester hours in social sciences distributed in at least three fields, namely:
Economics 301, 302, 305 or an equivalent course in statistics
Political Science 330
Anthropology, Geography or Sociology (6 hours to complete the required 18 hours)
Twelve (12) semester hours in one foreign language
Three hours in philosophy
Psychology 320

*This program is described in Bulletin of the Graduate School.

Teaching Major in History

The teaching major in history must complete a minimum of 124 semester hours of University courses. Included in these hours are thirty semester hours in history courses at the 200 level or above with grades of "C" or better. In these thirty hours the following courses are required: History 150, 204, 205, 303, 304 and a research course or history seminar. Other required courses are:

Eighteen semester hours in social sciences distributed in at least three of the following fields:
Economics 301, 302
Political Science 330 or 230
Geography 200 or 210 or 319

Six (6) hours of electives from sociology, anthropology, economics, geography or political science.
Six (6) semester hours in one foreign language
Philosophy 260, 261 or 262
Psychology 320
Education 300, 301, 400, 436, 536, 560, 637

Teaching Major in Social Sciences

The Teaching Major in Social Sciences is an interdisciplinary sequence of study. Students pursuing this program must complete 124 semester hours of University courses. Included in the 124 hours are forty-five hours in the social sciences with a grade of "C" or better. The requirements in this area of study are as follow:

History: A minimum of twenty-one (21) semester hours at the 200 level or above including History 150, 204, 205, 303, 304, and a research course or history seminar.

Social Sciences: A minimum of twenty-four (24) semester hours at the 200 level or above (exception Sociology 100)

Political Science 230 and 330 or 333 or 440 or 441 or 442 or 542
Economics 301 and 302
Sociology 100 and 204 or 302
Geography 200 or 210 or 319 or 650
Anthropology 200 or 300
Education 300, 301, 400, 436, 500, 536, 560, 637
Psychology 320
Foreign Language (6) semester hours

The Minor in History

Students desiring to minor in history must complete eighteen semester hours in history at the 200 level or above including History 150, 204, 205, 303 and 304.

COURSES IN HISTORY

Undergraduate

***100. History of World Civilization—Part I.** Credit 3(3-0)

A general survey of the development of the social, political, economic, religious and cultural life in World Civilization. Part I treats the period from the Ancient World through the 17th century.

***101. History of World Civilization—Part II.** Credit 3(3-0)

A continuation of the social, political, economic, religious and cultural life in World Civilization from the Age of Enlightenment to the present.

105. History of Africa. Credit 3(3-0)

A study of basic information about Africa the geography of the continent, the characteristics of the population, the varying social structures, the natural resources, and the multiplicity of languages. Treated also in a thorough manner is the effect of European encroachment.

107. Religions and Civilization. Credit 3(3-0)

A course that surveys the origins and development of the traditional religions of India and China and the three "Religions of the Book": Judaism, Christianity, and Islam.

204. United States from 1492-1865. Credit 3(3-0)

A survey of the origin and development of the American nation to 1865.

205. The United States Since 1865. Credit 3(3-0)

A synthesis of social, cultural, economic and political forces affecting the United States since 1865.

206. The Afro-American in the United States to 1865. Credit 3(3-0)

A survey of the history of Negroes in the United States from the African background through emancipation. Emphasis is on American slavery, abolition movement, and the Free Negro community.

207. The Afro-American in the United States Since 1865. Credit 3(3-0)

A continuation of History 206. Particular emphasis is placed upon the struggle for equality.

208. History of North Carolina. Credit 3(3-0)

A general survey of North Carolina from colonial times to the present.

209. Africa South of the Sahara. Credit 3(3-0)

The formation of West African states, the European impact on the social, political, and cultural African institutions. African nationalism and the formation of new African nations.

280. History Honors. Credit 2-3(2-0)

An investigation in some depth of a period, movement, theme, or historical problem. 2-3 credits (2 credits for reports on intensive readings; 3rd credit for an approved study—investigation paper—to be arranged with an instructor). Prerequisite: For sophomores with a 3.0 average and consent of the department. May be repeated with the consent of the department.

300. Ancient History. Credit 3(3-0)
(Formerly History 400)

The Ancient Orient, Greece and the Roman Republic and Empire.

301. Medieval History. Credit 3(3-0)

Analysis of major developments in Medieval Europe with particular emphasis on social, political and religious institutions and cultural patterns.

302. The Renaissance and the Reformation. Credit 3(3-0)
(Formerly History 402)

A study of the background, causes and progress of the intellectual and cultural movements in Europe in the fourteenth, fifteenth, and sixteenth centuries. Emphasis will also be placed on the influence of the Renaissance on the events leading to the world conflicts of the sixteenth century.

303. Europe 1648-1815. Credit 3(3-0)
(Formerly History 403)

This course deals with such major themes as the Age of Louis XIV, Eighteenth Century Enlightment, The Old Regime, the French Revolution and Napoleon.

304. Modern Europe Since 1815. Credit 3(3-0)
(Formerly History 404)

A survey emphasizing main trends in European development; political and social impact of the French Revolution; Industrial Revolution; authoritarianism vs. liberalism; church vs. state; nationalism; imperialism; World Wars I and II; Communism, Nazism, present-day Europe.

312. Blacks in the Caribbean. Credit 3(3-0)
(Formerly History 110)

A history of the social, economic, and political development of Blacks in the West Indies and the Caribbean.

325. History of Colonial Latin America. Credit 3(3-0)
(Formerly History 502)

A survey dealing with the exploration and settlement, political, economic, and social development of Latin America concluding with the wars for independence.

326. History of Republican Latin America. Credit 3(3-0)
(Formerly History 502)

A continuation covering Latin American history from independence to the present time.

330. History of The Far East I. Credit 3(3-0)
(Formerly History 503)

A study of the history and culture of the Chinese and Japanese peoples from the classical civilization to the arrival of European nations.

331. History of the Far East II. Credit 3(3-0)
(Formerly History 504)

A study of the modern history of the Far East, an analysis of the reaction of China, Japan, and Korea to the western powers and the growth of these nations into modern powers.

334. Honors in History. Credit 3(3-0)

Intensive reading and study in the field of history. For history majors with a 3.0 average.

405. History of England. Credit 3(3-0)
(Formerly History 2855)

A study of English institutions and concepts that influence the Western World, and particularly America. Concentration of The Tudor and Stuart periods in the survey of institutions, and British imperialism as the basis for present world problems.

407. American Diplomatic History. Credit 3(3-0)
(Formerly History 2857)

A study of the relations of the United States with other nations with special reference to the development and use of the economic, political, social, military, and naval power necessary to give support to policy.

410. American Constitutional History. Credit 3(3-0)
(Formerly History 500)

A study of the constitutional development of the United States from the adoption of the Constitution to the present time.

416. History of Black Culture in the United States. Credit 3(3-0)

Focus on early cultural developments, folk culture, and religion in antebellum America; social and cultural trends in the twentieth century; the "Harlem Renaissance"; Urban life.

420. Seminar: Urban America. Credit 3(3-0)

Special topics in the rise of the American city and the development of urban patterns of life. Concentration on such themes as population shifts to cities, the development of slums and ghettos, growth of municipal institutions and services, and the relationship of government with city residents. (Prerequisite: 205 and consent of the instructor).

430. Topics in Twentieth Century American History. Credit (3-0)

In depth analysis of selected topics since the late nineteenth century, with special emphasis on written historical communication. Prerequisite: Six hours of American history (204 and 205) and the consent of the instructor.

440. Russia to 1917. Credit 3(3-0)

A study of Russian history from earliest times to the downfall of the Romanov dynasty in 1917. Emphasis is on those characteristics which contribute to the understanding of contemporary Russia.

441. Russia in the Twentieth Century. Credit 3(3-0)
(Formerly History 406)

After a survey of the background to the Revolution of 1917, topics include the Bolshevik Revolution, subsequent development and expansion of the Soviet Union.

450. Modernization in Historical Perspective Credit 3(3-0)

This course concentrates on an analysis of the various paths to modernity taken by several advanced societies, notably England, France, Germany, Russia, Japan and the United States. In particular, attention will be devoted to the causes and effects of: industrialization, the formation of new social classes and attitudes, urbanization demographic growth, bureaucratization, changes in family structure, intellectual responses to rapid change, and the development of the modern state.

460. Senior Program. Credit 3(3-0)

Guided readings and research for senior students concentrating in history. Required of history majors. Open to seniors only.

Courses for Advanced Undergraduates and Graduates

600. British Colonies and the American Revolution. Credit 3(3-0)
(Formerly History 2878)

Intensive analysis of special problems in Colonial and Revolutionary America.

603. The Civil War and Reconstruction. Credit 3(3-0)
(Formerly History 2881)

This course begins with a summary of the Civil War. It then treats the historiography of the Reconstruction period, the reconstruction of the South, and the restoration of the Union.

604. Contemporary History of the United States. Credit 3(3-0)
(Formerly History 2882)

The United States from the Great Depression of the 1930's to the present. Depression, New Deal, prosperity, Second World War, and problems of contemporary America.

605. The Soviet Union Since 1917. Credit 3(3-0)
(Formerly History 2883)

A discussion of the ideological background of the Soviet Union with emphasis on the doctrines of Marx, Engels, and Lenin. This is followed by events leading up to the revolution of 1917 and the establishment of Communist autocracy, the new economic policy, the first Five-year Plan, Stalin's doctrine, and Soviet Communism since the death of Stalin.

615. Seminar in the History of Black Americans. Credit 3(3-0)
A reading and discussion course which gives concentrated attention to various aspects of the life and history of the Afro-Americans.

616. Seminar in African History. Credit 3(3-0)
Reading and discussion of selected topics in the history of Africa.

620. American Social and Cultural Forces to 1865. Credit 3(3-0)
A study of the social and cultural forces in the development of society in the United States to 1865.

621. Social and Cultural Forces in the United States Since 1865. Credit 3(3-0)
A continuation of History 620. It is also open to those who wish to take the course separately.

625. Seminar in Historical Method. Credit 3(3-0)
Research and training in historical writing culminating in the presentation of a research paper.

630. Studies in European History, 1815-1914. Credit 3(3-0)
(Formerly History 703)
An intensive study of the main problems in selected periods of Nineteenth Century European history.

631. Studies in Twentieth Century Europe, 1914 to the Present.
(Formerly History 707) Credit 3(3-0)
Reading course in Contemporary European History, 1914 to the Present.

Courses for Graduates Only

700. The French Revolution and Napoleon. Credit 3(3-0)
(Formerly 2888)

701. Recent United States Diplomatic History. Credit 3(3-0)
(Formerly 2889)

702. Social and Political History of England From 1714-1832. Credit 3(3-0)
(Formerly 2890)

704. United States in The Early Twentieth Century. Credit 3(3-0)
(Formerly History 2894)

706. Independent Study in History. Credit 3(3-0)
(Formerly History 2894)

712. The Black American in The Twentieth Century. Credit 3(3-0)

730. Seminar in History. Credit 3(3-0)

PHILOSOPHY

260. Introduction to Philosophy. Credit 3(3-0)
(Formerly Philosophy 2904)

An introductory course covering such topics as theories of reality, the nature of mind and knowledge, and the higher values of life.

261. History of Philosophy. Credit 3(3-0)
(Formerly Phil. 2905)

The history of philosophic thought is traced from ancient Greek philosophers to modern philosophers through Hegel.

262. Logic. Credit 3(3-0)
(Formerly Phil. 2906)

An introductory course designed to give a critical analysis of the principles, problems and fallacies in reasoning.

Advanced Undergraduate and Graduate

608. Culture and Value. Credit 3(3-0)
(Formerly Phil. 5970)

A critical study of the nature and justification of basic ethical concepts in light of historical thought.

609. Contemporary Philosophy. Credit 3(3-0)
(Formerly Phil. 5971)

A critical investigation of some contemporary movements in philosophy with special emphasis on existentialism, pragmatism, and positivism.

COURSES IN GEOGRAPHY

Undergraduate

200. Principles of Geography. Credit 3(3-0)
(Formerly Geog. 518)

A survey of the principles of geography.

210. World Regional Geography Credit 3(3-0)

A survey of the geographic character of the major culture regions of the world. Contemporary cultural characteristics are examined within the framework of both environmental relationships and historical development.

319. Regional Geography of Anglo-America. Credit 3(3-0)
(Formerly Geog. 519)

A study of the geographic regions of the United States and Canada.

321. Political Geography. Credit 3(3-0)
(Formerly Geog. 521)

Theories of political geography; territorial changes and their political significance; problems in political unification, centralization and federation. Prerequisite: Political Science 230 or 330.

322. Economic Geography. Credit 3(3-0)
(Formerly Geog. 522)

A geographical survey of major economic activities as agriculture, forestry, fishing, mining, manufacturing, and commerce. Emphasis is placed upon areal patterns of production and exchange.

Advanced Undergraduate and Graduate

640. Topics in Geography of Anglo-America. Credit 3(3-0)
(Formerly Geog. 610)

Selected topics in cultural geography of the United States and Canada are studied intensively. Emphasis is placed upon individual reading and research and upon group discussion.

641. Topics in World Geography. Credit 3(3-0)
(Formerly Geog. 620)

Selected topics in world geography are studied intensively. Concern is for cultural characteristics and their interrelationships with each other and with habitat. Emphasis is upon reading, research, and discussion.

650. Physical Geography I. Credit 3(3-0)
(Formerly Geog. 605)

A study of the surface of the earth, including means of representation of the earth's surface, physical elements of weather and climate, climatic regions, and the earth's water and elements.

651. Physical Geography II. Credit 3(3-0)
(Formerly Geog. 606)

A continuation of Physical Geography I concentrating on climate and weather, natural vegetation and animal life, soils and association of physical landscape attributes.

PHILOSOPHY
ADVANCED UNDERGRADUATE AND GRADUATE

233-608. Culture and Value. Credit 3(3-0)
(Formerly 5970)

A critical study of the nature and justification of basic ethical concepts in light of historical thought.

233-609. Contemporary Philosophy. Credit 3(3-0)
(Formerly 5971)

A critical investigation of some contemporary movements in philosophy with special emphasis on existentialism, pragmatism, and positivism.

GEOGRAPHY

Advanced Undergraduate and Graduate

233-640. Topics in Geography of Anglo-America. Credit 3(3-0)
(Formerly 610)

Selected topics in cultural geography of the United States and Canada are studied intensively. Emphasis is placed upon individual reading and research and upon group discussion.

233-641. Topics in World Geography. Credit 3(3-0)
(Formerly 720)

Selected topics in world geography are studied intensively. Concern is for cultural characteristics and their interrelationships with each other and with habitat. Emphasis is upon reading, research and discussion.

233-650. Physical Geography I. Credit 3(3-0)
(Formerly 605)

A study of the surface of the earth, including means of representation of the earth's surface, physical elements of weather and climate, climate regions, and the earth's waters and elements.

233-651. Physical Geography II. Credit 3(3-0)
(Formerly 606)

A continuation of Physical Geography I concentrating on climate and weather, natural vegetation and animal life, soils and association of physical landscape attributes.

DEPARTMENT OF POLITICAL SCIENCE

Amarjit Singh, *Acting Chairman*

In keeping with the objectives of the University, and the political science profession, all study within the department has the following aims:

1. To develop a basic understanding of the operation of government at various levels.
2. To develop a basic understanding of the individual as a political entity.
3. To develop competence in the language and skills of the discipline.
4. To develop a sense of tolerance for miniority views, divergent views and unpopular beliefs.
5. To encourage students to engage in constructive criticism of the political and social problems.
6. To prepare students for advanced study.

The Department offers a major requiring 30 semester hours of course work in political science plus 12 hours of study in a cognate area. Eighteen credit hours are equired for a minor in political science.

THE DEPARTMENTAL MAJOR

A student may major in the general subject of political science or pursue a more concentrated program appropriate to his or her personal interests, career objectives and plans for graduate study. Fields of concentration are listed below with the careers for which they provide necessary preparation.

1. *American Politics:* graduate study in political science and certain governmental careers.
2. *Public Policy and Administration:* careers in public service and administration, urban planning and policy evaluation; and certain business occupations.
3. *Pre-law:* legal and para-legal careers
4. *International Affairs and Comparative Politics:* graduate study in political science and International Affairs, and careers in the foreign service, international governmental and business organizations.

The student's departmental advisor will suggest elective course-work within each area of concentration.

REQUIRED COURSES FOR POLITICAL SCIENCE MAJORS

Course No.	*Credit Hours*	*Course Title*
Pol. Sc. 230	3	Introduction to Political Science
Pol. Sc. 330	3	Federal Government
Pol. Sc. 440	3	Political Theory
Pol. Sc. 443	3	Public Administration

A minimum of eighteen hours must be selected for the following list to complete the major requirements:

Course No.	*Credit Hours*	*Course Title*
Pol. Sc. 331	3	The Struggle for Political Equality
Pol. Sc. 333	3	Introduction to Political Research
Pol. Sc. 441	3	State Government
Pol. Sc. 442	3	Municipal Government
Pol. Sc. 444	3	International Relations
Pol. Sc. 445	3	Problems of Contemporary Africa
Pol. Sc. 446	3	Politics of Black African Revolution
Pol. Sc. 447	3	Contemporary American Political Thought
Pol. Sc. 448	3	Politics of Transportation
Pol. Sc. 541	3	Party Politics and Pressure Groups
Pol. Sc. 542	3	American Constitutional Law
Pol. Sc. 543	3	International Law
Pol. Sc. 544	3	International Organization
Pol. Sc. 643	3	Urban Politics and Government
Pol. Sc. 645	3	American Foreign Policy (1945-Present)
Pol. Sc. 646	3	The Politics of Developing Nations

MAJOR IN POLITICAL SCIENCE

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 101, 102	3	3
History (See Below)	3	3
Physical Science 100	—	4
Biological Science 100	4	—
Education 100	1	—
Physical Education 101, 102	1	1
*Electives	—	1
	15	15

The following History courses may be elected by Freshmen students to satisfy the core requirements: 100, 101, 105, 107, 109.

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
French 100, 101 or German 102, 103 or Spanish 104, 105	3	3
Speech 250	—	2
Health Education 200	2	—
History 204, 205	3	3
Humanities 200, 201	3	3
Political Science 230	3	—
Psychology 320	—	3
*Electives	3	3
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Political Science 330, 440	3	3
Political Science 443, *Elective	3	3
Elective Political Science	3	3
Economics 301, 302	3	3
Philosophy 260 or 261 or 262	—	3
*Electives	3	3
	15	18

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Elective Political Science	3	3
Elective Political Science	3	3
*Electives	3	3
*Electives	3	3
Sociology 302	3	—
	15	12

COURSES IN POLITICAL SCIENCE

Undergraduate

***230. Introduction to Political Science** Credit 3(3-0)
(Formerly Political Science 2829)

This course treats the terminology and concepts of Political Science including such themes as politics and functions of governments, political behavior, constitutional systems, local government and federalism, individual rights of man, political representation, and governmental agencies and processes. A prerequisite to all other political science courses for political science majors.

330. Federal Government Credit 3(3-0)
(Formerly Pol. Sc. 2941)

A general introductory course in the government of the United States designed to acquaint the student with the basic facts and principles of the organization and operation of Federal institutions, and to give a foundation for more advanced work in Political Science. Prerequisite: Political Science 230 and History 205.

331. The Struggle for Political Equality Credit 3(3-0)
(Formerly Pol. Sc. 2914)

A comprehensive study of the Black man and minority groups in the United States to achieve political equality and equal justice before the law. It is structured around three main areas: (1) the political assumptions, idealogies and thought patterns of the architects of civil rights legislation; (2) the politics of protest—black political activity and allied group pressure attempts to secure equal rights. Such movements considered: the Abolitionist Movement, the Marcus Garvey Movement, Black Church protest, the NACCP, CORE, SNCC, SCLC and the more militant protests; Government and minority groups—special emphasis will be placed here on judicial interpretation as it has affected minorities on the national, state and local level.

333. Introduction to Political Research Credit 3(3-0)
(Formerly Pol. Sc. 2815)

Introduces students to fundamental methods and procedures in the collecting and analyzing of political data. Research on a specific political subject is required.

440. Political Theory
(Formerly Pol. Sc. 2940)

An in-depth treatment of the growth and development of this area of Political Science and its relevance to the field. The approach considers ancient and medieval thought as a unit and modern political thought as a separate unit.

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*Electives should be chosen from the following areas: History, Economics, Business Administration and Sociology. For suggested courses, see your advisor.

441. State Government Credit 3(3-0)
(Formerly Pol. Sc. 2942)

A study of the structure and functions of state government in the United States and its relation to federal and local governments. Special consideration is given to contemporary problems. Prerequisite: Pol Sc. 230.

442. Municipal Government Credit 3(3-0)
(Formerly Pol. Sc. 2943)

A study of municipal government in the larger context of local government as a whole. Treated will be form and structure, trends, economic developments, governments and politics, the power structure, the role of the citizen. A two-hour laboratory period is designed to import practical experience for the student. Open to juniors and seniors only.

443. Public Administration Credit 3(3-0)
(Formerly Pol. Sc. 2944)

Emphasis is devoted to basic principles of organization, location of authority, fiscal management, personnel management, forms of administrative action in the public service, technological and managerial advancements. Prerequisite: Pol. Sc. 230, 330.

444. International Relations Credit 3(3-0)
(Formerly Pol. Sc. 2945)

A comprehensive treatment of the policies and politics of nations; imperialism, colonialism, balance of power, international morality, treaties, sovereignty, diplomacy, tariff, war and other arrangements. Prerequisite: Pol. Sc. 330.

445. Problems of Contemporary Africa Credit 3(3-0)
(Formerly Pol. Sc. 2815)

Consideration of liberation struggles, decolonization and the emerging of independent states, and efforts toward Pan-Africanism since World War II.

446. Politics of the Black African Revolution Credit 3(3-0)
(Formerly Pol. Sc. 2912)

A look at the development of resistance to white colonialism, neo-colonialism, and general international relations.

447. Contemporary American Political Thought Credit 3(3-0)
(Formerly Pol. Sc. 2917)

A study of contemporary American political theories and ideas ranging from William Buckley to Herbert Marcus and Stokely Carmichael to Martin Luther King emphasis will be placed on the understanding, studying, evaluating, and meaningful alternative to our present government. Prerequisite: Federal Government, State and Local Government, a good understanding of existing forces in contemporary American politics, and consent of instructor.

448. Politics of Transportation Credit 3(3-0)

Analysis of political roots of various transportation problems such as highway location issues, mass transit bond issues, and politics of transportation innovation. The working mechanisms of federal, state and local transportation related units will also be considered. Case studies of local, regional and national issues will be included. Prerequisite: Junior status.

505. Honors Seminar in Political Science. Credit 3(3-0)
(Formerly Pol. Sc. 2816)

For superior students (seniors). A thorough examination of selected political works, primarily paperbacks. A treatment of selected political philosophies and ideas for informal discussion. Several critical reviews will be required.

540. American Foreign Policy. Credit 3(3-0)
(Formerly Pol. Sc. 2964)

An analysis of principles and problems of American Foreign Policy from 1789 to the present. Prerequisite: Pol. Sc. 330.

541. Party Politics and Pressure Groups. Credit 3(3-0)
(Formerly Pol. Sc. 2965)

This course deals with modern political parties in the United States as instruments of popular government. Special emphasis is placed upon party structure, functions and operations as it relates to the Negro. Prerequisite: Pol. Sc. 230.

542. American Constitutional Law. Credit 3(3-0)
(Formerly Pol. Sc. 2966)

A case study of major Supreme Court Decisions, the Judiciary, the Congress, the President, the Federal System, the First Amendment Freedoms and Due Process Rights.

543. International Law. Credit 3(3-0)
(Formerly Pol. Sc. 2967)

A study of the major principles and practices in the development of the Law of Nations, utilizing significant cases for purposes of clarification. Prerequisites: Pol. Sc. 230, 444.

544. International Organization. Credit 3(3-0)
(Formerly Pol. Sc. 2968)

This course analyzes the role of the international organization in world politics. Particular emphasis is given to the various approaches of international organizations in fostering peace and economic and social cooperation. Some attention will be given to the United Nations system as well as such defense, political, and economic arrangements as NATO, OSA, SEATO and the European Communities. Prerequisites: Pol. Sc. 230, 541, 543.

Courses for Advanced Undergraduates and Graduates

640. Federal Government Credit 3(3-0)
(Formerly Pol. Sc. 2976)

After a brief review of the structure and functions of the federal government, this course concerns itself with special areas of federal government: problems of national defense, the government as a promoter, the government as regulator, etc. Students will engage in in-depth study in one of the specific areas under consideration.

641. State Government Credit 3(3-0)
(Formerly Pol. Sc. 2977)

An in-depth study of special problems connected with operations of state and local governments.

642. Modern Political Theory Credit 3(3-0)
(Formerly Pol. Sc. 5973)

Includes selected political works for adherence to modern conceptions of the state, political institutions as well as the works of Machiavelli, Hobbes, Spinoza, Rousseau, Burke, Mill, Hegel, Marx, and Dewey.

643. Urban Politics and Government Credit 3(3-0)
(Formerly Pol. Sc. 5975)

A detailed analysis of the urban political arena including political machinery, economic forces and political structures of local governmental units.

645. American Foreign Policy—1945 to present Credit 3(3-0)
(Formerly Pol. Sc. 2976)

Examination of forces and policies that have emerged from Potsdam, Yalta, and World War II. Emphasis will be on understanding the policies that were formulated, why they were formulated, the consequences of their formulation, and the alternative policies that may have come about. Prerequisities: Survey course in American history, American Diplomatic History, and consent of instructor.

646. The Politics of Developing Nations Credit 3(3-0)
(Formerly Pol. Sc. 5974)

Political structures and administrative practices of selected countries in Africa, Latin America, Asia, analysis of particular cultural, social, and economic variable peculiar to the nations.

Courses For Graduates Only

For descriptions see Bulletin of the Graduate School.

730. Constitutional Development Since 1865
(Formerly Pol. Sc. 2896)

740. Government Finance
(Formerly Pol. Sc. 2898)

741. Comparative Government
(Formerly Pol. Sc. 2899)

742. Research and Current Problems
(Formerly Pol. Sc. 2980)

743. Readings in Political Science
(Formerly Pol. Sc. 5985)

Pre-Law Students

Students often ask, what course of study is best if one desires to enter law school upon graduation. The University of Denver Bulletin, College of Law, makes the following comment:

"In the College of Law, as in most law school, there is no course of study prescribed to precede admission to the study of law. A desirable prelegal course is one which prepares the student to think analytically, to reason logically, to concentrate effectively, to study purposefully and to express himself clearly in writing and speaking. In general, the prelaw student should acquire a broad liberal education. So far as possible, choice of courses should be made in accordance with the individual student's interest and needs. However, the student is strongly urged to obtain a broad background in the English language, including reading, writing and speaking."

DEPARTMENT OF SOCIOLOGY AND SOCIAL SERVICE

Frances Logan, *Acting Chairman*

The Department of Sociology and Social Service offers curricula leading to the following:

1. a B.A. degree in Sociology
2. a B.S. degree in Social Service
3. a B.A. degree in Social Service
4. a minor in Sociology

It is assumed that students who select a major in Sociology do so with the understanding that the program prepares only for graduate study in Sociology.

The program in Social Service is designed to prepare students for professional careers in the social services, including immediate employment, and preparation for graduate study.

SOCIOLOGY

The B.A. degree curriculum in Sociology is intended to prepare students for graduate study in Sociology. The program also offers sound preparation for graduate study in Business, Law, Urban Studies, Criminal Justice, Higher Education, Social Psychology, and other closely related fields and disciplines. Sociology majors must achieve and maintain a minimum cumulative grade point average of 3.00 for the junior and senior years, in order to insure favorable consideration for graduate study. Sociology majors normally pursue the Ph.D while in graduate school, the desired degree for research, and teaching.

REQUIREMENTS FOR SOCIOLOGY MAJORS

During the FRESHMAN and SOPHOMORE years, the following courses must be completed:

Biology and/or Zoology	8 credits
English 100, 101	6 credits
Speech	2 credits
Foreign Language	6 credits
Health or Physical Education	2 credits
Humanities 200, 201	6 credits
Math 111, 113, 240	11 credits
Philosophy or Art or Music	6 credits
Sociology 100, 302, 204*	9 credits
Political Science, or Economics, or Psychology	9 credits
	65 credits

During the JUNIOR and SENIOR years, the following courses should be completed:

Cognate area*	9 credits
Foreign Language	6 credits
Sociology 301, 402, 403, 671*	15 credits
Sociology electives*	6 credits
English	7 credits
Free Electives (Must be 300 level and above courses)	16 credits
	59 credits
TOTAL	124 credits

Note: The required cognate area (minor) for Sociology majors is math. The cognate area must consist of 9 hours of math courses numbered 200 and above, excluding math 240.

REQUIREMENTS FOR BACHELOR OF ARTS DEGREE IN SOCIAL SERVICE

The program of Social Service is designed to prepare students for professional careers in Social Work. Since its reorganization in 1968, the program, at A & T is the only Social Service program in a Black public North Carolina college or university that has maintained affiliate membership with the Council On Social Work Education. A & T's program is currently accredited (1974-75).

All Social Service majors must enroll in Field Instruction 15-20 clock hours per week, for two semesters, with the first Field enrollment normally taken in the Junior year.

During the FRESHMAN and SOPHOMORE year, the following courses should be completed:

Health or Physical Education	2 credits
Philosophy or Art or Music	6 credits
Biology or Zoology (any two courses)	8 credits
English 100, 101	6 credits
Foreign Language	12 credits
Math 111, 113, 240	11 credits
Social Service 133*	3 credits
Sociology 100, 302, 204*	9 credits
Typing	2 credits
Speech	2 credits
	61 credits

During the JUNIOR and SENIOR years, the following courses should be completed:

American History *or* Economics *or* Psychology *or* Political Science	9 credits
English *or* Speech (any courses)	5 credits
Social Service 306, 307, 333, 334, 520 571*	21 credits
Sociology 301, 333, 402, 403, 671*	15 credits
Free electives (Must be 300 level and above courses)	13 credits
	63 credits
	TOTAL 124 credits

REQUIREMENTS FOR BACHELOR OF SCIENCE DEGREE IN SOCIAL SERVICE

During the FRESHMAN and SOPHOMORE years, the following courses should be completed:

Political Science *or* Economics	9 credits
American History *or* Psychology	9 credits
Biology or Zoology (any two courses)	8 credits
Math 111, 113, 240	11 credits
Social Service 133*	3 credits
Sociology 100, 302, 204*	9 credits
Typing	2 credits
Speech	2 credits
Health *or* Physical Education	2 credits
English 100, 101	6 credits 6 credits
	61 credits

During the JUNIOR and SENIOR years, the following courses should be completed:

English, *or* Philosophy, *or* Speech (any courses)	5 credits
Social Service 306, 307, 333, 334, 520, 571*	21 credits
Sociology 301, 303, 402, 403, 671*	15 credits
Social Service Electives	6 credits
Free Electives (Must be 300 level and above courses)	16 credits
	63 credits
TOTAL	124 credits

*Must be completed with grade "C" or better.

COURSES IN SOCIOLOGY

100. Principles of Sociology.* Credit 3

Basic concepts and principles in Sociology as they are used to examine patterned and recurrent forms of social behavior.

200. Introduction to Anthropology Credit 3

An analysis and comparison of primitive cultures; further comparisons with modern cultures.

204. Social Problems.* Credit 3

Major social problems in American society and their relationship to social structures. Prerequisite: Sociology 100, concurrent, Statistics.

301. Origins of Social Thought.* Credit 3

The nature of social thought from the Greeks to the 19th century.

300. Topics in Cultural Anthropology Credit 3

Selected topics in language, culture, mythology, and religion designed to acquaint students with analyzing cultural patterning in this and other cultures.

302. Social Statistics I.* Credit 3

An introduction to elementary statistical reasoning. Prerequisite or concurrent: Sociology 100.

303. Social Statistics II.* Credit 3

Prerequisite: Sociology 302.

305. Reading For Honors In Sociology. Credit 3

Intensive and extensive library research on topics in Sociology. Prerequisite: "B" average.

308. The Family. Credit 3

The family as a social institution, and family types in cross cultural perspective.

313. The Community. Credit 3

A study of the social areas commonly defined as communities, and analyses of the social processes that occur within their boundaries.

402. Social Theories.* Credit 3

Social thought and theory in its development from Comte to the present. Prerequisite: Sociology 302.

403. Research Methods I.* Credit 3

Techniques used in social research. Prerequisite or concurrent, Sociology 301.

405. The Sociology of Work and Occupations. Credit 3

An analysis of work and occupational roles within bureaucratic societies. Forms of management-employee relations, and organizational theories, are studied.

406. Criminology Credit 3

Genesis and origin of crime and an analysis of theories of criminal behavior. Prerequisite: six (6) hours of Sociology and/or Social Service.

408. Independent Study I. Credit 3

Independent research on a specific topic or a delineated area in Sociology. Prerequisite: permission of instructor. (May be used in place of Sociology 403.)

501. Social Stratification Credit 3

A study of social inequalities and differentiation as related to social structures and social systems. Prerequisite: Sociology 302.

COURSES IN SOCIAL SERVICE

133. Social Professions, Fields and Services.* Credit 3

A basic introduction to selected welfare professions, their histories, development and present practices, as related to education, training and service functions. Required of all Social Service majors.

306. Social Functioning and Human Development.* Credit 3

Selected aspects of social responses to growth, health, disease and disability. Prerequisite: 133, concurrent: 307, 334, 333.

307. Field Instruction I.* Credit 5

Sypervised learning experiences in selected agencies and settings. Concurrent: 306, 334, 333.

309. Disability and Employment. Credit 3

This course will focus on selected mental, physical, and social disabilities, and their implications for coping and employment.

318. Practium in Community. Credit 5

Selection of a community problem; study and analysis of the problem followed by corrective activities, when possible. Prerequisite: consent of the instructor.

320. Reading For Honors in Social Welfare. Credit 3

Extensive library research in selected areas of social welfare. Prerequisite: Sophomore standing, "B" average.

325. Honors Seminar In Social Service. Credit 3

Selected topics in social welfare are extensively studied and discussed: Prerequisite: "B" average, Junior standing.

*Required courses.

333. Social Welfare I.* Credit 3
Social Welfare legislation and policy. Concurrent: 306, 307, 334.

334. Social Serivce Methods.* Credit 3
Basic methods in the provision of social services. Concurrent: 306, 307, 333.

425. Field Instruction II. Credit 3
Prerequisite: consent of instructor.

520. Field Instruction III.* Credit 5
Prerequisite: Consent of Instructor. Concurrent: 571.

525. Independent Study. Credit 3
Independent research in a delineated area of social welfare. Prerequisite: Consent of instructor.

571. Advanced Social Service Methods.* Credit 2
In depth discussion and utilization of selected social work methodology. Prerequisite: 306, 307, 334, or equivalent; concurrent: 520.

INTRA-DEPARTMENTAL COURSES

(These courses offer credit in either Sociology, or Social Service)

314. Black Experiences. Credit 2
A topical seminar focusing on commonly shared experiences of American Blacks in selected social institutions. Prerequisite: Junior standing.

370. Aging in Society. Credit 3
Aging and its implication in social institutions. Prerequisite: Junior standing.

505. Seminar in Urban Studies. Credit 3
An analysis of the nature and problems of cities, urban society and urban development. Prerequisite: Junior standing.

515. Independent Study II. Credit 3
Prerequisite: six (6) hours of statistics, and/or research.

570. Senior Seminar. Credit 1
Research and discussion of professional, and field issues related to careers in Sociology and in Social Service. Prerequisite: Senior standing.

600. Seminar in Social Planning. Credit 3
Personal and social values as related to social planning: "systems" theories program planning and evaluation. Prerequisite: Senior or graduate standing.

669. Small Groups. Credit 3
Elements and characteristics of small group behavior and process. Prerequisite: Senior or graduate standing; permission of instructor.

670. Law and Society. Credit 3

This course examines selected and representative forms of social justice and injustices; barriers to and opportunities for legal redress, as related to contemporary issues. Prerequisite: Senior or graduate standing.

671. Research Methods II.* Credit 3

Continuation of 403. Prerequisite: Senior or graduate standing; minimum of 6 to 9 credits in statistics and research.

672. Seminar in Women's Studies Credit 3

Exploration, research, and discussion of issues in female sex roles, institutionalized sexism, and human sexuality.

DEPARTMENT OF PSYCHOLOGY

Emory Sadler, *Chairman*

The Department of Psychology offers curricula leading to the following:

1. a B.A. degree in Psychology
2. a B.A. degree in Psychology with a Concentration in Manpower
3. an A.A. or B.A. in Psychology with a Concentration in Community Mental Health

The Manpower Concentration and Community Mental Health Programs are designed to prepare majors for immediate employment following graduation and are described elsewhere. The curriculum for the B.A. degree in Psychology is designed to prepare students for graduate study in the field of psychology.

The Major in Psychology

The major program is designed for the student whose occupational goal, following pre-professional undergraduate and professional graduate training, is in the general field in psychology. Samples of specific positions for which these two levels of training prepare the individual are: college professor, experimental psychologist, social psychologist, public opinion analyst, test designer, clinical psychologist, industrial psychologist, management consultant, school psychologist, rehabilitation worker, vocational counselor, and psychometrist.

Students with majors in psychology must first satisfy general education requirements prescribed by the School of Arts and Sciences with respect to English, foreign languages, health and physical education, and humanities. The mathematics requirements for psychology majors include Analytic Geometry and Calculus; the science requirements include one course in Biological Science, one course in Human Anatomy and Physiology, and one course in Physical Science; and the social science requirements include Western Civilization I and II and one course in Principals of Sociology. Psychology majors will preferably complete Elementary Psychology rather than the course in General Psychology which represents a general education course for non-psychology majors.

*Required courses.

Requirements in the area of specialization, including Elementary Psychology, are completion of sixteen (16) courses provided by the Department of Psychology with a minimum cumulative grade point average equaling or exceeding the overall minimum cumulative grade point average required by the University for graduation. Thirteen of the courses are prescribed. The additional three courses are departmental electives and should be selected with the approval of the student's advisor from among those listed below as *Requirements for a B.A. in Psychology.*

The Minor in Psychology

The minor program in psychology is designed for the student who desires training in the discipline beyond the level of an introductory course but whose occupational objectives are in fields other than psychology. These include law, medicine, education, social welfare, business administration, and the like. Such students will normally pursue those general education courses and major courses which are prescribed by the departments in which they are registered during the first two years of college work.

In addition, during their sophomore year, they should take Psychology 320, General Psychology and Psychology 322, Statistical Methods (or an equivalent first course in statistics). During the junior and senior years, the psychology minor will pursue an additional eighteeen semester hours in psychology selected from among other course offerings of the department, the only restriction being that the selection is limited to those courses whose prerequisites have been previously met.

Requirements for a B.A. in Psychology

General Education Requirements (54 hours)

Biology 100, Biological Science/Lab	4
English 100, 101, Ideas and Their Expression I and II	6
History 100, 101, World Civilization I and II	6
Sociology 100, Principles of Sociology	3
Physical Science 100, 110, Physical Science/Lab	4
Foreign Language	6
either 100, 101, Elementary French I and II or 102, 103, Elementary German I and II or 104, 105, Elementary Spanish I and II	
Physical Education 101, 102, Fundamentals	2
Mathematics 101, 102, Freshman Mathematics I and II	6
Health Education 200, Personal Hygiene	2
Humanities 200, 201, Survey of Humanities I and II	6
Speech 250, Speech Fundamentals	2
Zoology 461, Human Anatomy and Physiology/Lab	4
Humanities Elective (Art, English, Humanities, Music, Philosophy, or Speech)	3

Departmental Requirements (37 hours)

Psychology 100, Orientation to Psychology	1
Psychology 321, Elementary Psychology	3
Psychology 322, Statistical Methods	3
Psychology 324, Child Development	3

Psychology 325, Adolescent Development		3
Psychology 420, Social Psychology		3
Psychology 434, Abnormal Psychology*		3
Psychology 439, Theories of Personality*		3
Psychology 440, Introduction to Psychological Research		3
Two of the following:		6
Psychology 441, Information Processing	3	
Psychology 540, Physiological Psychology	3	
Psychology 541, Psychology of Learning	3	
Psychology 542, Seminar in Psychology*		3
Psychology 544, Psychological Testing		3

Requirements for a B.A. in Psychology

Departmental Electives (9 hours)

Three of the following:		9
Psychology 437, Mental Hygiene	3	
Psychology 441, Information Processing**	3	
Psychology 444, Applied Psychology	3	
Psychology 445, Industrial Psychology	3	
Psychology 540, Physiological Psychology**	3	
Psychology 541, Psychology of Learning**	3	3
Psychology 545, History and Systems in Psychology	3	
Psychology 645, Behavior Modification	3	

Free Electives (24 hours) 24

*Psychology majors with a concentration in Manpower should substitute Psy. 444, 445, and 610 (Manpower Internship) for Psy. 434, 439, and 542 which may be used as Departmental Electives. They should also take Sociology 405, Business Administration 569, Economics 602 and 603 with 12 hours remaining as free electives.

COURSES IN PSYCHOLOGY

100. Orientation to Psychology Credit 1(1-0)

A personal orientation to the department and an initial exposure to the major area of study. For example, an introduction to the departmental requirements, faculty interests, professional opportunities, and their implications for behavioral careers.

**Whichever is not used to satisfy the departmental requirements above.

320. General Psychology. Credit 3 (3-0)

An introduction to psychology as a life science especially designed for the major in areas other than psychology. Topics given major consideration include maturation and development; motivation, emotion, and personality; mental health; intelligence and aptitude; perception and attention; learning, forgetting, language, and thinking; social influences, attitudes, and beliefs, and vocational adjustment.

321. Elementary Psychology Credit 3(3-0)

An introduction to psychology as a behavioral science required of the major in psychology with enrollment restricted to such majors. Major areas of consideration include maturation and development; nervous system and internal environment; physiological basis of behavior; motivation, emotion, and personality; and, psychological testing.

322. Statistical Methods Credit 3(2-2)

Analysis and interpretation of research data. Descriptive statistics (frequency distributions, centrality, variability and correlation of measures), introduction to statistical inferences (normal curve sampling theory, chi-square tests of statistical hypotheses, t-tests, analysis of variance, Scheffe test ratio).

324. Child Development Credit 3(3-0)
(Formerly 430)

A comprehensive study of the physical, social, emotional personality, language and intellectual development of the child from birth through early childhood.

325. Adolescent Development Credit 3(3-0)
(Formerly 431)

A continuation of Child Development with emphasis on the periods of middle childhood through adolescence.

420. Social Psychology Credit 3(3-0)
(Formerly 323)

An introduction to the study of the behavior of the individual in relation to factors in his social environment. Socialization, enculturation, attitude formation and modification, social influence on perceptual and conceptual processes, and social interaction. (Prerequisites: Psy. 324, 325)

434. Abnormal Psychology Credit 3(3-0)

Behavior deviations and psychological disorders occurring during the several developmental stages; basic concepts employed in psycho-pathology, mental hygiene, and psychiatry.

437. Mental Hygiene Credit 3(3-0)

A study of basic principles of adjustment and mental hygiene.

439. Theories of Personality Credit 3(3-0)

Contemporary theoretical formulations of the structure and development of personality and their empirical bases.

440. Introduction to Psychological Research Credit 3(2-2)

A survey of various research methods with an emphasis on experimental design, instrumentation, and the collection, analysis, interpretation, and reporting of research data. (Prerequisite: Psy. 322, Statistical Methods or equivalent)

441. Information Processing Credit 3(3-0)

Sensation and perception including classical psychophysics, signal detection, decision theory, information theory, and adaptation-level theory.

444. Applied Psychology Credit 3(3-0)

The utilization of psychological principles in five areas of American culture; effectively training new generations; maintaining mental health; administrating justice; promoting economic progress; and facilitating efficient production.

445. Industrial Psychology Credit 3(2-2)

A consideration of the significance of individual differences in industry; employee selection and training; reduction of monotony and fatigue and the promotions of efficiency; accident prevention; psychological factors in employee turnover.

540. Physiological Psychology Credit 3(3-0)

A study of the physiological and chemical processes (and their anatomical substrates) that intervene between the arrival of sensory impulses in the central nervous system and the elaboration of responses to them. (Prerequisite: Zoo. 461)

541. Psychology of Learning Credit 3(3-0)

A general survey of those changes in performance as a function of practice subsumed under the label "learning." Consideration is given to the basic controlling variables; individual responses; such interactions of learned responses as chaining and transfer of training; and processes under the control if implicit and mediating activity such as retention and problem solving.

542. Seminar in Psychology Credit 3(3-0)

A study of selected major systematic views and theoretical issues in psychology. Each student participates in supervised research in psychological journals and other materials leading to an oral presentation and written paper on a substantive view or issue in psychology.

544. Psychological Testing Credit 3(2-2)

Emphasizes the principles of measurement of psychological attributes: an examination of factors essential for a reliable and valid measuring instrument with an emphasis on the important role they play in producing their effects. There will be discussion and preclinical experiences with the more valid tests available in the areas of personality, aptitude, attitude, interests, and intelligence testing. (Prerequisite: Psy. 322, Statistical Methods)

545. History and Systems of Psychology Credit 3(3-0)

A survey of the philosophical and scientific origins of contemporary theories of behavior including consideration of the schools and systems of thought which have emerged.

610. Manpower Internship Credit 3(3-0)

Off-campus cooperative assignments monitored and coordinated by University and Departmental personnel. Concentration in Manpower-Seniors only.

645. Behavior Modification Credit 3(3-0)

A survey of relevant research and techniques making use of either learning theory or behavior principles in the treatment of deviant behavior. Special emphasis is placed on the use of operant conditioning procedures in the prevention and treatment of abnormal behavior.

DEPARTMENT OF PSYCHOLOGY

Emory Sadler, Chairman

AN INTERDISCIPLINARY TRAINING PROGRAM FOR PARAPROFESSIONALS IN COMMUNITY MENTAL HEALTH "A BEHAVIORAL DISCIPLINE; AN APPLIED PSYCHOLOGY; A COMMUNITY PSYCHOLOGY"

Hattye H. Liston, *Director*

A PEOPLE/COMMUNITY/ACADEMIC DEGREE/HUMAN SCIENCE/ ECOLOGICAL-ORIENTED CURRICULUM.

The interdisciplinary program curriculum to train paraprofessionals in community mental health offers the Associate in Arts degree and/or the Bachelor of Arts degree. This program is an applied counterpart curriculum—a community psychology, differing from the traditional two and four year programs. It is a new and innovative program which provides the possibility of earning an Associate degree within one year or the Bachelor degree within two years.

Academic and general educational training is provided within the scope of a curriculum designed to meet the University's as well as the State of North Carolina's requirements for the awarding of an Associate or Bachelor degree.

The community mental health concentration is a part of the School of Arts and Sciences here at the North Carolina Agricultural and Technical State University. The Program approach is an interdisciplinary one, in accord with the Carnegie Commission on Higher Education's special report—"Less Time, More Options: Education Beyond the High School."

The interdisciplinary curriculum synthesizes psychology, guidance, sociology, social welfare, physical education, health and recreation into core courses. It is structured to provide a generalist training with emphasis in the areas of emotional disturbances, mental retardation, social gerontology, cor-

rections (adult and juvenile offenders), individual assessing of intelligence and mental ability, counseling, recreational therapy, drug and alcohol rehabilitation and education.

For admission to the Program, each applicant should have:

(1) A high school diploma or its equivalent;
(2) Proof of some working or service experience;
(3) A commitment to becoming a community mental health paraprofessional; and
(4) A sensitivity for the training necessary to the acquisition of skills enabling one to perform a variety of tasks and roles in community mental health—A Human Resource Service/An Applied Psychology/A Behavioral Science/A Community Psychology.

Also, it is preferable that applicants have some academic training and/or working experience beyond high school. However, this is not required. Priority for student selection is given to persons referred to the program by community agencies, veterans, licensed practical nurses, graduates of community colleges, housewives, and other mature individuals.

REQUIREMENTS FOR THE ASSOCIATE DEGREE

Requirements	*Semester Credit Hours*	*Percentage*
GENERAL EDUCATION		
English-Symbolic Comm. I 220-295	8	30%
Chemistry-Human Ecology I 220-290	4	
English-Great Ideas and Movements I 220-195	6	
OR Existing University courses		
MAJOR CORE		
Psychology 220-391, 220-392	10	32%
Psychology 220-393, 220-394	10	
PRACTICUM I and II		
Community Mental Health 220-491 (Practicum I)	6	19%
Community Mental Health 220-492 (Practicum II)	6	

***Practicum experiences should include a minimum of 200 contact hours.**

ELECTIVES from existing University courses	12	
TOTALS	62	100%

REQUIREMENTS FOR THE BACHELOR DEGREE

Requirements	*SEMESTER CREDIT HOURS*	*PERCENTAGE*
GENERAL EDUCATION		
Block I—English		
English-Symbolic Comm. I 220-295	8	30%
English-Symbolic Comm. II 220-296	8	
OR Existing University courses		
Block II—Natural Sciences		
Chemistry-Human Ecology 220-290	4	
Chemistry-Human Ecology 220-291	4	
OR Existing University courses		
Block III—Humanities		
English-Great Ideas and Movements I 220-195	6	
English-Great Ideas and Movements II 220-196	6	
OR Existing University courses		
MAJOR CORE		
Community Mental Health I and II 220-391, 220-392	10	
Community Mental Health III and IV 220-392, 220-394	10	
Community Mental Health V and VI 220-395, 220-395	10	
Community Mental Health VII and VIII 220-397, 220-398	10	
PRACTICUM		
Community Mental Health-Practicum I 220-491	6	
Community Mental Health-Practicum II 220-492	6	
Community Mental Health-Practicum III 220-493	6	
Community Mental Health-Practicum IV 220-494	6	

*A maximum of 18 semester hours of credit; 24 may be allowed for previous work experience. *At least 6 hours of Practicum must be taken while the student is enrolled in the Program.* The number of Practicum hours earned should equal a minimum of 500 contact hours.

ELECTIVES from existing University courses		
Courses offered in the University may be selected according to the students' needs and interests.	24	19%
TOTALS	124	100%

COURSE DESCRIPTIONS FOLLOW:

GENERAL EDUCATION

English-Symbolic Communications I 220-295

Fundamentals of communication skills. Includes reading, composition, speaking, logic mathematics, theories of information mass communications, creative projects.

English Symbolic Communications II 220-296

Advanced communication skills. Uses the problems approach to the production of communications, messages, including audiovisual media, and mathematical skills.

Chemistry-Human Ecology I 220-290

The integration of natural and physical sciences in a consideration of the relationships between organisms and their environment. Emphasis is on the development of man and his geographical, physiological, and sociological adjustments.

Chemistry-Human Ecology II 220-291

Continuation of 290. Examination of mass behavior in adjusting to the ecosystem and the impact of ecology on mass behavior within a near environment.

English-Great Ideas and Movements I 220-195

A thematic approach and synthesis of literature, art, history, religion, and music. Critical analysis and judgment in aesthetic experiences. Individual projects and differentiated readings.

English-Great Ideas and Movement II 220-196
Continuation of 195.

MAJOR CORE IN COMMUNITY MENTAL HEALTH

Psychology-Community Mental Health I 220-391

Introduction to the field of community mental health—its role and function, community organization, including an analysis of social needs, resources, and their relationships with the community's major social problems in American society. Field experiences and observations.

Psychology-Community Mental Health II 220-392

Continuation of 391. The urban society, social functioning and human behavior, mental deficiency and abnormal behavior, fundamentals of physical education. Field experiences and observation.

Psychology-Community Metal Health III 290-393

Interviewing and counseling techniques and their use in mental health agencies, utilization of audiovisual media for communication, observation and data collection, introduction of psychological testing and measures. Individual projects, demonstrations, and observations.

Psychology-Community Mental Health IV 290-394

Continuation of 393. Survey of various methods of assessment of intelligence, personality, and the measurement of special aptitudes and educational achievement. Group encounter and sensitivity techniques. Individual projects, demonstrations, and observations.

Psychology-Community Mental Health V 220-395

Child development and adolescent development and the interrelationships with social behavior, including the contemporary family and society. Geriatrics and social gerontology. Consultants, field trips, observations, and activity therapies.

Psychology-Community Mental Health VI 220-396

Continuation of 395. Personality development, criminology, correction and parole guidance, alcoholism and drug addiction, rehabilitation for the offender/ex-offender. Consultants, field trips, observations, and activity therapies.

Psychology-Community Mental Health VII 200-397

Individual assessing of intelligence and mental abilities, therapeutic and rehabilitative recreation. Individual projects, observations, and field practice.

Psychology-Community Mental Health VIII 220-398

Continuation of 397. Continued learning experiences in individual assessing. Release therapy, individual projects, observations and field practice.

PRACTICUM

Community Mental Health-Practicum I 220-491

Supervised work experience in an institution or agency setting.

Community Mental Health-Practicum II 220-492

Supervised work experience in an institution or agency setting.

Community Mental Health-Practicum III 220-493

Supervised work experience in an institution or agency setting.

Community Mental Health Practicum IV 220-494

Supervised work experience in an institution or agency setting.

SCHOOL OF BUSINESS AND ECONOMICS

Computer Center

SCHOOL OF BUSINESS AND ECONOMICS

Q. CRAIG, *Dean*

PURPOSE

The purpose of the School of Business and Economics is to develop business leaders who are capable of coping with new technologies and social progress. The scope of the School's programs includes curricula based primarily upon key concepts and skills necessary for decision-making and problem-solving roles in government, business, education, and industry. The School of Business and Economics also serves to perpetuate general understanding and appreciation for the interrelationships of the national as well as world socio-economic environments.

The programs within the School of Business and Economics are divided into three parts, viz., general education, business and economics core, and selected areas of specialization (accounting, business administration, business education, office administration or economics). Approximately forty percent consists of courses designed to give a broad foundation in general education. Another forty percent consists of courses designed to give the student a comprehensive background in basic areas of business and economics. Approximately twenty percent is designed for specialization.

Admission Requirements of the School of Business and Economics

Graduates of standard high schools, and other students who are able to satisfy the entrance requirements of the University, may be admitted to the School of Business and Economics.

Course Load

The normal course load is fifteen or sixteen (15 or 16) credit hours. A full-time undergraduate student is required to carry a minimum of twelve (12) credit hours. A student may not enroll for more than eighteen hours without the approval of the Department Chairman and the Dean.

Degree Requirements

The student is held responsible for the election of courses in conformity with the curriculum of his choice. A student who enters the School of Business and Economics has the privilege of graduating under the provisions of the catalogue current upon admission provided all requirements are completed within six years. If all requirements are not completed within six years after admission, the student is expected to conform to the catalogue requirements specified for the class with which graduation is anticipated.

The applicant for graduation must have earned a minimum of 124 semester hours excluding deficiency courses and remedial work with a cumulative grade point average of 2.00 or better on all courses undertaken and attain a cumulative grade point average of 2.00 or better in his major field of study.

Proficiency Examinations

Students who have had some training or experience in certain fields offered in the School of Business and Economics will be given an opportunity to take an examination in such fields with the permission of the Chairman of the De-

partment and the approval of the Dean of the School of Business and Economics. A student who passes a proficiency examination is given credit toward graduation, provided that the course is acceptable in his curriculum. Credit is given only if a grade of "C" is made on the examination. "S" is the grade recorded on the student's record. No official record is made of failures in these examinations.

Proficiency examinations are given under the following restrictions:

1. They may be taken only by persons who are in residence in the University.
2. They may not be taken to raise grades or remove failures in courses.
3. They may be taken only once in the same course.

DEPARTMENT OF ACCOUNTING

Ladell Hyman, *Acting Chairman*

ACCOUNTING CURRICULUM

Successful practice of accounting today requires both technical competence in accounting and a thorough understanding of the economic environment in which accounting operates. Only by understanding the objectives and contraints of the economic environment is the accountant able to apply his technical competence toward the solution of business problems.

The accounting curriculum attempts to meet this two-fold need by requiring broad exposure to the related business disciplines as well as rigorous training in the methodology and underlying theory of the specialized fields of accounting. Successful completion of the degree requirements will prepare a student for graduate study as well as accounting positions in business and government. Special attention is given to preparation for the C.P.A. Examination.

Freshman Year

Course and Number	*Fall Semester* *Credit*	*Spring Semester* *Credit*
English 100, 101	3	3
Mathematics 111, 112	4	4
Social Science (Elective)[1]	3	3
Natural Science (Elective)[2]	4	3-4
Physical Education	1	—
Health Education 200	2	3
Business Administration 220	—	3
	17	16-17

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Accounting 221,222	3	3
Economics 301, 302	3	3
Humanities (Elective)[3]	3	3
Psychology 320	3	—
Business Administration 361	—	3
Speech 250	2	—
Economics 305, 310	3	3
	17	15

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Administration 430	—	3
Business Administration 360	—	3
Economics 415	3	—
Accounting 441, 442	3	3
Business Administration 420	3	—
Accounting 443	3	—
Business Administration 453	3	—
Business Administration 550	—	3
Elective	—	3
	15	15

Senior Year

Course and Number	*Fall Semester Credit*	Spring Semester Credit
Business Administration 451, 452	3	3
Accounting 545	3	—
Accounting 561	—	3
Accounting Elective	3	—
Business Administration 480	3	—
Accounting 444	3	—
Business Administration 520	—	3
Electives	3	3
	15	15

[1]Recommended Courses: History 100; 101; 105; 206; 207. Geography 200 and 322; Political Science 230; Sociology 100 and 200.

[2]Recommended Courses: Biological Science 100; Physical Science 100; Introduction to Astronomy 101.

[3]Recommended Courses: Humanities 200; 201; and courses from Art, Music, and/or Literature.

Major Program Requirements:	*Semester Hours*
Acct. 221—Principles of Accounting I	3
Acct. 222—Principles of Accounting II	3
Acct. 441—Intermediate Accounting I	3
Acct. 442—Intermediate Accounting II	3
Acct. 443—Income Tax Accounting	3
Acct. 444—Cost Accounting	3
Acct. 545—Advanced Accounting	3
Acct. 561—Auditing Principles	3
Econ. 305—Elementary Statistics	3
B.A. 451—Business Law I	3
	30

COURSES IN ACCOUNTING

Undergraduate

221. Principles of Accounting I. Credit 3(3-1)
(Formerly Accounting 3321)

Introduction to the basic records and procedures used by service and merchandising organizations in accumulating financial data with emphasis on statement presentation. Includes discussion of special problems of income measurement and asset valuation. Prerequisite: B.A. 220.

222. Principles of Accounting II. Credit 3(3-1)
(Formerly Accounting 3322)

Continuation of Principles of Accounting I. Emphasis on financial statement interpretation and uses of accounting data by management for planning and control. Prerequisite: Acct. 221.

441. Intermediate Accounting I. Credit 3(3-1)
(Formerly Accounting 3341)

Rigorous study of the methodology and underlying theory of financial accounting. In-depth analysis of valuation alternatives, problems, and their effect on the income measurement. Prerequisite: Acct. 222.

442. Intermediate Accounting II. Credit 3(3-1)

A continuation of Accounting 441. A study of accounting theory and techniques underlying the determination of contents and values of accounts for the financial statement of a going concern. Prerequisite: Acct. 441.

443. Income Tax Accounting. Credit 3(3-1)
(Formerly Accounting 3343)

Study of current Federal Income Tax laws as they apply to individuals, partnerships, fiduciaries, and corporations. Prerequisite: Acct. 222.

444. Cost Accounting. Credit 3(3-1)
(Formerly Accounting 3344)

Study of the principles and methodology of inventory cost determination and its effect on income measurement for manufacturing concerns, including product, process, and standard cost systems. Special attention given to uses of accounting data as an aid in managerial planning and control. Prerequisite: Acct. 441.

445. Selected Topics in Accounting. Credit 3(3-1)

Topics are chosen to give additional consideration to selected accounting problems. Some attention is given to not-for-profit accounting. Prerequisite: 441.

446. Managerial Accounting. Credit 3(3-1)

Development of accounting concepts and techniques as aids to management, planning and control; including budgeting, cost behavior, cost-volume-profit analysis, and responsibility accounting. Prerequisite: Acct. 222.

545. Advanced Accounting. Credit 3(3-1)

Branches and agencies; mergers and consolidations; parent and subsidiaries; pooling of interest vs. purchases; foreign exchange; fund accounting; and special advanced topics. Prerequisite: Acct. 441.

561. Auditing Principles. Credit 3(3-1)
(Formerly Accounting 3361)

Concentrates on the conceptual and practical aspects of the examination of financial statements by independent accountants within the framework of generally accepted auditing standards.

562. Accounting Systems. Credit 3(3-1)
(Formerly Accounting 3362)

Focuses on current techniques of data processing with emphasis on principles of internal control. Prerequisite: Acct. 441.

590. Seminar in Accounting Theory. Credit 3(3-1)

The framework of ideas, concepts, and principles which make up the body of knowledge of accounting theory. Prerequisite: Senior standing.

DEPARTMENT OF BUSINESS ADMINISTRATION

Department Code 520 Major Code 21

William H. Bailey, *Acting Chairman*

Business Administration Curriculum

The principal purpose of the department is to create an environment in which an individual can develop an inquiring mind and the ability to think objectively. The intent is to educate young people who will continue their learning processes after they leave the school. The educational pattern that accomplishes this is a combination of courses that emphasize knowledge, skills, and tools and those that advance an administrative point of view.

The basic philosophy of the Business Administration program recognizes that business procedure is subject to change over time and that methods of tomorrow may bear little semblence to the techniques currently utilized. For this reason stress is laid upon fundamental knowledge concerning the field of business administration and tools for problem solving and decision making.

The program leading to the degree of Bachelor of Science in Business Administration is designed for students to develop such competences as the following:

1. Competence to gain entry into an organization, work with people and conduct meaningful analyses of a variety of types of problems.
2. Competence to plan effective communications; to communicate orally and in writing.
3. Competence to examine, to analyze systematically, and to select processes considered best for solutions to business problems.
4. Competence to interact with other disciplines and stay abreast of their own discipline.
5. Competence to develop proficiency in the application of selected analytical approaches to the solution of meaningful problems arising throughout an organization, i.e., those dealing with managerial information systems, internal operations, and the external environment.

BUSINESS ADMINISTRATION CURRICULUM

This curriculum allows for one semester hour in military related courses. If total semester hours exceed 18, written permission must be obtained from the department and/or the Dean of the School of Business and Economics.

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Social Science electives	3	3
Natural Science electives	3-4	3-4
Mathematics 111, 112	4	4
B.A. 220—Bus. Environment	3	—
Philosophy 262 or elective	—	3
	16-17	16-17

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Economics 301, 302	3	3
B.A. 322—Management	3	—
B.A. 361—Data Processing	—	3
Accounting 221, 222	3	3
Humanities electives	3	3
Speech 250	—	2
Health Ed. 200 or Physical ed. activity	2	—
B.A. 360—Bus. Communication	—	3
Psychology 320	3	—
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Accounting 446	3	—
B.A. 430—Marketing	—	3
B.A. 451, 452—Business Law I, II	3	3
Economics 305, 310	3	3
B.A. 453—Business Finance	3	—
Economics 415	—	3
B.A. 420—Human Behavior in Business	3	—
B.A. 480—Production Management	—	3
	15	15

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
B.A. 550—Financial Management	3	—
B.A. 520—Business Policy	—	3
B.A. 522—Personnel Management	3	—
Business electives	6	6
Free electives	3	6
	15	15

Major Program Requirements	*Semester Hours*
Accounting 446—Managerial Accounting	3
B.A. 361—Introduction to Data Processing	3
B.A. 430—Marketing	3
B.A. 451—Business Law I	3
B.A. 480—Production Management	3
B.A. 520—Business Policy	3
B.A. 522—Personnel Management	3
B.A. 550—Financial Management	3
Economics 305—Elementary Statistics	3
Economics 415—Money & Banking	3
	30 hours

COURSES IN BUSINESS ADMINISTRATION

Undergraduate

220. Business Environment Credit 3(3-0)
(Formerly Business Administration 204)

The purpose of this course is to provide an understanding of the evolution of American business and the businessman, and an appreciation of the growing responsibilities facing both the company and its leaders. This course also covers enterpreneurship and the nature and problems of establishing a business enterprise. Ultimately students should develop a satisfying personal business philosophy.

322. Introduction to Management Credit 3(3-0)
(Formerly Business Administration 305—Principles of Management)

An analysis of the basic managerial processes which guide processes at the administrative, staff, and operational levels of a firm. Designed to aid students in developing a philosophy of management and in acquiring administrative techniques. Prerequisite: Business Administration 220 or consent of instructor.

360. Business Communication Credit 3(3-0)
(Formerly Business Administration 450)

The study of communication theory and its applications to business; emphasis also placed on composing the basic forms of business communication, including correspondence and reports. Prerequisite: English 101.

361. Introduction to data Processing Credit 3(3-0)
(Formerly Business Administration 372—Electronic Data Processing)

A business-oriented discussion of concepts, computer hardware, data representation, file design and problem solving techniques. The course will conclude by familiarizing students to a brief treatment of Cobol programming language. Prerequisite: Accounting 221.

420. Human Behavior in Business Credit 3(3-0)
(Formerly Business Administration 490)

Introduction of behavioral concepts of concern to management. Emphasis is placed upon the analysis of interpersonal relations, communication practices, and morale factors relative to the effect upon productivity, organizational effectiveness, and personal systems. Prerequisite: Junior standing.

430. Marketing Credit 3(3-0)
(Formerly Business Administration 440)

Marketing is a basic function in the firm and in the economy. Emphasis is placed on the relationship between marketing activities and the consumer. Includes both functional and institutional aspects of marketing. Prerequisite: Junior standing.

431. Advertising Credit 3(3-0)
(Formerly Business Administration 458)

Analyzes the fundamentals of advertising, including various advertising media. Prerequisite: Business Administration 430.

433. Retailing Credit 3(3-0)
(Formerly Business Administration 570)

Emphasis is on retail store management. Attention is given to store location, layout, personnel, organization, buying, inventory, sales promotion, customer services and operating expenses. Prerequisite: Business Administration 430.

435. Salesmanship Credit 3(3-0)
(Formerly Business Administration 565)

Treats the fundamentals of planning, acquiring resources, organizing, and operating a sales organization. Prerequisite: Business Administration 430.

436. Marketing Research Credit 3(3-0)

Types of research techniques used by business coordinated marketing activities with consumer demand. Emphasis placed upon survey, observational and experimental techniques used in marketing. Prerequisite: Economics 310 and Business Administration 430.

438. Marketing Management Credit 3(3-0)

A course to develop an understanding of marketing problems and to survey policies and procedures for the formulation, execution and appraisal of marketing programs. Prerequisite: Business Administration 436.

451. Business Law I Credit 3(3-0)
(Formerly Business Administration 3351)

Nature of legal rights and obligations, resolution of disputes, law as an expression of social forces, contracts, personal property and bailments. Prerequisite: Junior standing.

452. Business Law II Credit 3(3-0)
(Formerly Business Administration 3352)

Treats sale of goods, security devices, commercial paper, agency and employment, corporations, partnerships, real estate, government and business. Prerequisite: Business Administration 451 for business majors.

453. Business Finance Credit 3(3-0)
(Formerly Business Administration 578—Corporate Finance)

An introduction to the financial problems of business organizations, the finance function and its relationship to other decision-making areas in the firm, the concepts and techniques for planning and managing the acquisition and allocation of financial resources from the standpoint of internal management. Prerequisite: Accounting 222.

454. Risk & Insurance Credit 3(3-0)
(Formerly Principles of Insurance)

Introduction to risk management with emphasis on varied applications of insurance as a technique for treating uncertainty. Prerequisite: Junior standing.

455. Investments Credit 3(3-0)
(Formerly Business Administration 571)

Analyzes the various types of corporate and public securities; examines the operation of securities markets. Prerequisite: Business Administration 453.

457. Real Estate Credit 3(3-0)
(Formerly Business Administration 3357)

Analyses the fundamental laws of real property with special emphasis on the changing character of the urban economy; buildings and land use and their values. Prerequisite: Junior standing.

470. Urban Transportation Concepts Credit 3(3-0)

An analysis of the role of transportation in the urban scene. Topics cover transportation needs of the poor, demand for the modes of transportation, and urban transportation planning methods. Prerequisite: Sophomore standing.

480. Production Management Credit 3(3-0)
(Formerly Business Administration 493)

A survey of the major production and operations functions of organizations with various production systems. Stresses the identification of major problem areas associated with these functions such as aggregate planning, scheduling, man-machine systems, inventory control, etc., and the development of concepts and decision processes for dealing with the problems. Some modern quantitative techniques related to production management will be introduced. Prerequisite: Junior standing.

481. Management Science I Credit 3(3-0)

An introduction to operations research. Basic concepts of management science including selected quantitative models applicable to business administration, allocating problems including linear programming and its extensions, game theory, inventory theory, and network models. Prerequisite: Economics 310 and a course in calculus.

520. Business Policy Credit 3(3-0)
(Formerly Business Administration 580)

An integrative course that focuses on strategic planning, policy formulation, corporate-wide decision making. The terminal performance objectives of this course involve analysis of a complex organization in order to develop the ability to: identify major problems and opportunities; to establish strategic objectives; and to recommend implementation plans and programs. Prerequisite: Senior standing.

522. Personnel Management Credit 3(3-0)
(Formerly Business Administration 569—Personnel Organization and Management)

The student is provided with various skills and techniques which are currently employed in the practice of personnel management. The course covers developments in programs and activities pertaining to the management of human resources with emphasis on the role of management. Topics include management's responsibilities in dealing with people, the role of personnel management, recruitment and selection, performance appraisal, the exercise of authority, and others. Prerequisite: Senior standing.

550. Financial Management Credit 3(3-0)

Stresses the corporate financial officer's responsibilities for determining optimal policies and procedures for: capital budgeting under conditions of uncertainty, long-term and short-term financing, dividend distribution, mergers and acquisitions, and working capital management. A problem solving and/or case study approach is used, but not to the exclusion of probing theoretical questions. Prerequisite: Business Administration 453.

570. Interdisciplinary Seminar in Transportation Credit 3(3-0)
(Formerly Business Administration 610)

Geared to current developments in urban transportation; an interdisciplinary course on urbanism and transportation. Prerequisite: Advanced status in business administration, business education, accounting, economics, political science, sociology, or architectural engineering.

DEPARTMENT OF BUSINESS EDUCATION AND ADMINISTRATIVE SERVICES

Meada G. Shipman, *Acting Chairman*

The Department of Business Education and Administrative Services offers three undergraduate programs of study: (1) the preparation of comprehensive business education teachers, (2) the preparation of basic business education teachers, and (3) the administrative services area which includes office administration.

BASIC BUSINESS EDUCATION CURRICULUM

The basic business education curriculum is designed to develop students to teach basic business subjects at the secondary school level. The curriculum meets the certification requirements for the State of North Carolina. Never-

theless, each student must make the minimum score on the National Teachers Examination as required by the State of North Carolina to qualify for a Class A North Carolina teaching certificate. The Business Education and Administrative Services Department will be guided by the State's certification procedure in force.

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 111, 112	4	4
Biology 100, Physical Science 100, Botany 140, Zoology 160 (Select any two)	4	4
History 100, 101	3	3
Business Administration 220	3	—
Business Education 302*(1)	—	2
Physical Education	—	2
	17	18

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Economics 301, 302	3	3
Accounting 221, 222	3	3
Psychology 320	—	3
Humanities 200, 201	3	3
Speech 250	2	—
Education 300, 301	2	2
Business Education 334	2	—
Health Education 200	—	2
Electives	2	1
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Administration 420	—	3
Business Administration 451	3	—
Business Administration 361	3	—
Accounting 446	—	3
Economics 305	3	—
Education 400	3	—
Business Education 575-577	—	3
Business Administration 480	3	—
Business Administration 430	—	3
Electives	2	5
	17	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Education 574	(1)	1
Education 637	3	(3)
Education 500	3	(3)
Education 560	6	(6)
Economics 415	(3)	3
Business Administration 360	(3)	3
Business Education 579	(3)	3
Business Administration 520	(3)	3
	12 (13)	13(12)

(1) Students who do not pass the Proficiency Test for Beginning Typewriting should enroll in BE 301, the prerequisite for BE 302.

Major Program Requirements	*Semester Hours*
Accounting 222—Principles of Accounting II	3
Accounting 446—Managerial Accounting	3
B.A. 420—Human Behavior in Business	3
B.A. 430—Marketing	3
B.A. 451—Principles of Business Law I	3
Econ 305—Elementary Statistics	3
Econ 415—Money and Banking	3
B.A. 360—Business Communication	3
B.A. 361—Introduction to Data Processing	3
B.E. 579—Personal Finance	3
	30

COMPREHENSIVE BUSINESS EDUCATION CURRICULUM

The comprehensive business education curriculum is designed to develop students to teach both skill and basic business subjects at the secondary school level. The curriculum meets the certification requirements for the State of North Carolina. Each student must make a specified minimum score on the National Teachers Examination as required by the State of North Carolina to qualify for a Class A teaching certificate. The Business Education and Administrative Services Department will be guided by the State's certification procedure in force.

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 111, 112	4	4
Biology 100, Physical Science 100, Botany 140, Zoology 160 (Select any two)	4	4
History 100, 101	3	3
Business Administration 220	—	3
Business Education 302	2	—
	16	17

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Economics 301, 302	3	3
Accounting 221, 222	3	3
Psychology 320	—	3
Speech 250	2	—
Business Education 332	—	3
Business Education 334	2	—
Education 300, 301	2	2
Humanities 200, 201	3	3
Health Education 200	2	—
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Administration 420	3	—
Business Administration 480	—	3
Business Administration 451	—	3
Business Administration 430	—	3
Economics 305	3	—
Business Administration 361	3	—
Business Education 447	3	—
Education 400	3	—
Business Education 575-578	—	4
Electives	2	3
	17	16

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Education 574	(1)	1
Education 637	3	(3)
Economics 415	(3)	3
Education 500	3	(3)
Education 560	6	(6)
Business Education 573	(3)	3
Business Administration 360	(3)	3
Business Administration 520	(3)	3
Business Education 579	(3)	3
	12(16)	16(12)

(1) Students who do not pass the Proficiency Test for Beginning Typewriting should enroll in BE 301, the prerequisite for BE 302.

(2) Students who do not pass the Proficiency Test for Shorthand I should enroll in BE 331, the prerequisite for BE 332.

Major Program Requirements	*Semester Hours*
Econ. 415—Money and Banking	3
B.A. 430—Marketing	3
B.A. 360—Business Communications	3
B.E. 579—Personal Finance	3
B.A. 361—Introduction to Data Processing	3
B.E. 332—Shorthand II	3
B.E. 447—Transcription	3
B.E. 573—Executary Administration	3
Acct. 221-222—Principles of Accounting I and II	6
	30

REQUIREMENTS FOR STUDENT TEACHING IN BUSINESS EDUCATION

To be eligible for student teaching in both comprehensive business education and basic business education, the student must have met the following requirements:

1. Senior Standing.
2. Completed three-fourths of the number of hours required in the basic business and economic courses.
3. Completed three-fourths of the number of hours required in his subject matter major.
4. Attained an average of 2.00 or better on all work undertaken in the University, on all professional education courses undertaken and on all courses undertaken and on all in the subject matter major.
5. Possesses a personality deemed necessary for successful teaching.

OFFICE ADMINISTRATION CURRICULUM

The office administration curriculum is designed to develop personnel for managerial-level service roles as office executives and secretaries in business, professional, governmental, and industrial firms.

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 111, 112	4	4
Biology 100, Physical Science 100, Botany 140, Zoology 160 (Select any two)	4	4
Business Administration 220	3	—
Business Education 301, 302	2	2
History 100	—	3
	16	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
History 101	—	3
Humanities 200, 201	3	3
Accounting 221, 222	3	3
Business Administration 420	3	—
Psychology 320	—	3
Speech 250	2	—
Business Education 331, 332	3	3
Business Education 334	—	2
Mathematics 115	3	—
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Administration 451	3	—
Business Administration 480	—	3
Economics 301, 302	3	3
Business Administration 430	3	—
Economics 305	—	3
Business Administration 361	3	—
Business Education 447	3	—
Business Education 568	—	3
Physical Education	2	—
Electives	—	4
	17	16

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Economics 415	3	—
Business Administration 453	—	3
Business Administration 360	3	—
Business Administration 520	—	3
Business Education 573	3	—
Business Education 574	—	1
Business Education 579	3	—
Electives	—	6
	12	13

Major Program Requirements	*Semester Hours*
B.E. 568—Office Organization and Management	3
B.A. 361—Introduction to Data Processing	3
B.E. 332—Shorthand II	3
B.E. 447—Transcription I	3
B.E. 573—Executary Administration	3
B.E. 579—Personal Finance	3
B.A. 522—Human Resource Management	3
B.A. 360—Business Communication	3
Acct. 221, 222—Principles of Accounting	6
	30

DISTRIBUTIVE EDUCATION

A special cooperative arrangement between N. C. A & T State University and University of N. C. at Greensboro is available by which students obtaining degrees in business at A & T State University can design a program which would certify them to teach distributive education in secondary schools. For more information about this program, contact the Chairman of the Department of Business Education and Administrative Services.

COURSES IN BUSINESS EDUCATION AND OFFICE ADMINISTRATION

Undergraduate

301. Beginning Typewriting. Credit 2(1-2)
(Formerly Office Administration 3301)

Designated to develop a working knowledge of the use of the typewriter toward final mastery of keyboard reaches with drills, simple problems, and techniques of control. Requirement: 45 gwam.

302. Intermediate Typewriting. Credit 2(1-2)
(Formerly Typewriting II)

Emphasis on technical typewriting, tabulation reports, and other advanced practical applications. Requirements: 60 gwam. Prerequisite: Business Education 301.

331. Gregg Shorthand I. Credit 3(2-1)

Study of theory as outlined in Gregg Shorthand Diamond Jubilee Series. Requirement: 70 wam on practiced matter. Prerequisite: Business Education 302.

332. Gregg Shorthand II. Credit 3(2-1)
(Formerly Office Administration 3332)

Emphasis is placed on difficult dictation and transcription, speed tests, and reporting speeches. Requirements: 80 wam on new matter. Prerequisite: Business Education 301, 302.

334. Business Machines. Credit 2(1-2)
(Formerly Office Administration 3334)

Designed to develop concepts and skill in the use of modern office equipment. Prerequisite: Business Education 302.

447. Transcription.
(Formerly Office Administration 3347)

Designed to review techniques and coordinate the skills of typewriting, shorthand, and English and promote desirable habits of performance. Intensive development of secretarial skill through timed dictation. Requirement: The production of mailable transcripts. Prerequisite: Business Education 331, 332.

568. Office Organization and Management. Credit 3(3-0)
(Formerly Business Administration 3368)

Treats principles and concepts of the scientific office management and the responsibility of management of office services. Prerequisite: Junior Standing.

573. Executary Administration. Credit 3(2-1)
(Formerly Secretarial Procedures)

Discuss the qualifications, duties, and responsibilities of the secretary in the modern business office. Prerequisite: Business Education 301, 302, 331, and 332.

574. Coordinated Business Experience. Credit 1(0-1)
(Formerly Secretarial Internship)

A program of observation and field work in selected business firms designed to contribute materially to the total development of the student's educational experiences. Prerequisite: Consultation with instructor.

575-578. Methods of Teaching the Business Subjects, Credit 4(4-0)
(Comprehensive)

Analysis and evaluation of objectives, materials, and methods of teaching typewriting, shorthand, transcription, and related office skills. Provisions is made for observation and participation in demonstration teaching. Prerequisite: Education 300, 301, 400, 500 (Concurrent); Psychology 320; BE 302, 334, 447.

575-577. Methods of Teaching the Business Subjects. (Basic) Credit 3(3-0)
(Formerly Business Education 3377)

Selection, organization, and evaluation of supplementary teaching materials and analysis of techniques in teaching bookkeeping, general business, business law, business structure, and elementary economics. Construction of teaching units, enrichment materials, and lesson plans for effective teaching on the secondary level. Prerequisite: Education 300-301, 400, 500 (Concurrent); Psychology 320; BE 302, 334.

579. Personal Finance Credit 3(3-0)
(Formerly Business Administration 3379)

Treats the problems faced by individuals in managing personal incomes and expenditures. Stress is also placed upon credit, borrowing, and saving. Prerequisite: Economics 301.

581. Coordinating Techniques and Job Analysis in Cooperative Occupational Education Programs. Credit 3(3-0)

A study of the role and responsibilities of the coordinator of occupational educational systems. Surveys the organizations of the office education programs: the course content of the related class, supervision, on-the-job trainees, the establishment of working relationships among the school, business, and home; examines pertinent research; emphasizes procedures in job analyses. Prerequisite: Business Education 575-578, Senior Standing and Consultation with advisor.

DEPARTMENT OF ECONOMICS

Sidney H. Evans, *Chairman*

The Department of Economics offers two majors: Economics and Agricultural Economics. The Agricultural Economics majors may choose to concentrate in either Agricultural Business or Agricultural Science. The former is concerned with the business or industrial phase of agriculture; the latter group would be more interested in graduate study and research. The Economics majors have two options: *A and B. These are designed to introduce flexibility in the program. The Economics major is organized to equip students for graduate study in the field; careers in government service, industry and business. It also serves as an excellent background for the study of law.

Economics 301, macro economics, and Economics 302, micro economics are prerequisites for all courses in economics except statistics. The sequence of required courses for individual students after prerequisites are met will be recommended by the student's advisor. In general, advanced macro and micro courses will follow macro and micro principles respectively. Freshmen will be permitted to take courses in economics only on the recommendation of the advisor.

It is suggested that majors in economics choose their non-economic electives from related disciplines: Accounting, Business Administration and Mathematics are strongly recommended.

*A—Business Economics and B—General Economics

REQUIRED COURSES*FOR ECONOMICS MAJORS

Course No.	*Credit Hours*	*Course Name*
Econ. 301	3	Principles of Economics (macro)
Econ. 302	3	Principles of Economics (micro)
Econ. 305	3	Elementary Statistics
Econ. 410	3	Intermediate Economic Theory
Econ. 420	3	National Income Analysis
Econ. 525	3	Economic Seminar
Econ. Electives**	12	

*A grade of "C" or better must be obtained in these courses.

REQUIRED COURSES FOR AGRICULTURAL ECONOMICS MAJORS CONCENTRATING IN AGRI-BUSINESS

Course No.	*Credit Hours*	*Course Name*
Econ. 301	3	Principles of Economics (macro)
Econ. 302	3	Principles of Economics (micro)
Ag. Econ. 330	3	Introduction to Agricultural Economics
Ag. Econ. 332	3	Elements of Farm Management
Ag. Econ. 334	3	Marketing Agricultural Products
Ag. Econ. 436	3	Agricultural Prices
Ag. Econ. 644	3	Statistical Methods in Agricultural Economics I
Ag. Econ. 646	3	Statistical Methods in Agricultural Economics II

**Courses selected from the Economics curriculum in consultation with the advisor.

REQUIRED COURSES FOR AGRICULTURAL ECONOMICS MAJORS CONCENTRATING IN AGRICULTURAL SCIENCE

Course No.	*Credit Hours*	*Course Name*
Econ. 301	3	Principles of Economics (macro)
Econ. 302	3	Principles of Economics (micro)
Ag. Econ. 330	3	Introduction to Agricultural Economics
Ag. Econ. 332	3	Elements of Farm Management
Ag. Econ. 334	3	Marketing Agricultural Products
Econ. 410	3	Intermediate Economic Theory
Ag. Econ. 436	3	Agricultural Prices
Ag. Econ. 644	3	Statistical Methods in Agricultural Economics I
Ag. Econ. 646	3	Statistical Methods in Agricultural Economics II

At least nine hours of major electives must also be taken.

PROGRAM FOR BUSINESS ECONOMICS MAJORS

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 111, 112	4	4
History 100, 101	3	3
Biological Science 100	4	—
Physical Science 100	—	4
Business Administration 220	3	—
Physical Education (men) 101	—	1
Physical Education (women) 102	—	—
Health Education 200	—	2
	17	17

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Accounting 221, 222	3	3
Physical Education (Men) 103	1	—
Physical Education (Women) 104	—	—
Speech 250	—	2
Humanities	3	3
Psychology 320	3	—
Economics 301, 302	3	3
Foreign Language	3	3
Business Administration 361	—	3
	16	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Administration 430, 453	3	3
Economics 415	—	3
Economics 305, 310	3	3
Business Administration 420	3	—
Economics 410, 420	3	3
Business Administration 451, 480	3	3
	15	15

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Business Administration 520	3	—
Economics 525, Free Elective	3	3
Economics Electives	3	3
Social Science or Business Electives	3	3
Business Elective	—	3
Free Electives	3	3
	15	15

PROGRAM FOR GENERAL ECONOMICS MAJORS

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 111, 112	3	3
History 100, 101	3	3
Biological Science 100	4	—
Physical Science 100	—	4
Military Science 101, 102 or Air Science 101, 102 or Electives	1	1
Physical Education (Men) 101, 103	1	1
Physical Education (Women) 102, 104	—	—
	15	15

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Foreign Language	3	3
Health Education 200	2	—
Air Science 201 or 202, or Military Science 201 or 202 or Electives	1	—
Speech 250	—	2
Humanities 200, 201	3	3
Economics 301, 302	3	3
Business Administration 220 Psychology 320	3	3
Social Science Elective	—	3
	15	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 305, 310	3	3
Economics 410, 420	3	3
Economics 415, Business Elective	3	3
Economics Electives	3	3
Social Science or Math Electives	3	3
	15	15

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 525	—	3
At least 29 hours of free electives	15	14

PROGRAM FOR AGRICULTURAL ECONOMICS MAJORS CONCENTRATING IN AGRI-BUSINESS

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
History 100, 101	3	3
Mathematics 111, 113	4	4
Physical Science 100	4	—
Biological Science 100	—	4
Air or Military Science or Electives	1	1
Education 100	1	—
	16	15

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200, 201	3	3
Physical Education 200	2	—
Economics 301, 302	3	3
Psychology 323	—	3
Ag. Econ. 330	3	—
Animal Husbandry 301; Dairy Husbandry 302; Plant Sc. 110 or Poultry Husbandry 317	3	3
Ag. Econ. 644	—	3
Air or Military Science or Electives	2	2
	16	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Ag. Econ. 332, 334	3	3
Accounting 221, 222	3	3
Speech 250	—	2
Sociology 203	3	—
Electives (Major Area)	4	6
Electives	3	3
	16	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Ag. Econ. 436, 646	3	3
Business Administration 451, 452	3	3
Business Administration 361	—	3
Business Administration 453	—	3
Electives (Major Area) Ag. Econ. 438	5	3
Electives (Technical Agriculture)	4	—
	15	1

Fifteen (15) hours of major electives—Major electives will be selected from the following courses:

Ag. Econ. 442	(3)	Ag. Econ. 632	(3)
Ag. Econ. 530	(3)	Ag. Econ. 638	(3)
Ag. Econ. 532	(3)	Ag. Econ. 642	(3)
Econ. 410	(3)	Ag. Econ. 646	(3)

PROGRAM FOR AGRICULTURAL ECONOMIC MAJORS CONCENTRATING IN AGRICULTURE SCIENCE

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Education 100	1	—
English 100, 101	3	3
History 100, 101	3	3
Botany 140, Zoology 160	4	4
Mathematics 111, 112	4	4
Air or Military Science or electives	1	1
	16	15

Sophomore Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
Econ. 302, 301	3	3
Physical Science	4	—
Biological Science	—	4
Agr. Econ. 330	—	3
Sociology 100	3	—
Air or Military Science or elective	2	2
Humanity 200, 201	3	3
	15	15

Junior Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
Economics 305	3	—
Agr. Econ. 334	—	3
Economics 410, 420	3	3
Agr. Econ. 332	—	3
Accounting 221	3	—
Speech 250	—	3
Foreign Language	3	3
Animal Husbandry 301 or Poultry Science 317	3	—
	15	15

Senior Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
Ag. Econ. 436, 644	3	3
Ag. Econ. 646	—	3
Business Administration 451, 452	3	3
Electives, major area	9	6
	15	15

Nine (9) hours of major electives-Major electives will be selected from the following courses:

Ag. Econ. 440	(3)	Ag. Econ. 638	(3)
Ag. Econ. 530	(3)	Ag. Econ. 642	(3)
Ag. Econ. 532	(3)	Ag. Econ. 648	(3)
Ag. Econ. 632	(3)	B.A. 361	(3)
Math 240	(3)		

MANPOWER CONCENTRATION FOR ECONOMICS MAJORS

The Department of Economics offers a manpower concentration which provides an understanding of manpower planning, manpower program evaluation, and manpower administration. In this concentration students gain expertise in coping with problems of employment and additional skills for careers in state, city and county government, federal agencies, private industry, as well as community manpower agencies.

Students interested in the manpower concentration should pursue the following module by successfully completing the entire core requirement and selecting a minimum of two electives.

MANPOWER CONCENTRATION MODULE

Required Courses		*Electives*	
Econ. 602	Manpower Problems & Prospects	Econ. 604	Evaluation Methods
Econ. 603	Manpower Planning	Psych. 544	Psychological Testing
B.A. 569	Human Resource Management	Psych. 444	Applied Psychology
Sociol. 405	Sociology of Work & Occupations	Sociol. 600	Seminar on Social Planning
Sociol. 302, Economics 305, or Psychology 322,	Statistics	Psych. 600	Introduction to Guidance
Psych. 445	Industrial Psychology	Psych. 645	Behavior Modification
Econ. 599	Independent Study	Sociol. 309	Disability and Employment

COURSES IN ECONOMICS

Undergraduate

***301. Principles of Economics, (macro)** Credit 3(3-0)

An introduction to the meaning and scope of economics, economics terminology, and the basic principles as they apply to the whole economy.

***302. Principles of Economics, (micro)** Credit 3(3-0)

An introductory approach to the principles of economics as they relate to individual segments of the society. Emphasis will be placed on diminishing returns, supply, demand and market structures.

304. Quantitative Analysis. Credit 3(3-0)

This course is intended to provide the students with a solid foundation in mathematical economics. It includes a study of economic models emphasizing their mathematical properties. Mathematical discussions of micro and macro economics will show the relevance of such topics as constrained maxima and minima, partially and simply ordered systems, probability theory difference equations, and matrix algebra to economics. Prerequisite: Math 101 & 102.

305. Elementary Statistics. Credit 3(2-2)

An introduction to research methods; measures of central tendency, dispersion and sampling techniques.

310. Advanced Statistics. Credit 3(2-2)

Introduction to econometrics and quantitative methods used in testing economics hypotheses. The student receives an introduction to the tools of model estimation, linear programming and a study of stochastic processes. Particular emphasis is placed on econometric studies of current economic issues. Prerequisites: Econ. 305 & Math 112.

401. Public Finance. Credit 3(3-0)

An analysis is made of the way federal, state, and local governments obtain and spend their revenues. Tax theories, incidence and impact are covered. Factors influencing government fiscal policies.

405. History of Economic Thought. Credit 3(3-0)

A survey of the history of economic thought from the Middle Ages to John M. Keynes. The course aims to show how, and under what conditions the more important laws and theories become a part of the body of modern economics.

410. Intermediate Economic Theory. Credit 3(3-0)

Allocation of resources and distribution of income within various market structures, with emphasis on analytical tools. Prerequisite: Econ. 302.

415. Money and Banking. Credit 3(3-0)

An introduction to the classical Keynesian and past Keynesian monetary theories. Also the foundations and practices of Federal monetary policies in achieving various macro goals. Prerequisite: Econ. 301.

420. National Income Analysis. Credit 3(3-0)

An introduction to the modern theory of the determination of the level of income, employment, and prices; the various theories of money and interest; fiscal and monetary policy. Prerequisite: Econ. 301.

425. Economics of Transportation. Credit 3(3-0)

This course traces the historic development of our nation's transportation system, its role in economic development and its influence on the growth of urban places. Emphasis will be placed on the understanding of the Socio-economic impact of the industry. The relationship of transportation problems to other urban concerns will be explored.

426. Physical Distribution Analysis. Credit 3(3-0)

Analysis of alternative sources of transportation, economics of movement of goods, both in and out of the firm, integration of transportation with production flow, inventory management, warehousing, marketing policies, plant location, with special reference to location theory.

501. Labor Problems. Credit 3(3-0)

An introductory course dealing with the efforts of working people to improve their relative position in the economy; the influence of unionism and of government participation are emphasized. The role of management.

505. International Economic Relations. Credit 3(3-0)

National specialization and international exchange. The history and significance of international trade among nations of the world.

510. Business Cycles. Credit 3(3-0)

The general instability of capitalism and its causes, seasonal fluctuations and the secular trend. Business cycle history and theories. The influence of cycles on government fiscal policy.

512. Introduction of Econometrics Credit 3(3-0)

Application of modern statistical procedures to theoretical economic models formulated in mathematical terms; computer applications and model testing; multivariate analysis, serial and auto correlation, estimation techniques and simulations. Prerequisite: Economics 304 or Math 112.

515. Comparative Economic Systems Credit 3(3-0)

A description and analytical study of the various systems that have developed in different countries at different times; motivations, production and distribution patterns.

520. Economic Development Credit 3(3-0)

This course surveys the problem of economic growth and development in modern times and analyzes the present efforts to increase the rate of economic growth. Selected case studies will be drawn from both highly developed nations and lesser developed nations. Special Emphasis will be given to disproportioned growth in sectors of the United States' economy.

525. Economics Seminar Credit 3(3-0)

The use of economic tools in delineating, analyzing and presenting economic problems that are not included in other courses. This course will include also an exposure to recent development in economics.

599. Independent Study Credit 3 or 6

This course is designed for students involved in Cooperative Work-Study Program where the length and nature of their involvement warrants the awarding of such credit. The following conditions must be met in order to receive credit: (1) the credit will be determined by the department chairman at the time of registration; (2) the student must be registered at the University during the off-campus assignment; (3) the student should spend a minimum of three

months in the off-campus experience for each three semester hours of academic credit. When the off-campus experience is in the form of seminar exposure, then not less than forty-five (45) clock hours should represent three semester hours of academic credit; (4) the student will be required to present a written report and/or other evaluative criterion that will be evaluated by the supervising teacher. Any special problem or technical report pursued by the student will be subject to prior approval by the department chairman and/or supervising teacher. Prerequisite: Consent of the advisor and/or department chairman.

COURSES OFFERED TO ADVANCED UNDERGRADUATES AND GRADUATES

601. Economic Understanding Credit 3(3-0)

An introduction to the principles of economics utilizing the macro approach. No credit towards a degree in economics.

602. Manpower Problems and Prospects Credit 3(3-0)

An analysis of manpower development problems and prospects, with particular reference to the problems of unemployment, underemployment and discrimination. The course will focus on problem measurement, evaluation of existing policy and prospects for achievement of all human resource development. The course will invite an interdisciplinary participation on the part of students and faculty. Prerequisites: Econ. 301 or 302; Econ. 305 or equivalent or consent of instructor.

603. Manpower Planning Credit 3(3-0)

Manpower planning center chiefly on the adjustment necessary to adapt labor resources to changing job requirements. This course is designed to prepare students to create plans which will facilitate this adjustment. This course will attempt to acquaint the student with labor force and labor market behavior such that he is able to make planning decisions relating to job creation (increasing demand) and education and training (increasing supply). Planning will be done at both the national (macro) and local (micro) levels, with special emphasis on the latter. We will further attempt to evaluate all planning decisions by use of Cost-Benefit Analysis and/or Multivariate Analysis. Prerequisite: Econ. 301 or 302; Econ. 305 or equivalent or consent of instructor.

604. Economics Evaluation Methods Credit 3(3-0)

This course will cover needed tools of research design, statistical reporting, cost/benefit analysis and other related techniques for internal and external evaluations of human resource development programs. The course is designed both for inservice personnel currently employed by agencies, and for the regular student enrolled in a degree-granting program.

610. Consumer Economics Credit 3(3-0)

This course is designed to acquaint the student with the nature, scope and tools of consumer economics. It is particularly oriented to minority groups, thus focusing on the economic choices currently affecting groups with rising incomes and aspirations. This course will consider the economic choices faced by consumers in maximizing satisfaction with limited means.

615. Economic, Political and Social Aspects of the Black Experience Credit 3(3-0)

A study of the political, economic and social tools of current public policy treating the subject of race in America. The course will examine the economic and social conditions of income inequality and explore the national commitment to equal opportunity. Special emphasis will be placed on illustrations from North Carolina and adjacent states.

COURSES OFFERED TO GRADUATE STUDENTS

701. Labor and Industrial Relations Credit 3(3-0)

To important sectors of the economy are examined—Labor and Management. Historical, public and governmental influences are studies.

705. Government Economic Problems. Credit 3(3-0)

This course will consider the growth of public expenditures and revenues, and debt of the United States: theories of taxation and tax incidence; and the effects of public expenditures and taxes on economic growth.

710. Economic Development and Resource Use. Credit 3(3-0

This course deals with resource and economic development in the domestic economy and also a comparison drawn among developed, developing and undeveloped societies.

720. Development of Economic Systems. Credit 3(3-0)

An analytical approach to the study of various Economic systems, how these systems developed and how they are organized to carry on economic activity.

COURSES IN AGRICULTURAL ECONOMICS

Undergraduate

330. Introduction to Agricultural Economics. Credit 3(3-0)

An application of the fundamental principles of economics to agricultural production, marketing, land tenure, leasing arrangements, financing and related economic problems.

332. Elements of Farm Management. Credit 3(2-2)

Principles which govern the effective organization and operation of the farm firm.

334. Marketing Agricultural Products. Credit 3(3-0)

Principles and practices of marketing as applied to farm commodities. Form, place, time and possession utility, the ultimate consumer's market, the agricultural industries market, the middleman system, exchange market operation and futures contracts, price determination, reducing marketing costs. Visits will be made to local markets. Prerequisite: Ag. Econ. 330.

336. Agricultural Prices. Credit 3(2-2)

Information regarding agricultural price changes, index numbers, price determination, seasonal and cyclical price movements, storage problems, and other methods of controlling extreme price fluctuations, government price policy.

440. Resource Economics. Credit 3(3-0)

Analysis of Economic problems of resources use and management. Perception of and definition of problems in terms of allocation mechanism. Analysis of Economic relationships over time and market externalities with emphasis on welfare implications. Prerequisite: Economics 302.

442. Cooperative Marketing. Credit 2(2-0)

Early cooperative movements, principles of cooperatives, importance of cooperatives in the United States, problems of organization, management and operation of cooperative endeavors by farmers in buying and selling. Prerequisites: Ag. Econ. 330, 334.

444. Marketing Dairy Products. Credit 3(2-2)

Economic problems in procuring milk and cream, in processing and distributing fluid milk, cream and manufacturing dairy products; marketing legislation, market news, market methods, including cooperation, consumer demand and price policy. Prerequisite: Ag. Econ. 334.

530. Economics of Food Distribution. Credit 3(3-0)

Description of market structures and operations in the processing, wholesale and retail distribution of food. The effect of industrial organization and government regulations on the efficiency of the market and consumers demand for food.

532. Agricultural Economics Research. Credit 3(3-0)

Review of different types of research methodology used in the field of Agricultural Economics. Prerequisite: Consent of the Department Chairman.

Advanced Undergraduate and Graduate

630. Southern Resources in a Changing Economy—A Seminar. Credit 3(3-0)

Trends and the formulation of economic and social problems in the South and particularly in North Carolina; labor and capital mobility, agricultural as compared with the industrial, the problem of underemployment, and important phases of current economic development. Prerequisite: Economics 301, Sociology 203 or Ag. Econ. 330.

632. Agri-Business Policy. Credit 3(3-0)

The place of Agri-business in the National and International economy; the impact of public policy on the industry. An analysis of policy as it relates to price support programs, finance, trade and resource development. Prerequisite: Ag. Econ. 330.

634. Commodity Marketing Problems. Credit 3(3-0)

Economic problems arising out of the demand, supply and distribution of specific agricultural commodities; the price making mechanism, marketing methods, grades, values, price, cost, and governmental policy. Not more than two commodities will be studied in any one quarter. Selection of commodities and emphasis on problem areas will be made on the basis of current need; commodities studied will be cotton, tobacco, fruits and vegetables, and grains. Prerequisite: Consent of the Department Chairman.

636. Seminar in Marketing Farm Products. Credit 3(3-0)

Discussion, reports, consultation and research efforts which throw light on marketing problems of low income farmers in North Carolina including National and International importance of locally grown products such as tobacco and cotton. Prerequisite: Consent of the Department Chairman.

638. Special Problems in Agricultural Economics. Credit 3(1-2)

Designed for students who desire to work out special problems in the field of agricultural economics; problem definition, formulation and investigation. Prerequisite: Consent of the Department Chairman.

640. Agri-Business Management. Credit 3(2-2)

Methods of research, plans, organization, and the application of management principles. Part of the student's time will be spent in consultation with Agri-Business firms. Prerequisite: Consent of Department Chairman.

642. Seminar in Agricultural Economics. Credit 2(2-0)

Discussion reports and an appraisal of current literature on agricultural problems. Prerequisite: Consent of the Department Chairman.

644. Statistical Methods in Agricultural Economics I. Credit 3(2-2)

Statistical methods with special applications to agricultural problems. The statistical table, ratios, percentages, bar charts, line charts, and frequency distribution are used as analytical tools. Prerequisites: Ag. Econ. 330. Econ. 301 or Sociology 203.

646. Statistical Methods in Agricultural Economics II. Credit 3(2-2)

Statistical methods with special applications to agricultural problems. The time series analysis, sampling theory, analysis of variance, and simple correlation are used as analytical tools. This course is a continuation of Ag. Econ. 644.

648. Appraisal and Finance of Agri-Business Firms. Credit 3(3-0)

Principles of land evaluation, appraisal and taxation. The role of credit in a money economy, classification of credit, principles underlying the economic use of credit. The role of the government in the field of credit.

TRANSPORTATION INSTITUTE

Arthur Saltzman, *Director*

The Transportation Minor

The Transportation Institute of North Carolina Agricultural and Technical State University, Greensboro, N.C. currently offers a minor in Transportation which may be taken by students from any academic department. Students who take the minor will be prepared for graduate programs in transportation or careers in the transportation industry.

Transportation is a vital element in the nation's economy, accounting each year for approximately 20 per cent of the gross national product. Its importance to the nation was emphasized when a Secretary of Transportation was created as a cabinet-level position. Transportation, as a discipline, is concerned with planning and management of a viable transportation system within a competitive framework. This includes both the public and private sectors on a regional, national and international basis. Private companies and public agencies are rapidly growing, and there is a serious shortage of qualified personnel.

The major problems currently faced by the mass transit industry further attest to the need for providing more qualified managers and professionals. This imbalance between the large number of racial minorities who ride mass transit and the almost complete absence of transit company managers who are minorities further emphasizes the need for the University to train students in transportation and help provide solutions to problems faced by the transportation disadvantaged.

The transportation courses are structured so that the students who desire to emphasize the planning and engineering aspects may take the engineering and planning courses. Students who want to concentrate on transportation, physical distribution and traffic management may take the courses offered under the School of Business and Economics.

The official transcript from this University will indicate the successful completion of the minor in transportation. Academic and job counseling are available at the Transportation Institute located in Merrick Hall.

The minor in transportation will (1) provide an opportunity to acquire the knowledge, attitudes, and skills that are essential in the field of transportation; (2) provide a broad professional education enabling the student to develop competence in research and planning necessary for solving problems confronting the transportation industry; (3) develop a broad understanding not only of issues and problems of a strictly business character, but also of a general economic, legal, political, technological, and social character; (4) provide an understanding of the theory and practice of transportation management from the viewpoints of the shippers, the carriers, and the planning and regulatory agencies; (5) develop analytical and decision-making abilities of the transportation manager.

Curriculum

This minor is comprised of eighteen semester hours selected from the following courses:

*Business Administration 470	Urban Transportation Concepts	3 hours
Business Administration 610	Interdisciplinary Seminar in Transportation	3 hours
*Economics 425	Economics of Transportation	3 hours
Economics 426	Physical Distribution Analysis	3 hours
Political Science 448	Politics of Transportation	3 hours
Advanced Undergraduate and Graduate Engineering 660	Selected Topics: Urban Transportation Planning	3 hours
Architectural Engineering 566	City Planning & Urban Design I	4 hours
Architectural Engineering 567	City Planning & Urban Design II	5 hours
Mechanical Engineering 461	Transportation Engineering I	3 hours
Mechanical Engineering 462	Transportation Engineering II	3 hours

*Required Courses

SCHOOL OF EDUCATION

Child Development Laboratory

SCHOOL OF EDUCATION

S. Joseph Shaw, *DEAN and DIRECTOR of Teacher Education*

The School of Education provides opportunities for students to prepare for teaching careers in the elementary (K-3) and secondary schools of the state and for other professional careers in industry and government. The programs of study are planned to allow the students to attain competence in both specialized and general areas of Education.

The School of Education includes the following departments: Education, Psychology and Guidance, Health, Physical Education and Recreation and the Division of Industrial Education and Technology which comprises the departments of Industrial Education and Industrial Technology. In addition to these departments, the School includes the Department of Adult Education and Community Services and the Reading Center.

All professional teacher education programs are administered and supervised by the School of Education. The Schools of Education and Graduate Studies cooperate with the graduate teacher education programs. Moreover, the School of Education serves as the central agency for implementing all teacher education policies for undergraduates.

Upon the satisfactory completion of one of the undergraduate programs offered by the School of Education in cooperation with other departments of the University, the student is eligible to receive the degree of Bachelor of Science with a major in one of the following areas: Agricultural Education, Art Education, Biology Education, Business Education, Chemistry Education, Early Childhood Education, English Education, French, History, Home Economics Education, Industrial Education, Mathematics Education, Music Education, Physical Education, Physics Education, Social Studies, Psychology, Recreation, and Library Science.

THE TEACHER EDUCATION PROGRAM

The program of teacher education seeks to improve the equality of education available to the youth of North Carolina through improved preparation of teachers and other school personnel including administrators, guidance counselors and supervisors. To that end, it offers both undergraduate and graduate programs of professional study which represent a continuum with similar objectives. The program seeks, therefore, to realize these objectives:

(1) to prepare persons to take their places as competent members of the profession of education; and

(2) to provide opportunities for advanced study for school personnel already established in education.

The office of the Registrar in collaboration with the office of the Director of Teacher Education is the central agency vested with the authority and responsibility to certify to the State Department of Public Instruction students who are to be recommended by the Institution for certification in the following fields:

1. Agricultural Education
2. Arts
3. Biology
4. Early Childhood Education
5. Business Education
6. Chemistry
7. English
8. Foreign Languages
9. History
10. Home Economics Education
11. Industrial Arts Education
12. Mathematics
13. Music
14. Physical Education
15. Physics
16. Social Sciences
17. Vocational Industrial Education
18. Safety & Driver Education

In recognition of this function, the approval or endorsement of the department providing courses in the subject matter areas in which the candidate is to be certified must be secured prior to the approval or endorsement of the Director. The University reserves the right to refuse to recommend any applicants for certificates when they are deficient in mental or physical health, scholarship, character, or other qualifications deemed necessary for success in the profession of education.

The program in teacher education is divided into three separate but interrelated phases: (1) general education; (2) subject-matter specialization; and (3) professional education. Effective September 7, 1972, the new competency-based teacher education program approach was adopted by the State Board of Education. This approach will be gradually phased into the current approved program in the University.

General Education

The general education phase of the Teacher Education Program functions to provide experience and learning which meet the fundamental needs of all teachers, both in the role of teacher and citizen in a democracy. General education provides for the student the understanding, the knowledge, the appreciation, and the sensitivity attainable through the study of a broad range of materials and concepts ranging across the humanities, the arts, the social sciences, the natural sciences and mathematics. It provides a broad understanding of the cultural heritage and of the physical and social environments.

Subject-Matter Specialization

Experiences of students in the subject-matter specialization area are designed to develop a high level of subject competence in those who later will seek certification in their respective specialities. Subject-matter specialization provides opportunities for the student to understand the theoretical basis upon which subject content is developed and organized. It also provides the student an opportunity to accumulate and to understand a vast body of facts which comprises one's selected discipline. The function of knowledge in the development of mature scholarship is emphasized in this segment of the prospective teacher's experiences also.

Professional Education

The professional education phase of the Teacher Education Program is designed to induct the prospective teacher into the profession of education. During this segment of the student's experience he develops definable competence in the following:

1. Understanding the school as a social system with structures, functions, and special goals.
2. Understanding the learner (student) as a dynamic and unique personality capable of wide variation in behavioral adjustment.
3. Understanding the functional nature of human learning, how to diagnose and assess it, and how it takes place in individual and group settings, especially in organized school environments.
4. Understanding what resources facilitate learning and how these resources may be effectively used in a learning-teaching environment.
5. Understanding the processes at work between the school and the wider society which have influenced the learning-teaching situation, historically.
6. Understanding effective techniques and strategies for enhancing learning among students who have a wide range of needs, abilities and interests.
7. Understanding the education profession as a medium through which continuous individual development of the teacher is paramount in order to maintain accountability to himself, to the students he will teach, to the profession proper, and to society in general.

Teacher Education Admission and Retention Standards

Admission

The Teacher Education Council makes all policies governing the entire Teacher Education Program; therefore, admission, retention, and exit procedures are reviewed by the council. To be admitted to the Teacher Education Program a student should file an application with the chairman of the academic department in which he plans to major during his sophomore year. The student must have an overall grade point average of 2.00 and a major field average of 2.00 before he can be admitted to the Program.

Prior to his fourth semester in residence each applicant must satisfy the following requirements:

1. Successfully complete Mathematics 101 and 102 or 111.
2. Successfully complete English 100, 101, and Speech 250 with a grade of "C" or better in each course.
2. Take a personality inventory test.
4. Show evidence of good health. A statement from a physician is necessary. The health of a prospective teacher should not restrict his ability as a teacher. The details regarding what constitutes health not good enough for a teacher will be determined in consultation with the Student Health Director.
5. Demonstrate his ability to use the English language effectively.

Generally, during the fourth semester of a student's residence, his com-

plete profile will be examined by the Teacher Education Council. At this time, the student must have a minimum cumulative average of 2.00 before the Teacher Education Council will consider his application for Teacher Education.

Retention

To remain in the Teacher Education Program, the student must maintain an academic average of 2.00 in the areas in which he seeks certification and in professional education. In addition, a student must repeat any required major field course or professional education course, except General Psychology or Introduction to Education, when he earns a grade of "D". The repetition will not be considered in the hours required for graduation but the hours and the grade for the repetition will be included in the determination of the overall grade point average.

Should a student's academic average fall below 2.00 in either the area he seeks certification or the area of professional eeucation, he will be placed on probation or dropped from the Teacher Education Program, depending on the level to which his academic marks fall.

Once a student has been dropped from the Teacher Education Program because of poor scholarship, he may reapply with the Director of Teacher Education providing his academic average has returned to 2.00 in the area he seeks certification and/or in the area of professional education.

Readmission to Teacher Education Program

Once a student has been dropped from the Teacher Education Program for any reason, the following steps must be taken before a student will be readmitted to the Teacher Education Program:

1. The student must file a formal application for readmittance to the Teacher Education Program with the Director of Teacher Education.
2. The Director of Teacher Education must bring the application of the student along with the student's complete profile before the Teacher Education Council for action.
3. The Director of Teacher Education will formally notify, in writing, the student, Department Chairman, Dean of the School involved and the Chief Officer of Academic Affairs of the action of the Teacher Education Council with reference to the student's application for readmission to the Teacher Education Program.

Transfers to the Teacher Education Program

Transfer policies refer to the student who starts his college program in an academic area (such as mathematics or chemistry) and decides to become a teacher late in his college career. The following requirements are necessary for admittance to the Teacher Education Program under these conditions:

1. The student must have satisfied the general education requirements.
2. The student must have a 2.00 grade point average in his academic work and the general education program.
3. The student must apply formally to be admitted to the Teacher Educa-

tion Program. Application will be made to the Chairman of the Department in which he plans to major.

4. The student must meet the same criteria as are recommended for other students in Suggested Policies Governing Admission to the Teacher Education Program.
5. The Chairman of the Academic Department has the responsibility of enrolling the student in the Teacher Education Program after the student has met all requirements.

Certification

When the student completes the Teacher Education sequence of experiences, he must apply for state certification by (1) requesting a certification application form from the Office of the Director of Teacher Education, and (2) requesting a copy of his official transcript from the Registrar's Office to be attended to the application and submitted to the Division of Certification in Raleigh, North Carolina.

The student must take the National Teacher Examination, both the Common and the Teaching Area Examinations, and he must have these scores placed on file in the Teacher Education Office. Modifications of certification will be made gradually as the new exit criteria and competency-based program approved by the State Board of Education are phased into the pre-service program.

Irregular Certification

Occasionally students will need to be certified under the provision of "irregular certification." This provision is made primarily for students who are classified in the following categories:

1. One who completes an academic program of studies other than teacher education.
2. One who seeks initial certification in North Carolina from another state provided he/she does not qualify for certification under the "reciprocity" provision between the state of North Carolina and other selected states. A student does not need to be recommended by this institution for certification under the reciprocity provision; he/she makes direct contact with the North Carolina State Department of Public Instruction in Raleigh relative to his/her certification problem.

Anyone seeking a recommendation for certification under the "irregular certification" provision must contact the Office of the Director of Teacher Education for appropriate directions.

DEPARTMENT OF EDUCATION

Dorothy M. Prince, *Chairman*

The Department of Education offers (1) a major in Early Childhood Education for prospective teachers of kindergarten through grade three, (2) a program in Educational Media, (3) a program in Reading and (4) professional studies for prospective secondary school teachers. In Educational Media, the teacher education student may pursue a program leading toward certification as Associate Media Coordinator. Two options are offered in Reading: (1) Early Childhood Education and Reading and (2) Secondary Education and Reading. The department also provides professional studies and cooperates with the various academic departments of the University for the preparation of secondary school teachers.

Early Childhood Education

The Early Childhood Education program is designed to develop professional competencies and understandings needed to teach in kindergarten through grade 3. The program is interdisciplinary and requires a minimum of 124 semester credit hours. Satisfactory completion of the curriculum leads to the Bachelor of Science in Early Childhood Education degree and to North Carolina teacher certification in K-3.

The program aims to develop prospective teachers who will realize the importance of change and the need for continued learning. Specific objectives of the program are:

1. To produce socially sensitive teachers who understand and are willing to assume their responsibility to society.
2. To provide opportunities for prospective teachers to develop the ability to think critically, analytically, and creatively in dealing with the needs of learners.
3. To provide the prospective teacher with a broad experience in general education including the disciplines of the humanities, sciences, and social science.
4. To prepare competent teachers for grades K-3 through a strong interdisciplinary curriculum.
5. To provide for the knowledge and understanding of the learning process; human growth and development; sociological, historical, and philosophical foundations of American education.
6. To provide opportunities for professional laboratory experience and the application of instructional methodology, curriculum content, and utilization of organizational patterns in grades K-3.
7. To develop an understanding of the purpose, organization, and administration of school systems with emphasis on the role of the teacher in the total education program.

Suggested Sequences for Early Childhood Education

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
History 204, 205	3	3
Mathematics 111	—	4
Education 100	1	—
Physical Science 100, 110	4	—
Physical Education 101, 102	1	1
Political Science 230	—	3
Geography 210 or 200	—	3
Elective	3	—
Total	15	17

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Psychology 320	3	—
Child Development 311	3	—
Zoology, 160, 461	4	4
Speech 250	2	—
Anthropology 200	—	3
Humanities 200, 201	3	3
Education 300, 301	2	2
Electives	—	3
Total	17	15

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Education 451, 644	2	3
Music 609	3	—
Art 600	3	—
Education 315	—	3
Education 436	3	—
Education 660	—	3
Education 635	—	3
Physical Education 462	2	—
English 220 or 430	3	—
Electives	(2)	6
Total	18	18

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Block I		
Education 519	3	—
Food & Nutrition 632 or 535	3	—
Electives	6	—
Block II		
Education 556	—	3
Education 557	—	3
Education 558 or 560	—	6
Total	12	12

EDUCATIONAL MEDIA

The undergraduate program in educational media requires the satisfactory demonstration of competencies in seven areas: relationship of media to teaching and learning, human relationships, evaluation and selection of media, effective utilization of media, production of instructional materials, organization and management of media collections, program planning and management. The program in media leads to North Carolina State Certification as Associate Media Coordinator in a school setting. A minimum of nineteen semester hours in media is required with a teaching major.

The student must complete Ed. 624, 642, and 644, and he must elect ten semester hours from the following: Ed. 611, 612, 645, 650, 651, English 638, 639, Industrial Arts 608, 630, 635 and Speech 638, 637.

Reading

The Reading program prepares the Teacher of Reading. Undergraduate students who are Early Childhood Education majors and secondary school teaching majors may pursue Reading as a second area of concentration. The student must complete a minimum of eighteen semester hours of prescribed courses in the option that he selects.

OPTION A: EARLY CHILDHOOD EDUCATION AND READING

An Early Childhood Education major who selects Reading as a second area of concentration must complete Ed. 630, 635 or 636, 638, 557 and Education 436. The student may also elect English 626 and other courses in Reading.

OPTION B: SECONDARY EDUCATION AND READING

A student majoring in any secondary subject area (English, speech, social studies, science, etc.) may pursue a second area of concentration in Reading. He must complete Ed. 630, 637, 638, 639 English 627 and Education 436. He may also elect English 510, 501; Speech 630, 610 and other courses in Reading.

PROFESSIONAL STUDIES

The professional studies component of the teacher education program is designed to provide for the development of those professional understandings and abilities which are essential to the professional role of a teacher.

Approximately eighteen percent of the undergraduate curriculum constitutes the professional studies component. Specific teacher competencies are

developed through the provision of (1) a study of the processes and theories of human growth development, learning and teaching with field experiences; (2) a humanistic study of the problems, issues and trends in education within a historical, philosophical, sociological, economic, and governmental framework; (3) instruction and experiences in creating and using learning environments; (4) a study of the processes and techniques for analyzing and evaluating the teaching learning environment; and (5) experiences for the acquisition of knowledge, attitudes, and skills for positive human and social relationships.

Sophomore Year

Fall		*Spring*	
Ed. 300	2	Ed. 301	2
Psy. 320	3		
	5		2

Junior Year

Fall		*Spring*	
Ed. 400	3	Ed. 436	3
	3		3

Senior Year

Fall		*Spring*	
*Ed. 500	3	*Ed. 500	3
*Ed. 535, 536	3	*Ed. 535, 536	3
*Ed. 560	6	*Ed. 560	6
	12		12

COURSES IN EDUCATION

100. Orientation. Credit 1(1-0)
(Formerly Education 2100)

A familiarization with methods of improving study, taking notes and using the library. Offered each semester of the Freshman year and during the Summer Session.

300. Introduction to Education. Credit 2(2-0)
(Formerly Education 2120)

An overview of the historical background of the systems of education in the United States, their aims, organization and procedures, and of the principles and practices on all levels of the American educational system; emphasis on the requirements of North Carolina.

*Professional Black-Students except those taking library science courses are restricted to 12 semester hours during the student teaching semester.

301. Philosophical and Sociological Foundations of Education. Credit 2(2-0)
(Formerly Education 2121)

A view of the educative process and its philosophical foundations; emphasis on the philosophical implications of education as they relate to the pupil, curriculum, teacher, and the institution.

302. Field Experiences and Community Services. Credit 1-3

Field experiences as tutor, assistant, participant or employee in a school or education related institution, organization, agency, community, church, business, or industrial program involving interaction with children, youth or adults. Evaluation and written reports required. Planned in consultation with an instructor.

303. Socio-Philosophical Aspects of Education. Credit 4(4-0)

An examination of past and contemporary factors in American Education through philosophical and sociological perspectives. Exploration of problems and possibilities inherent in relating theory and practice in education.

315. Family, Community, and School. Credit 3(3-0)

Study of the relationships of the family, community, and school that involve the learner, with emphasis on the young child. Attention to family structure, parent education and involvement with the school and community; community development and participation in education. Consideration of research, and identification of current problems and issues. Observations and projects.

343. Methods and Materials of Bibliography. Credit 2(2-0)

An examination and evaluation of the principles and methods of bibliographic planning with emphasis on library skills and research techniques.

400. Psychological Foundations of Education—Growth and Development Credit 3(2-2)
(Formerly Education 2154—Restricted to Teacher Education Students)

Psychological principles governing the interests and needs of preadolescense and adolescence; emphasis is placed on general principles of growth and development; physical, motor, intellectual, social, emotional and moral aspects. Observing, recording and interpreting human behavior including functional conceptions of learning will be provided in laboratory settings. Prerequisites: Psychology 320, Education 300, 301.

402. Extramural Studies I. Credit 1-3

Off-campus experiences, testing or exploring relevance of education to real world situations in an agency, organization, institution or business. Project report and evaluation by permission of department.

413. Learning and Practice. Credit 3(3-0)

Survey and analysis of learning theories and the learning process with applications to education. Integration of theoretical viewpoints and research findings with observations and experience in classroom situations. Prerequisite: Psychology 320.

436. Tests and Measurements. Credit 3(2-2)

A basic study of standardized and teacher-made measuring devices, acceptable methods of selecting, administering, and interpreting all types of tests applicable to the school and classroom.

451. Foundations of Early Childhood Education. Credit 2(2-0)

The study of the historical background and the sociological, philosophical, economic factor, and current issues relating to early childhood education; the physical plant, equipment, supplies and other facilities necessary for appropriate experiences.

500. Principles and Curricula of Secondary Schools. Credit 3(3-0)
(Formerly Education 2140)

The history, nature, and function of the secondary school and its relationship to the elementary school and adult life. Prerequisite: 12 semester hours in education and psychology.

501. Methods of Research and Evaluation in Health and Physical Education. Credit 2(1-2)
(Formerly 2160)

The use of various research methods as applied to health education and physical education and the study of methods of evaluating biological, social and physiological outcomes for health education and physical education. Elementary statistical procedures are utilized. Prerequisite: Psychology 436.

510. Teaching Language Arts in the Intermediate Grades. Credit 2(2-0)

Methods, content, resources, and materials for teaching speaking, listening, writing and spelling in grades 4-9.

511. Teaching Reading in the Intermediate Grades. Credit 2(2-0)

Basic course in the methods, materials, and techniques used in reading instruction from the primary area through the study skills techniques of high school. An examination of learning and the teaching of reading in light of curriculum adjustment and procedures for developing expanding reading skills in grades 4-9. Prerequisite: Psychology 451.

512. Social Studies in the Intermediate Grades. Credit 2(2-0)

The instructional program in the social studies. Emphasis on current methods, organization, materials, and resources.

513. Strategies in Teaching Science in the Intermediate Grades. Credit 2(2-0)

The examination design, and evaluation of experiences for teaching science in grades 4-9.

514. Strategies in Mathematics Instruction for the Intermediate Grades. Credit 2(2-0)

Methods, materials, resources and evaluation for teaching modern mathematics in grades 4-9.

515. Principles and Techniques of Librarianship. Credit 3(1-4)

A study of the relationship of school media centers to other social and educational agencies, standards for school media centers, and librarianship as a profession. Practical experience required.

519. Preschool Materials, Methods, and Practicum. Credit 3(1-4)

Methods, materials and program planning for the preschool child. Attention to staffing scheduling, and curriculum planning. Directed observation and participation in an established pre-school program as a day care center, nursery or kindergarten.

525. Methods of Teaching Art. Credit 3(3-0)
(Formerly Education 2149)

A study of the aims, objectives, methods and techniques of art teaching in the modern schools. Special attention given to planning courses of material and correlation. Required of those wishing to qualify as art teachers. Prerequisites: 30 hours of Art and 15 hours of Education and Psychology.

526. Methods of Teaching English. Credit 3(3-0)
(Formerly Education 2144)

A study of materials and methods of teaching English in the high school. Required of those planning to teach English. Prerequisite: English 450, 430, 24 additional hours of English courses above English 100 and 15 semester hours in Education and Psychology.

527. Methods of Teaching Foreign Languages. Credit 3(3-0)
(Formerly Education 2148)

A study of the problems and difficulties experienced in teaching foreign languages. Special attention given to the matter of classroom aids, equipment, etc. Required of those students planning to teach the subject. Prerequisites: 27 hours of French and 15 semester hours of Education and Psychology.

528. Methods of Teaching Home Economics. Credit 3(3-0)
(Formerly Education 2151)

A study of the objectives, methods, and techniques necessary for teaching vocational homemaking on the secondary level.

529. Methods of Teaching Mathematics. Credit 3(3-0)
(Formerly Education 2147)

An evaluation of subject matter, materials, methods and techniques and objectives in the teaching of mathematics in the junior and senior high school. Required of those planning to teach the subject. Prerequisites: 30 hours of mathematics and 15 hours of Education and Psychology.

530. Public School Music Methods. Credit 2(2-0)
(Formerly Education 2141)

A comprehensive study of materials and methods in the teaching of public school music.

531. Vocal Methods and Materials. Credit 3(3-0)
(Formerly Education 2142)

The teaching of vocal music in the public schools: vocal literature for vocal combinations in the public schools.

532. Band Methods. Credit 3(3-0)
(Formerly Education 2145)

A study of school band organization and administration. (Fall)

533. The Teaching of Physical Education. Credit 2(1-2)
(Formerly Education 2143)

A study of materials, methods and practice in planning, organizing and conducting physical education class activities. Prerequisites: Phy. Ed. 446 and an adequate number of other physical education courses.

534. The Teaching of Health Education. Credit 2(2-1)
(Formerly Physical Education 2163)

Methods, materials and procedures for the teaching of health in the elementary and secondary schools. Prerequisites: Health Education 220 and 442.

535. Methods of Teaching Science. Credit 3(3-0)
(Formerly Education 2150)

A study of methods, materials and techniques of teaching such subjects as Biology, Chemistry, Physics, General Science, and Environmental Science in the high school. Required of all those planning to teach in this field. Prerequisite: 27 hours of Science and 15 semester hours of Education and Psychology.

536. Methods of Teaching Social Sciences. Credit 3(3-0)
(Formerly Education 2146)

A study of techniques of social science instruction on the high school level. Required of those planning to teach the subject. Prerequisites: 27 hours of Social Studies and 15 semester hours of Education and Psychology.

539. Methods of Teaching Speech. Credit 3(3-0)

A study of the aims, objectives, problems and difficulties experienced in teaching speech in the modern school. Special attention is given to the organization and coordination of both speech and theater curriculums, to planning courses of study, its presentation, and to the selection of materials and equipment required of all Speech and Theater Education majors. Prerequisites: 27 hours of speech and 15 hours of Education and Psychology.

556. Curriculum and Methods in Literature, Language Arts, and Social Studies in Early Childhood Education Credit 3(2-2)

The study of basic principles underlying the social studies and language arts curriculum; children's literature; appropriate materials and methods for kindergarten-primary grades. Development of concepts and skills relating to the scope and importance of social studies and language arts in the total program. Laboratory and observation experiences.

557. Curriculum and Methods in Science and Mathematics in Early Childhood Education. Credit 3(2-2)

Basic principles underlying the science and mathematics curriculum. Consideration of appropriate materials and methods for kindergarten through primary grades. Development of concepts and skills relating to the scope and importance of science and mathematics in the schools programs. Laboratory and observation experiences.

558. Student Teaching and Seminar in Early Childhood Education. Credit 6(2-8)

Observation and guided teaching experiences in the preschool laboratory and in kindergarten through grade three. Seminar experiences throughout the term. Prerequisite: Overall GPA of 2.00.

559. Student Teaching and Seminar. Credit 6(2-8)

Actual teaching experiences under supervision in grades 4-9; seminar before, during and after field experiences. Prerequisites: Education 300, 303, 400, and Psychology 436, and Education 510-514.

560. Observation and Student Teaching. Credit 6(2-8)
(Formerly Education 2161)

The application and practice of methods, techniques, and materials of instruction in a real classroom situation under supervision, includes purposeful observation; organization of teaching materials; participation in other activities which will aid in developing a teacher (guidance activities, child accounting, co-curricular activities, parent-teacher associations, teacher's meetings), and ninety or more clock hours of actual teaching. Prerequisites: Overall GPA of 2.00 in both the professional sequence and the academic sequences major and minor areas of specialization; Ed. 500, Principles and Curricula of Secondary Schools and Ed. 525-536, Methods of Teaching or Ed. 556 and 557 . . . completed or taken concurrently.

561. Seminar. Credit 1(1-0)

A consideration of selected topics and current trends in the field of education.

Advanced Undergraduate and Graduate

602. Extramural Studies II. Credit 1-3

Off-campus experiences with educational programs of agencies, organizations, institutions or business which gives first hand experiences with youth and adults and aspects of education. Project report and evaluation by permission of department.

610. Organization and Administration of School Media Centers. Credit 3(3-0)

The administrative organizational procedures include functions, organization and selection policies, program planning, and management of school media centers.

611. Classification of Media Collections. Credit 3(3-0)

Basic course in techniques of book and non-book description, their organization for services in libraries through decimal classification and their subject representation in the public catalog. Practice in laboratory.

612. Reference Materials. Credit 3(3-0)

The selection, evaluation, and use of basic reference materials with emphasis on the selection of materials, study of contents, methods of location, and practical application.

624. Educational Media Administration. Credit 3(2-2)

Planning, organizing, coordinating, and administering educational media progress. Developing criteria for selection, utilization, care and evaluation of the effectiveness of materials and equipment. Scientific arrangement of learning environments, space and space relations. The planning of facilities and budgeting for programs and public relations activities.

625. Theory of American Public Education. Credit 3(3-0)
(Formerly 2180)

An examination of the philosophical resources, objectives, historical influences, social organization, administration, support, and control of public education in the United States.

626. History of American Education. Credit 3(3-0)
(Formerly Education 2184)

A study of the historical development of education in the United States emphasizing educational concepts and practices as they relate to political, social, and cultural developments in the growth of a system of public education.

627. The Afro-American Experience in American Education. Credit 3(3-0)
(Formerly Education 2181)

Lectures, discussions, and research in the Afro-American in American education including the struggle for literacy, contributions of Afro-Americans to theory, philosophy and practice of education in the public schools, private and higher education. Traces the development of school desegregation, its problems, and plans.

628. Seminar and Practicum in Urban Education. Credit 3(1-4)

A synthesis of practical experiences, ideas and issues pertinent to more effective teaching in urban areas.

630. Foundations in Reading. Credit 3(3-0)
(Formerly Education 2179)

Basic reading course; consideration of the board field of reading—its goals and nature; factors affecting its growth; sequential development of skills, attitudes and interests, types of reading approaches, organization and materials in teaching the fundamentals of reading.

635. Teaching Reading Through the Primary Years. Credit 3(3-0)

Methods, materials, and techniques used in reading instruction for preschool through grade three. An examination of learning, the teaching of reading, and curriculum experiences and procedures for developing reading skills.

636. Methods and Materials in Teaching Reading in the Elementary School. Credit 3(3-0)
(Formerly Education 2171)

The application of principles of learning and child development to the teaching of reading and the related language arts. Methods and approaches to the teaching of reading in the elementary school, including phonics, developmental measures, informal testing procedures, and the construction and utilization of instructional materials.

637. Teaching Reading in the Secondary School. Credit 3(3-0)
(Formerly Education 2178)

Nature of a developmental reading program initiating and organizing a high school reading program, the reading curriculum, including reading in the content subjects, critical reading, procedures and techniques, and corrective and remedial aspects.

638. Classroom Diagnosis in Reading Instruction. Credit 3(3-0)

Methods, techniques, and materials used in the diagnosis of reading problems in the kindergarten-primary area through the intermediate level. Attention upon the pupil and the interpretation of physiological, psychological, sociological, and educational factors affecting learning to read. Opportunity for identification analysis interpretation on, and strategies for fulfilling the reading needs of all pupils. Prerequisite: Psychology 541.

639. Reading Practicum. Credit 3(0-6)

Application of methods, materials and professional practices relevant to teaching pupils. Provisions for participation in and teaching of reading. Designed to coordinate the student's background in reading, diagnosis, learning, and materials. Student teaching in a public school. Prerequisite: 12 credit hours in reading.

640. Reading for the Atypical Learner. Credit 3(3-0)

Attention to the gifted child, the able retarded, the slow learner, the disadvantaged, and the linguistically different child. Special interest groups will be formed for investigation reports.

641. Teaching the Culturally Disadvantaged Learner. Credit 3(3-0)
(Formerly Education 2771)

Psychological and sociological influences on culturally deprived learners and their development; emphasis on the experiential lacks of the culturally deprived learner; and special teaching methods, materials and activities. A consideration of groups of American Indians, Negroes, Puerto Ricans, urban poor, rural poor, Mexican Americans, Mountain whites, and migrant workers who may be culturally deprived.

642. Production of Instructional Materials. Credit 3(2-2)

The planning, designing, and production of opaque materials, charts, graphs, posters, transparencies, mounting, bulletin boards, displays, models, mock-ups, spectrums, chalkboards, scriptwriting, and recording techniques.

644. Utilization of Educational Media. Credit 3(2-2)

Applies basic concept to problems in teaching and learning with school and adult audiences. Relates philosophical and psychological bases of communications to teaching. Discusses the role of communications in problem-solving, attitude formation, and teaching. Methods of selecting and using educational media materials effectively in teaching. Experience in operating equipment, basic techniques in media preparation. Practice in planning and presenting a session.

650. Book Selection and Related Materials for Children. Credit 3(3-0)
(Formerly Education 2075)

A study of children's literature with emphasis on aids and criteria for selection of books and other materials for preschool through late childhood ages, storytelling, and an investigation of reading interests.

651. Book Selection and Related Materials for Young People. Credit 3(3-0)
(Formerly Education 2076)

A consideration of literature, reading interests, and non-book materials for young people.

660. Introduction to Exceptional Children. Credit 3(3-0)
(Formerly Education 2372)

An overview of the educational needs of exceptional or "different" children in the regular classroom situation; emphasis placed on classroom techniques known to be most helpful to children having hearing losses, speech disorders, visual problems, emotional, social handicaps and intelligence deviation, including slow-learners and gifted children. An introduction to the area of special education. Designed for classroom teachers.

661. Psychology of the Exceptional Child. Credit 3(3-0)
(Formerly Education 2373)

An analysis of psychological factors affecting identification and development of mentally retarded children, physically handicapped children, and emotionally and socially maladjusted children.

662. Mental Deficiency. Credit 3(3-0)
(Formerly Education 2376)

A survey of types and characteristics of mental defectives; classification and diagnosis; criteria for institutional placement and social control of mental deficiency. Prerequisites: Special Education 660 and 661.

663. Measurement and Evaluation in Special Education. Credit 3(2-2)
(Formerly Education 2375)

The selection, administration, and interpretation of individual tests; intensive study of problems in testing exceptional and extremely deviate children; consideration to measurement and evaluation of children that are mentally, physically, and emotionally or socially handicapped. Emphasis upon the selection and use of group tests of intelligence and the interpretation of their results.

664. Materials Methods, and Problems in Teaching Mentally Retarded Children. Credit 3(2-2)
(Formerly Education 2377)

Basic organization of programs for the education of the mentally retarded: classification and testing of mental defectives; curriculum development and principles of teaching intellectually slow children. Attention is also given to the provision of opportunities for observing and working with children who have been classified as mentally retarded. Prerequisites: Special Education 660, 661, and 663.

665. Practicum in Special Education. Credit 3(0-6)

Observation, participation, and teaching in an educational program for the mentally retarded.

683. Curriculum in Early Childhood. Credit 3(3-0)
(Formerly Education 2080)

Curriculum experiences and program planning appropriate to nursery and kindergarten education.

684. Methods in Early Childhood. Credit 3(3-0)
(Formerly Education 2079)

Administration, principles, practices, methods, and resources in the organization of preschool and primary programs. An interdisciplinary and team approach. Observation for teaching styles and strategies.

GRADUATE COURSES

These courses are open only to graduate students. For descriptions of them, see the *Graduate School Bulletin.*

700. Introduction to Graduate Study. Credit 2(2-0)
(Formerly 2294)

701. Philosophy of Education. Credit 3(3-0)
(Formerly 2185)

702. Readings in Modern Philosophy of Education. Credit 3(3-0)
(Formerly 2092)

703. Educational Sociology. Credit 3(3-0)
(Formerly 2195)

710. Methods and Techniques of Research. Credit 3(3-0)
(Formerly 2189)

711. Educational Statistics. Credit 3(2-2)
(Formerly 2299)

720. Curriculum Development. Credit 3(3-0)
(Formerly 2085)

721. Curriculum in the Elementary School. Credit 3(3-0)
(Formerly 2296)

722. Curriculum in the Secondary School. Credit 3(3-0)
(Formerly 2187)

723. Principles of Teaching. Credit 3(3-0)
(Formerly 2295)

724. Problems and Trends in Teaching Science. Credit 3(3-0)
(Formerly 2193)

725. Problems and Trends in Teaching Social Sciences. Credit 3(3-0)
(Formerly 2192)

726. Workshop in Methods of Teaching Language Arts. Credit 2(2-0)
(Formerly 2291)

727. Workshop in Methods of Teaching Modern Mathematics for Junior and Senior High School Teachers. Credit 3(3-0)
(Formerly 2087)

728. Workshop in Methods of Teaching Modern Mathematics in Elementary Schools. Credit 3(3-0)
(Formerly 2290)

736. Workshop in Educational Media. Credit 3(1-4)
(Formerly 2191)

738. Educational Media Internship and Seminar. Credit 3(1-4)

739. Reading in the Content Areas. Credit 3(3-0)

740. Problems in the Improvement of Reading. Credit 3(3-0)
(Formerly 2094)

741. Advanced Diagnosis in Reading Instruction. Credit 3(3-0)

742. Organization and Administration of Reading Programs. Credit 3(3-0)

743. Advanced Practicum in Reading. Credit 3(0-6)

744. Seminar and Research in Reading. Credit 3(3-0)

755. Supervision of Instruction. Credit 3(3-0)
(Formerly 2086)

756. Supervision of Student Teachers. Credit 3(3-0)
(Formerly 2285)

757. Problems in Supervision of the Elementary School. Credit 3(3-0)
(Formerly 2197)

758. Problems in High School Supervision. Credit 3(3-0)
(Formerly 2199)

760. The Junior High School. Credit 3(3-0)
(Formerly 2088)

761. School Organization and Administration. Credit 4(4-0)

762. The Principalship. Credit 3(3-0)

763. Public School Administration. Credit 3(3-0)
(Formerly 2091)

764. Pupil Personnel Administration. Credit 2(2-0
(Formerly 2297)

765. School Publicity and Public Relations. Credit 3(3-0)
(Formerly 2194)

766. School Planning. Credit 3(3-0)
(Formerly 2186)

767. Public School Finance. Credit 3(3-0)
(Formerly 2095)

768. Principles of School Law. Credit 3(3-0)
(Formerly 2174)

769. Problems in Educational Administration and Supervision. Credit 3(0-6)
(Formerly 2089)

755. The Community College and Post Secondary Education. Credit 3(3-0)
(Formerly 2393)

776. Principles of College Teaching. Credit 3(3-0)
(Formerly 2394)

780. Comparative Education. Credit 3(3-0)
(Formerly 2093)

781. Issues in Elementary Education. Credit 3(3-0)
(Formerly 2286)

782. Issues in Secondary Education. Credit 3(3-0)
(Formerly 2287)

783. Current Research in Elementary Education. Credit 3(3-0)
(Formerly 2288)

784. Current Research in Secondary Education. Credit 3(3-0)
(Formerly 2289)

785. Independent Readings in Education I. Credit 1(0-2)
(Formerly 2395)

786. Independent Readings in Education II. Credit 2(0-4)
(Formerly 2396)

787. Independent Readings in Education III. Credit 3(0-6)
(Formerly 2397)

790. Seminar in Educational Problems. Credit 3(1-4)
(Formerly 2392)

791. Thesis Research. Credit 6(0-12)
(Formerly 2292)

792. Advanced Seminar and Internship in Educational Administration. Credit 3(0-6)
(Formerly 2090)

EDUCATIONAL PSYCHOLOGY AND GUIDANCE

William Lawrence, *Acting Chairman*

The Department of Educational Psychology and Guidance offers a program leading to a Master of Science in Education with a concentration in Counselor Education (Guidance). In addition to the degree program, the Department offers courses designed for educators who wish to raise the level of their preparation or to develop competencies necessary to enter certain service positions in the field of education. The master's level program in counselor education is designed to prepare graduates for employment as professional counselors in both educational and non-educational settings.

Requirements for admission to candidacy and for the degree are listed earlier in this catalogue in the description of the degree programs.

COUNSELOR EDUCATOR CURRICULUM: 31 S.H. required

This program is designed for the individual who seeks issuance of a School Counselor's Certificate or the Master's Degree. The prerequisites for admission to the program are (1) a course in principles of guidance or an equivalent

course (e.g., Introduction to Guidance, Field of Guidance, and so on), and (2) a course in statistics or educational and psychological measurement.

1. Required Courses:

		Sem. Hrs
Education 701	Philosophy of Education	3
Education 720	Curriculum Development	3
or		
Education 722	Curriculum in the Secondary School	3
Ed. Psy. 726	Educational Psychology	3
Ed. Psy. 623	Personality Development	3
Guidance 706	Organizational and Administration of Guidance Services	2
Guidance 716	Techniques of Individual Analysis	2
Guidance 717	Educational and Occupational Information	3
Guidance 718	Introduction to Counseling	3
Guidance 730	Guidance Practicum	3
	Courses distributed among —	
Anthropology		
Economics		
Intercultural Relations		
Sociology		

2. An Internship involving an extended period of continuous full-time experience must be completed by students who have not had previous teaching experience. The Internship will be completed during a regular school term, and will be concerned with providing knowledge about the total school program including curriculum and relationships with students, parents, teachers, administrators and community referral agencies.

3. Other Requirements:

   Graduate Record Examination (Aptitude and Advanced Test in Education)
   3.0 grade point average or better for graduate courses.
   Final Comprehensive Examination in Guidance and in Education.

Undergraduate Courses in Educational Psychology and Guidance

320-435 Educational Psychology Credit 3(3-0)

A study of basic problems underlying the psychology of education, individual differences, development of personality, motivation of learning and development, nature of learning and procedures which best promotes its efficiency.

Advanced Undergraduate and Graduate Courses in Educational Psychology and Guidance

320-600 Introduction to Guidance Credit 3(3-0)

A study of the meaning of guidance; need for guidance, guidance techniques; and role of the teacher, administrator, employer and counselor in the guidance program; the concept of the term approach to guidance and ways of evaluating guidance services. This course is prerequisite for all other courses in guidance and must, therefore, be taken first.

320-623 Personality Development Credit 3(3-0)

A study of the basic processes in personality, the contents of personality and the consequences of personality. Concern will be given to the structure and development of the normal personality, influences of childhood experiences upon personality, significance of emotional, developmental, integration, measurements of traits, and personality types.

320-661 Psychology of the Exceptional Child Credit 3(3-0)

An analysis of psychological factors affecting identification and development of mentally retarded children, physically handicapped children, exceptionally high IQ children and emotionally and socially maladjusted children. In addition, the course will include a study of the basic facts, principles and methods of understanding the personality and behavior of individuals who possess mental or physical handicaps.

320-662 Mental Deficiency Credit 3(3-0)

An in-depth study of types and characteristics of mental deficiencies, classification and diagnoses, criteria for institutional placement and social control of mental deficient children. Attention is given also to the nature of mental retardation, biological and psychological factors, heredity-environmental interactions, cultural-family factors, and review of related research.

Courses Offered to Graduates Only

320-706 Organization and Administration of Guidance Services Credit 2(2-0)

A study of organizational procedures and patterns; methods by which guidance policies and service may be emplemented; and the administrative relationships of person's involved in the organizational structure. Further attention will be given to conceptual models useful to the counselor in understanding how organizational structures emerge, develop and decline, organizational goals, theories of organization, authority-subordinate roles; and communication within and between organizations.

320-707 Research Seminar Credit 3(1-4)

An in-depth understanding of principles of planning, conducting, analyzing and interpreting counseling research and evaluation. Evaluating research in professional journals. Formulating a research problem, conducting a research study and writing the research report. (Permission must be granted by Counselor-Educator)

320-714 Internship in Guidance Credit 3(1-4)

The internship is designed to give the counselor-trainee who has not had teaching and other related educational experiences, the opportunity to be involved in the organization and operation of the many and varied public school programs and their interaction with community agencies. (Permission must be granted by Counselor-Educator)

320-715 Measurement for Guidance Credit 3(2-2)

A critical study of the principles and techniques involved in measurement in Guidance and Education. Emphasis will be placed on concepts in the qualification of human performances, the nature of tests, especially the characteristics of objectivity, validity, reliability, and standardization.

320-716 Techniques of Individual Analysis Credit 2(1-2)

A course designed to allow students an opportunity to demonstrate diagnostic and analytical skills necessary for psychological counseling. Emphasis will be placed on principles of interviewing, observation, interpretation of assessment data, development of listening and testing conditions and procedures.

320-717 Educational and Occupational Information Credit 3(3-0)

Study of vocational development theory, occupational trends, sources of educational and occupational information and their application to guidance and counseling.

320-718 Introduction to Counseling Credit 3(3-0)

Principles and application of counseling with particular emphasis on the counseling relationship, the counseling techniques and the different theoretical approaches to counseling.

320-720 Principles and Practices of Group Dynamics Credit 3(3-0)

Provides a general overview of the dynamics, processes and practices of group work in guidance activities and in counseling, with special emphasis on the therapeutic forces for behavior change within a counseling group. Enrollees participate in a group to exchange their own interactions and motives and the experiences are related to the didactic content of the course.

320-726 Educational Psychology Credit 3(3-0)

An advanced indepth study of the application of psychological principles to educational practices.

320-727 Child Growth and Development Credit 3(3-0)

A comprehensive analysis of physical, mental, emotional, and social growth and development from birth through adolescence.

320-728 Measurement and Evaluation Credit 3(2-2)

Strong consideration is given to applying measurement techniques and interpretation of group tests and individual pupil diagnostic tests.

320-729 Mental Hygiene for Teachers Credit 3(3-0)

An analysis of the functions of mental hygiene in the total educative process. Attention is given to the basic principles of mental health as these apply to pupils and teachers alike; to the types of adjustment; to the development of personality; and to psychotherapeutic techniques for the restoration of mental health.

320-730 Guidance Practicum (Formerly 320-705) Credit 3(1-4)

A course for advanced students in counseling to demonstrate under supervision the ability to apply theories and techniques in individual and group counseling sessions. Students in this course must have completed at least 24 semester hours including 320-706, 716, 717, and 718, and should have demonstrated skills in techniques in the field. Permission must be granted by Counselor-Educator.

DEPARTMENT AND HEALTH, PHYSICAL EDUCATION AND RECREATION

Roy D. Moore, *Chairman*

The objectives of the Department of Health, Physical Education and Recreation are:

1. To provide instruction in a wide variety of physical education activities to meet the needs and interests of all students in the required general education program of the University.
2. To promote participation in wholesome extra-class activities through sponsoring and supervising such organizations as the Aquatics Club, Cheerleaders' Squad, Dance Group, Gymnastics Club, Women's Athletic Association, Intramural Leagues, and Officiating Club.
3. To provide recreational outlets for students and members of the College community through conduct of informal recreational activities.
4. To enrich the total University program through cooperation with the programs of such units of the University as the music and dramatic groups, alumni association, agricultural homemaking groups, guidance and health service divisions.
5. To provide necessary preparation for students planning careers as teachers of elementary, junior and senior high school health and physical education and as athletic coaches and recreational administrators.
6. To provide courses in health, physical education which meet State and National Teacher Certification standards.
7. To provide courses in Recreation which meet guidelines of National Recreation and Park Administration.

Each major is required to complete a minimum total of fourteen competencies of the following:

3—Team Sports
3—Individual and Dual Sports
2—Gymnastics
2—Dance
4—Swimming

Each major is also required to specialize in one of the following areas: Team Sports, Individual and Dual Sports (includes officiating), Gymnastics, Dance, Swimming or Athletic Training.

During the Junior and Senior years before student teaching, the major will be assigned to an instructor and assist in the basic program. Freshmen Physical Education majors will be placed in PE 101 and PE 102.

SUGGESTED PROGRAM IN HEALTH AND PHYSICAL EDUCATION FOR MAJORS

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 101, 102	3	3
History 100, 101	3	3
Biological Science 100	4	—
Physical Science 100	—	4
Physical Education 101, 102, 103, and 104	1	—
English 102 (1 hour either semester)	—	1
Education 100 (1 hour either semester)	1	1
Air or Military Science or Electives	1	1
	16+	16+

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Education 300, 301	2	2
English 250	2	—
Humanities 200, 201	3	—
Foreign Language	3	3
Psychology 320	3	—
Zoology 160	—	4
Health Education 200, 220	2	2
Physical Education 229, 231	1	1
Physical Education 234 (W), 235 (W)	1	1
Physical Education 237 (M), 238 (M)	1	1
Physical Education 246 (W), 247 (w)	1	1
Physical Education 249 (M), 251 (M)	1	1
Physical Education 261, 361	1	1
Air or Military Science (Optional)	2	2
	21	20

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Education 400	3	—
Psychology 436	—	3
Zoology 469, 560	3	3
Health Education 440	2	—
Physical Education 445	—	2
Physical Education 446	3	—
Health Education 442	—	3
Physical Education 448, 450	1	1
Physical Education 451, 452	1	1
Physical Education 453 (W), 455 (W)	2	2
Physical Education 456 (M), 458	2	2
Physical Education 460, 461 (M)	2	2
Physical Education 462	2	—
	21	19

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Health Education 560	2	—
Education 500	—	3
Physical Education 563	2	—
Education 560	—	6
Physical Education 566	3	—
Physical Education 567, 568	1	1
Physical Education 569	2	—
Physical Education 669	3	—
Education 533	—	2
	13	12

Suggested Program for Recreation Majors

Freshman Year

1st Semester

	S.H.
English 100	3
Mathematics 101	3
History 100	3
Biological Science 100	4
Phy. Ed. 101 or 102	1
English 102	3
Education 100	1
Air or Military Sci. (Optional)	1
	19

2nd Semester

	S.H.
English 101	3
Mathematics 102	3
History 101	3
Physical Science 101	4
Physical Education 261	1
Health Education 200	2
Air or Military Sci. (Optional)	1
	17

Sophomore Year

1st Semester	S.H.	*2nd Semester*	S.H.
Humanities 200	3	Humanities 201	3
Physical Education 460	2	S100	3
English 250	2	Health Education 442	3
Psychology 320	3	Physical Education 229	1
Economics 301	3	Health Education 220	2
Physical Education 261	1	Art 401	3
Physical Education 231	1	Air or Military Sci. (Optional)	1
Physical Education 247	2		
Air or Military Sci. (Optional)	1		
	18		16

Junior Year

1st Semester	S.H.	*2nd Semester*	S.H.
Recreation 402	2	Recreation 408	2
Industrial Arts 210	2	Recreation 463	3
Political Science 442 or Poli. Sci. 330	3	Recreation 465	3
Recreation 464	2	Recreation 466	3
Music 119	2	Physical Education 344	1
Physical Education 448	1	Physical Education 458	2
Recreation 561	3		
Psychology 323	3		
	18		14

Recreation 112 — Summer Field Work I — 6 S.H.

Senior Year

1st Semester	S.H.	*2nd Semester*	S.H.
Recreation 509	2	Recreation 510	2
Education 644	2	Sociology 204	3
Physical Education 566	3	B.A. 351	3
Recreation 570	3	Electives	4
B.A. 305	3		
Elective	1		
	14		12

HEALTH EDUCATION COURSES

Undergraduate

200. Personal Hygiene. Credit 2(2-0
(Formerly 2700)

This course is designed to give the student definite knowledge of the principles of personal health, both mental and physical, and to prepare him for self guidance through and beyond the college years. Emphasis is placed upon information pertinent to social behavior today and upon effective approaches to college living.

220. Community Health. Credit 2(2-0)
(Formerly 2720)

An introductory study of environmental factors which affect health. Emphasis will be placed upon the health of the group rather than that of the individual. Consumer health, community resources for health and prevention and control of disease through organized community efforts will be stressed. (Prerequisite 200.)

HEALTH EDUCATION COURSES FOR MAJOR STUDENTS

440. Advanced Hygiene and Principles of Health Education Credit 2(2-0)
(Formerly 2740)

A comprehensive review of health facts and scientific principles applicable to the prospective teacher, the school child, and the community. Fundamentals of health promotion in the school program are considered. (Prerequisite: HE 200, 201.)

442. First Aid, Safety, and Prevention of Injuries. Credit 3(2-2)
(Formerly 2745)

Techniques of first aid to the injured in the home, school and community and the teaching of safety measures to be practiced in daily living; the prevention and care of the injuries occurring in physical education classes and in competitive sports. The standard Red Cross First Aid Certificate is awarded upon successful completion of the course. (Prerequisite: Zoo. 469.)

560. The Teaching of Health Education. Credit 2(2-1)
(Formerly 2760)

Methods, materials and procedures for the teaching of health in the elementary and secondary schools. (Prerequisites: Health Education 220 and 442, Zool. 469, 560 and HE 440.)

Advanced Undergraduate and Graduate

HEALTH COURSES

651. Personal, School and Community Health Problems. Credit 3(3-0)
(Formerly 2771)

A study of personal, school and community health problems and resources. Emphasis is placed on the control of communicable diseases, healthful school living and the development of individuals of the scientific attitude and a positive philosophy of healthful living.

652. Methods and Materials in Health Education for Elementary and Secondary School Teachers. Credit 3(3-0)
(Formerly 2772)

A study of the fundamentals of the school health program, pupil needs, methods, planning instruction, teaching techniques, selection and evaluation of materials for the elementary and secondary programs, and the use of the community resources.

GENERAL PHYSICAL EDUCATION REQUIREMENT

101. Fundamentals of Physical Education. Credit 1(0-2)
(Formerly 2701)

To develop an understanding of the value and the logic behind exercise and sports activity and regular habits of exercise, to determine the physical fitness needs of the student with the nature, basic rules, techniques and skills of a wide variety of popular American sports and guide him into activities which will be of most interest and benefit to him now and in the future.

102. A Continuation of 101. Credit 1(0-2)
(Formerly 2703)

229. Modern Dance. Credit 1(0-2)
(Formerly 2729)

To develop an understanding of the various qualities of movement; the techniques of obtaining and applying them in the art form of dance.

231. Folk and Tap Dance. Credit 1(0-2)
(Formerly 2731)

Clog, tap and folk dances characteristic of many nationalities.

233. Social and Country Dance. Credit 1(0-2)
(Formerly 2733)

Ballroom, square, and round dance forms; fundamentals leading and following, dance etiquette.

234. Team Sports: Hockey, Soccer, Basketball (Women). Credit 1(0-2)
(Formerly 2724)

Fundamental techniques, rules, strategy, terminology, and cultural significance of field hockey, soccer and basketball.

235. Team Sports: Volleyball, Speedball, Softball, (W). Credit 1(0-2)
(Formerly 2725)

Fundamental techniques, rules, strategy, terminology and cultural significance of volleyball, speedball, and softball.

237. Group Games, Football and Basketball. Credit 1(0-3)
(Formerly 2737)

Practice methods and applied techniques of a large variety of games of lower organization of the circle, group, and line types which might be suitable for playground, gymnasium, camp and for adult gatherings. Concentration on developing performance skills and understanding of football and basketball.

238. Baseball, Track and Field. Credit 1(0-3)
(Formerly 2738)

To develop performance skills, methods, and techniques in baseball, track and field.

240. Introduction to Physical Education. Credit 2(2-0)
(Formerly 2740)

Survey of the nature and scope of physical education; interpretation of objectives and philosophy of physical education as a part of the total educational program. Qualifications, responsibilities, and opportunities of professional personnel. Evaluation of personal fitness and suitability to area of interest.

246. Individual Sports: Archery, Tennis, Badminton, Golf, Credit 1(0-2)
(Formerly 2726)

Fall or Spring. Techniques, rules, playing courtesies, and significance of individual sports to college and after school life.

247. Individual Sports: Recreational Games. Credit 1(0-2)
(Formerly 2727)

Shuffleboard, handball, deck tennis, table tennis, croquet, modified bowling and horseshoe.

248. Adapted Physical Education. Credit 1(0-2)
(Formerly 2736)

A continuation of 454.

249. Individual Sports and Combatives. Credit 1(0-3)
(Formerly 2739)

To develop performance skills in combatives and a wide variety of individual sports including shuffleboard, handball, table tennis, badminton, croquet, archery, golf, and tennis.

251. Shoftball, Soccer, and Volleyball (Men). Credit 1(0-2)
(Formerly 2721)

To develop an understanding of rules, strategy and performance skills in softball, soccer, and volleyball.

252. Touch Football, Speedball, and Basketball (Men). Credit 1(0-2)
(Formerly 2722)

To develop an understanding of rules, strategy, and performance skills in touch football, speedball, and volleyball.

261. Swimming, Beginning. Fall or Spring. Credit 1(0-2)
(Formerly 2711)

To teach the elementary skills as outlined in the American Red Cross Standards for beginning swimmers.

263. Rhythmics. Credit 1(0-2)
(Formerly 2732)

Suitable types of rhythmical activities for boys and men including fundamental movements, folk, tap, social dance and singing games.

335. Adapted Physical Education. Credit 1(0-2)

Special activities designed for those students whose physical examination shows that they are unable to participate in the regular physical education classes.

343. Bowling. Credit 1(0-2)

To develop performance skills and techniques in bowling.

344. Beginning Tennis and Badminton. Credit 1(0-2)
(Formerly 2744)

To develop an understanding of rules, strategy and performance skills in tennis and badminton.

361. Intermediate Swimming. Credit 1(0-2)

Swimming for Intermediates.

441. Beginning Golf. Credit 1(0-2)
(Formerly 2741)

To develop performance skills and techniques in golf.

443. Skating for Beginners. Credit 1(0-2)
(Formerly 2742)

To develop performance skills and techniques in ice skating.

445. Kinesiology. Credit 2(2-0)
(Formerly 2752)

A study of the body movements, types of muscles exercise and their relation to the problems of body development. (Prerequisite: Zoology 469.)

446. History and Principles of Physical Education. Credit 3(3-0)
(Formerly 2749)

The evolution of physical education from the earliest time to the present day. Consideration of the relationship of physical education to education and to national life and ideas through the different historical periods. A critical analysis of the scientific basis for physical education with applications of the aims and objectives to the modern concepts of education.

448. Gymnastics I. (Men and Women). Credit 1(0-2)
(Formerly 2747)

An introduction to the basic skills of tumbling, floor exercise, trampoline and different types of vaulting. The course will include methods and basic evaluation.

450. Advanced Gymnastics (M) (W). Credit 1(0-2)
(Formerly 2734)

Men: Fundamental skills and routines on the following gymnastics apparatus: rings, parallel bars, horizontal bar, and side horse.

451. Dance Composition. Credit 1(0-2)
(Formerly 2753)

The rhythmical and musical basis of dance, the elements of dance construction. Theory and practice of skills involved. (Prerequisite 229.)

452. Applied Dance. Credit 1(0-2)
(Formerly 2755)

A coordinated course designed to increase skills in technique and the use of related art materials. (Prerequisites: 229, 231, 451.)

453. Techniques and Methods in Fall and Indoor Activities. Credit 2(1-4)
(Formerly 2754)

Theory and practice of field hockey, soccer, archery, golf, basketball, gymnastics, and apparatus. Analysis of performance skills, materials and techniques. Opportunity for officiating and obtaining local and national official rating.

454. Adapted Physical Education. Credit 1(0-2)
(Formerly 2735)

A continuation of 262.

455. Techniques and Methods of Seasonal and Indoor Activities. Credit 2(1-4)
(Formerly 2756)

Theory and practice of volleyball, recreational games, speedball, softball, tennis, badminton, track, and field, Materials and teaching techniques, analysis of skills involved. Opportunity for obtaining officials' ratings.

456. Teaching of Soccer, Football and Basketball. Credit 2(1-2)
(Formerly 2745)

Consideration is given to the teaching of history, rules, performance skills, methods or organizing practices, strategy, team offenses and defenses, and various formations for the three sports.

458. Lifesaving and Water Safety. Credit 2(1-2)
(Formerly 2746)

The teaching of swimming and lifesaving. Skills required for the American Red Cross standard Life Saving Certificate; instruction in desirable methods and techniques for the teaching of swimming and aquatic events. Prerequisite: 361 or equivalent.

460. Community Recreation. Credit 2(2-0)
(Formerly 2761)

A study of city, state, and national organization. Practice in the general principles and techniques in the organization and promotion of leisure activities for home, school, and community.

461. The Teaching of Individual Sports and Net Grames. Credit 2(1-2)
(Formerly 2748)

Methods and techniques for teaching individual sports including shuffleboard, handball, table tennis, badminton, archery, deck tennis, volleyball, newcomb, and paddle tennis.

462. Elementary School Physical Education. Credit 2(1-2)

Philosophy, program planning, and method for teaching children. Observation and instruction of children at various grade levels. Experiences in simple games, relays, stunts, tumbling, creative rhythms and dance movement exploration. (Prerequisite: 240—Admittance to the Teacher Education Program.)

469. The Physiology of Exercise. Credit 3(2-2)

The purpose of this course is to observe and record the effects of physical activity on the organic systems and service organs of the human body and to learn basic laboratory techniques and procedures of physical education.

547. Baseball Stunts. Credit 1(0-2)

560. Methods of Research and Evaluation in Health and Physical Education. Credit 2(1-2)
(Formerly 2760)

Same as Education 501.

562. The Teaching of Physical Education. Credit 2(1-2)
(Formerly 2762)

Same as Education 533.

563. Adapted Physical Education. Credit 2(2-0)
(Formerly 2763)

Methods of examining and determining needs of the handicapped; activities suitable for individuals with abnormal body conditions, and the conduct of a program of restricted activities to meet their needs.

564. Minor Problems in Health Education and Physical Education. Credit 2(2-0)
(Formerly 2764)

This course is designed primarily for seniors to provide them with an opportunity to investigate selected professional problems.

565. Problems in Physical Education. Credit 2(2-0)
(Formerly 2765)

Special administrative problems in the organization of physical education programs and the coordination of the different phases pertinent to men and women of professional construction in the light of historical backgrounds, intramural activities, girls' athletics, athletic insurance, and athletic associations.

566. The Organization and Administration of Health and Physical Education. Credit 3(3-0)
(Formerly 2766)

Philosophy and policies in the administration of a health and physical education program, including health services, healthful school living, health instruction, the classification of students, the staff, teaching loads, time schedule, finance, the gymnasium, locker-rooms, equipment, intramural and interscholastic athletics. (Prerequisites: 446 and permission of advisor.)

567. Advanced Techniques and Methods in Physical Education Activities. Credit 1(0-2)
(Formerly 2767)

A course designed to increase skill in technique and the use of related materials in the areas of dance, sports, gymnastics, aquatics, fundamentals of marching and conditioning activities. Emphasis is placed upon the development of competency in areas of individual student weakness.

568. Physical Education Specialization. Credit 1(0-2)
(Formerly 2768)

A continuation of 471. Opportunities for careful exploration in dance, aquatics, sports, gymnastics through skill improvement, independent study, field experience and special projects pertinent to the particular area of interest.

569. Methods of Research and Evaluation in Health and Physical Education. Credit 2(1-2)

The use of various research methods as applied to health education and the study of methods of evaluating biological, social and physiological outcomes for health education and physical education. Elementary statistical procedures are utilized. Prerequisite: Psychology 436.

COURSES FOR ADVANCED UNDERGRADUATE AND GRADUATE STUDENTS

655. Current Problems and Trends in Physical Education. Credit 3(3-0)
(Formerly 2775)

A practical course for experienced teachers. Consideration given to individual problems in physical education with analysis of present trends.

656. Administration of Interscholastic and Intramural Athletics. Credit 3(3-0)
(Formerly 2776)

A study of the relation of athletics to education, and the problems of finance, facilities, scheduling eligibility, and insurance. Consideration given to the organization and administration of intramural activities in the school program.

657. Community Recreation. Credit 3(3-0)
(Formerly 2777)

A study of the recreational facilities and problems with consideration being given to the promotion of effective recreational programs in rural and urban communities.

658. Current Theories and Practices of Teaching Sports. Credit 3(3-0)
(Formerly 2778)

Methodology and practice at various skill levels. Emphasis placed on seasonal activity.

669. The Physiology of Exercise. Credit 3(2-2)

The purpose of this course is to observe and record the effects of physical activity on the organic systems and service organs of the human body and to learn basic laboratory techniques and procedures of physical education.

Recreation Courses

112. Summer Field Experience. Credit 6(0-6)
(Formerly 2712)

A placement program conducted in cooperation with a formal recreation agency. The student is assigned to an agency during the summer. The student is required to maintain records of daily experiences relative to organization, programs, problems, supervision, conferences and budget.

402. Field Experience I. Credit 2(0-4)
(Formerly 2702)

Laboratory experiences during the semester in an operating recreational program.

408. Field Experience II. Credit 2(0-4)
(Formerly 2708)

Practices in a second agency of Field Experience.

463. Principles and Practices of Outdoor Recreation. Credit 3(2-2)
(Formerly 2763)

Philosophy, organization, administration and laboratory experiences in outdoor recreation.

464. Group Leadership. Credit 2(2-0)
(Formerly 2750)

Techniques in group dynamics and methods of developing group leadership capabilities.

465. Program Planning in Recreation. Credit 3(3-0)
(Formerly 2765)

This course is an analysis of recreation programs. Emphasis is placed on objectives, personnel and facilities.

466. Camp Administration. Credit 3(3-0)
(Formerly 2766)

The organization and administration of camp activities. Programming camping activities that will apply to all ages and both sexes.

509. Field Experience III. Credit 2(0-4)
(Formerly 2709)

Practices in a third agency of Field Experience.

510. Field Experience IV. Credit 2(0-4)
(Formerly 2710)

Practices in a fourth agency of Field Experience.

561. Methods of Research and Evaluation in Recreation. Credit 3(2-2)
(Formerly 2760)

The application of methods of research and evaluation to the various problems in recreation.

570. Supervision of Recreation and Park Services. Credit 3(3-0)
(Formerly 564)

An analysis and investigation of supervision of employees involved in recreational services.

DEPARTMENT OF ADULT EDUCATION AND COMMUNITY SERVICES

B. W. Harris, *Chairman*

The role and scope of the university's Department of Adult Education and Community Services may be conceptualized and understood through various factors, as described below:

Philosophy: Extension or public service is one of the three major functions of a Land-Grant institution of higher learning. The extension function is grounded upon the belief that the general populace, from which the university receives considerable support, is entitled to educational service. (It has been proven that an individual may be capable of gaining new knowledge throughout his life span.) These beliefs constitute the philosophical position of this department.

Objective: The fundamental objective of the department is to promote the extension function of the university, for the purpose of meeting the needs of people being served. More specificially, the department seeks to provide a wide variety of learning experiences for the benefit of nonresident students.

Clientele: Courses are scheduled to meet the expressed needs of learners as classified below:

A. Employees and management personnel in private industry.

B. Employees and administrative personnel in public or governmental agencies.

C. Personnel who may be associated with such voluntary organizations and agencies as Agricultural Extension, Vocational Agriculture, YWCA, YMCA, Girl Scouts, Boy Scouts, churches, and social organizations.

D. Teachers and other professional personnel which may need in-service training.

E. Housewives, senior citizens, and retired personnel who may need specified learning experiences for purposes of gaining further personal fulfillment.

That the above designated groups of clients can be reached and served meaningful, is consistent with the principle that learning can be lifelong.

Program: The philosophy and objective of the Department of Adult Education and Community Services suggest not a single program but one which is comprehensive and multi-dimensional. Therefore, the following components comprise the total program:

A. Formal Activities—

These endeavors include the program of evening and weekend courses for which academic credit is attainable. It is, therefore, possible for students to complete requirements for the baccalaureate degree on a part-time basis. Also, the opportunity is available for elementay and secondary school teachers to meet requirements for certificate renewal and/or begin graduate studies leading toward the master's degree.

B. Informal Activities—

Short-term learning experiences are made available through a variety of non-credit classes, conferences, workshops, seminars, and clinics, which address themselves to specific problems. Of equal importance is the community services component which offers speakers and consultant services.

C. Special Projects—

Through funds, which are usually available from sources other than state appropriations, it is possible to provide added programs and services. Currently, these sources include the Title I Act of 1965, National Endowment for the Humanities, and Law Enforcement Assistance Administration.

D. Staff—

The affairs of the department are administered by the chairman, professional staff members and clerical personnel. A large number of programs and activities are conducted in cooperation with other academic departments. This makes it possible for the university's resources to be extended more fully.

E. Facilities—

Departmental offices are housed in the North Carolina A. and T. State University Center for Continuing Education (located on east campus at U. S. Highway #29, North). The center has a modernized classroom and a conference room. In addition there are 15 bedrooms available for overnight guests, who may wish to attend evening, weekend classes, or conferences.

F. Adult Education Courses—

(For advanced undergraduate and graduate students)

650. Adult Education Credit*

Special Projects in Adult Education (*credits varying from one to four semester hours.)

Course Description: Special topics, individual and group study projects, research, workshops, seminars, summer institutes, travel study tours and organized visitations in areas of adult education worked out and agreed upon by participating students and the department of Adult Education and Community Services.

Prerequisite: By instructor's approval.

670. Introduction to Adult Education. Credit 3(3-0)

(Formerly Education 2172)

The history, philosophy, and general organization and administrational problems of adult education.

671. Methods in Adult Education. Credit 3(2-2)

(Formerly Education 2172)

Methods of informal instruction, group leadership, conference planning and techniques in handling various issues of interest to adults. For persons preparing to conduct adult education programs as well as those preparing to serve as insutructors or leaders in the public schools and/or in various agencies serving adults.

G. Further Information—

Respondents are asked to write:

DEPARTMENT OF ADULT EDUCATION AND
COMMUNITY SERVICES

N. C. A. and T. State University
Box G-25
Greensboro, North Carolina 27411

or call:

(919) 379-7840 or 379-7841

DIVISION OF INDUSTRIAL EDUCATION AND TECHNOLOGY

- DEPARTMENT OF INDUSTRIAL EDUCATION
- DEPARTMENT OF INDUSTRIAL TECHNOLOGY

DIVISION OF INDUSTRIAL EDUCATION AND TECHNOLOGY

Charles W. Pinckney, *Director*

In responding to increasing interest and requests for the type of academic service embodied in the technology of modern industry the Division of Industrial Education and Technology identifies its primary function. The Division administers training programs leading to careers in teaching industrial subjects, safety and driver education and related technological-middle management positions for industry, commerce and governmental agencies. These programs provide collegiate-level preparation for a family of careers that require a common background of knowledge and understanding of modern industrial-production operations and management.

The breadth and depth of offerings by the Division accommodate maximum flexibility in choice of career preparation permitting development of the technical background necessary to many contemporary and emerging professional employment opportunities.

The Division is organized into two departments, namely industrial education and industrial technology. These departments provide respectively teacher training and preparation for industrial-technical-management careers.

Admission to the Division

The admission of students to programs offered by the Division is based upon general admission requirements of the University for collegiate-level work. Transfer students from other approved institutions, including junior colleges, may be admitted with advanced standing after having such credits earned elsewhere evaluated by our Admissions Office.

DEPARTMENT OF INDUSTRIAL EDUCATION

George C. Gail, *Chairman*

This department offers three major undergraduate curricula for the preparation of teachers of industrial arts, vocational industrial education and safety and driver education. It also offers graduate curricula in these fields leading to the Master of Science degree. Service curricular leading to teacher certification is provided to interested students.

INDUSTRIAL ARTS EDUCATION

Industrial arts teachers generally work with public school and college students helping them gain a fuller understanding of various areas of industry; its materials, production methods, resulting products, and personnel.

Teaching careers in industrial arts are open to competent young men and women possessing creativeness, ingenuity and inventiveness; and who enjoy working with youth and adults. The curriculum encompasses a study of many technological areas such as manufacturing, construction, communications and transportation. More specifically; opportunities are provided for gaining experience in drafting and design, woodworking, electricity-electronics, metalworking, leathercraft, plastics, printing, photography and ceramics. In addition to acquiring knowledge of teaching techniques, industrial organizations and occupations; students are actively involved in studying, planning, organizing, constructing, experimenting, testing, servicing, and evaluating materials, processes and products of industry.

OPPORTUNITIES: Excellent employment opportunities exist for Industrial Arts teachers. The public schools and colleges of North Carolina, and other states, are in constant need of securing qualified teachers for industrial arts classes. Many opportunities also exist for industrial arts graduates to participate as instructors, supervisors, or directors in various programs of industry, government agencies; rehabilitation and manual arts therapy center; and private, military and technical schools. Those desiring advanced training are prepared for graduate schools.

INDUSTRIAL ARTS EDUCATION CURRICULUM

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Education 210, 130	2	2
Industrial Education 260, 261	2	2
Mechanical Engineering 101, 102	2	2
English 100, 101	3	3
Mathematics 101, 102	3	3
Physical Science 100	4	—
Biological Science 100	—	4
	16	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Education 263, 463	3	2
Industrial Education 233, 234	3	3
Industrial Technology 210, 213	3	3
Industrial Technology 230, 231	3	3
Industrial Technology 470, 471	3	3
Speech 250	—	2
Physical Education	1	—
	16	16

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Technology 253	3	—
Industrial Education 412	3	—
Industrial Education 465, 510	2	2
Psychology 320	3	—
Education 400	—	3
History 100, 101	3	3
Humanities 200, 201	3	3
Economics 301	—	3
Health Education 200	—	2
	17	16

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Education 462	2	—
Industrial Education 566	3	—
Industrial Education 662	3	—
Sociology 100	3	—
Electives	2	2
Education 436, 500	3	3
Education 560	—	6
	16	11

Total: 124 Hours

VOCATIONAL INDUSTRIAL EDUCATION

Since the vocational industrial education teacher works with high school students who are interested in training for a single occupation or occupational family, his professional preparation must reflect a concentration of study in his chosen occupational field. In addition to developing teaching competencies, these trainees must choose their concentrated teaching field from five options; namely: automotive industry, construction industry, drafting, electrical industries and metal industries.

A high interest in the trade or occupational family and in working with people is necessary for success as a teacher in this field. Two years of trade experience, beyond the learning period, is required of applicants to this teaching field in North Carolina.

VOCATIONAL INDUSTRIAL EDUCATION CURRICULUM

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Education 260, 261	2	2
Mechanical Engineering 101, 102	2	2
English 100, 101	3	3
Mathematics 111, 112	4	4
Physical Science 100	4	4
Biological Science 100	—	—
Physical Education	—	1
	15	16

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Education 263, 463	3	2
Industrial Technology 230	—	3
Industrial Technology 470	3	—
Physics 211, 212	4	4
Speech 250	—	2
Technical Options	7	6
	17	17

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Education 462, 465	2	2
Psychology 320	3	—
Education 400	—	3
History 100, 101	3	3
Humanities 200, 201	3	3
Economics 301	3	—
Technical Options	3	3
Agricultural Education 401	—	2
	17	16

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Industrial Education 566	3	—
Industrial Education 662	3	—
Sociology 100	3	—
Health Education 200	2	—
Technical Options	3	—
Education 436, 500	3	3
Education 560	—	6
Electives	2	—
	17	9

Total: 124 Hours

VOCATIONAL INDUSTRIAL EDUCATION TECHNICAL OPTIONS

(Select Concentration in one of the Following Areas)

AUTOMOTIVE INDUSTRIES:

IE 233 Industrial Arts Drafting 3
IT 253 Power Technology 3
IT 254 Automotive Engine Technology 4
IT 255 Transmissions and Hydraulic Systems 4
IT 451 Automatic Transmission Servicing 4
IT 452 Advanced Diagnostic Testing & Servicing 4

CONSTRUCTION INDUSTRIES:

IE 432 Architectural Drafting 3
IT 210 Construction Technology 3
IT 215 Introductory Processes For Construction Projects 4
IT 216 Masonry Construction 4
IT 217 Construction Estimating 4
IT 571 Heating, Ventilation and Refrigeration 4

DRAFTING:

IT 210 Construction Technology 3
IE 233 Industrial Arts Drafting 3
IE 234 Industrial Arts Drafting 3
IE 235 Technical Drafting 3
IE 434 Advanced Architectural Drafting 3
IE 436 Machine Design Drafting 3
IE 536 Tool and Machine Design 4

ELECTRICAL INDUSTRIES:

IE 235 Technical Drafting 3
IT 210 Construction Technology 3
IT 231 Electronics Circuits 3
IT 234 Electronic Instrumentation 4
IT 235 Semi-Conductor Electronics 3
IT 430 Video Electronics 4
IT 432 Electronic Communications 2

METAL INDUSTRIES:

IE 233 Industrial Arts Drafting 3
IT 210 Construction Technology 3
IT 472 Manufacturing Processes Production I 4
IT 473 Manufacturing Processes Production II 4
IT 474 Dimensional Metrology 3
IT 474 Manufacturing Processes Metallurgy 4

COURSES IN INDUSTRIAL EDUCATION

Undergraduate

CRAFTS

210. Industrial Crafts. Credit 2(1-3)

Fundamentals of materials, tools and skills used in various industrial craft activities.

211. Designing, Carving and Stamping Leather Craft. Credit 2(1-3)

Fundamentals of materials, tools and skills used in leather craft.

218. Repair and Maintenance of Home Furniture. Credit 2(1-3)

A course designed to help homemaking teachers meet specific problems in the improvement and care of home furniture. Instruction in simple upholstery techniques and other processes using tools and accessories for home repair. Finishing and refinishing wood. Students encouraged to make an effort to provide their own work projects.

412. Upholstery—Furniture Construction. Credit 3(2-6)

Principles and techniques of webbing, springing, stuffing, padding, and covering upholstered furniture. Course includes chair frame construction, principles of woodturning, wood finishing and refinishing techniques.

413. Woodturning. Credit 2(1-3)

Spindle and face plate turning, re-chucking, plug chucking, finishing and polishing on wood lathes. Emphasis on methods and techniques of teaching woodturning.

415. Comprehensive Shop Projects. Credit 2(1-3)

General construction, repairs, maintenance work or advanced projects involving woodturning, carving, inlaying, upholstering and wood and metal finishing, metals, electricity-electronics, graphic arts.

510. General Shop. Credit 2(1-3)

Utilization and organization of multiple activity programs: instructional materials, procedures and operating problems. Student activities in various aspects of industry. Prerequisite: IE 465.

GRAPHIC ARTS

130. Graphic Communication Industries. Credit 2(1-3)

Technological, socio-economical, occupational and organizational aspect of graphic arts printing, publishing and allied industries, associated with producing mass media and other visual materials.

230. Introduction to Photography. Credit 3(1-5)

This course is designed to acquaint the beginner with the fundamental processes of photography. Training is given in the nomenclature, operation and maintenance of various cameras—the use of exposure meters—film development—contact printing and enlarging—preparation and storage of chemical solutions. Each student is required to provide for himself a camera with adjustable f-stops and shutter speeds.

231. Advanced Photography. Credit 3(1-5)

This course is a continuation of 230. Emphasis is given to larger cameras—studio lighting—portraiture—copying—refinement of darkroom techniques—spotting of negatives and prints—selection of chemicals and papers. Students showing high competence in both IE 230 and 231 are awarded a Certificate of Proficiency.

233. Industrial Arts Drafting. Credit 3(1-5)

A course for acquisition of information and development of skills needed by teachers of drafting; Instruction in A.S.A. conventions, projections, revolutions, developments, lettering and pictorial representation with reference to machine, furniture drawing, sheetmetal drawing, shading, technical sketching, production illustration and industrial arts design. Prerequisite: Mechanical Engineering 102.

234. Industrial Arts Drafting. Credit 3(1-5)

Continuation of I.A. 3526, including, basic elements in the planning and construction of residential buildings. Problems in floor plans, elevations, details and perspective. Study of kitchen living room, dining room, bathroom and bedroom design. Prerequisite: Industrial Arts 233.

235. Technical Drafting. Credit 3(1-5)

Problems involving maps, charts, graphs and electrical drawings. Emphasis on drawings used in design, construction, installation, and maintenance of electric-electronic equipment; schematic, single line, connection and interconnection diagrams; chassis layout, printed circuits, electrical codes and standards. Introduction to aircraft and marine drafting.

430. Technical Illustrations and Design. Credit 3(1-5)

Survey of design principles, practices and literature. Axonometric illustration, templates, overlays, bisuals, perspectives, air brush.

432. Architectural Drafting. Credit 3(1-5)

Planning residential structures. Construction and design principles floor, plot, heating electrical, plumbing plans; elevations, sections, details an perspectives. F.H.A. standards, building codes, cost estimates. Problems selected to meet individual needs.

434. Advanced Architectural Drafting. Credit 3(1-5)

Planning industrial, commercial and public buildings. Construction and design principles, materials, specifications and codes; complete plans including: plot, landscaping, framing, electrical and mechanical equipment; structural details; reinforced concrete, timber and steel. Advanced perspective rendering, analytical study of historical and comtemporary architecture; materials, methods and engineering.

435. Architectural Design. Credit 3(1-5)

Planning and structural problems of buildings and their relationship to other buildings and space. Studies of urban and rural planning; consideration of interior planning, landscape, townscape, projects carried to working detail.

436. Machine Design Drafting. Credit 3(1-5)

Advanced machine drawing; dimensions, analysis of motion, motion diagrams. Motion layout of threads; spur, bevel, worm gears and cams. Forging, pattern, piping, welding, structural practice, nomography; auxiliary views, revolutions, pictorial views. A.S.A., S.A.E., Aerospace standards.

536. Tool and Machine Design. Credit 4(2-4)

Fundamentals of tool design, cutting tools, punches and die design, gage design, jigs and fixtures; indexing and coding procedures. Design, assembly and detail drawings of machines, tools and parts.

PROFESSIONAL

260. Foundations of Industrial Education. Credit 2(2-0)

An orientation course in industrial education. Course requirements program operation, regulation. Familiarize the student with the underlying philosophy, basic principles, and history of industrial arts and vocational education.

261. Vocational Industrial Education. Credit 2(2-0)

Planning, organizing, administering, supervising, evaluating and interpreting trade and industrial education programs. Special consideration given to organization and responsibilities of local, state and national agencies.

263. Evolution and Organization of Technology Credit 3(3-0)

Historical antecedents, trends and future of technology; socio-economic and ecological impact; structure, functions, organization and functions of enterprise, personnel and associations related to industrial education.

462. School Shop Design & Management. Credit 2(2-0)

An analysis of general education and industrial education programs and objectives. Emphasis on planning and designing shops, equipment selection and specifications, shop management, maintenance and safety.

463. Career Guidance. Credit 2(2-0)

Principles and techniques of guidance and counseling in junior and senior high schools. With emphasis on the study of industrial occupations and guidance as it relates to industrial education classes.

465. Instructional Analysis Techniques Credit 2(2-0)

Analysis of industrial activities, and educational goals; identification of technical, occupational, consumer and recreational need of pupils; delineation of curriculum content and instructional materials. Prerequisite: 463.

566. Industrial Education Teaching Methods. Credit 3(3-0)

Educational methodology: Lesson planning, group and individual teaching techniques, media development and use, testing and evaluating outcomes in industrial courses. Prerequisites: IE 462, 463, 465.

Observation and Student Teaching—See Education 560.

Advanced Undergraduate and Graduate

616. Plastic Craft. Credit 3(2-2)

For teachers of industrial arts, arts and crafts, and those interested in plastics as a hobby. Operations in plastics analyzed and demonstrated; design, color, kinds and uses of plastics, how plastics are made and sold; vocational information. Projects suitable for class use constructed.

617. General Crafts. Credit 3(2-2)

Principles and techniques of crafts used in school activity programs. Emphasis on materials, tools, and processes used in elementary schools and industrial arts courses. Open to all persons interested in craft instruction for professional or non-professional use.

618. Elementary School Industrial Education Programs. Credit 3(3-0)

Aims, content, equipment, and methods utilized in programs designed to integrate K-6 elementary school activities with the study of industry and technology.

635. Graphic Arts. Credit 3(2-2)

Fundamentals of typography, hand composition, press operation, block printing, silk screen techniques, and other reproduction methods, and bookbinding.

660. Industrial Cooperative Programs. Credit 3(3-0)

For prospective teachers of vocational education. Principles, organization and administration of industrial cooperative training programs.

661. Organization of Related Study Materials. Credit 3(3-0)

Principles of scheduling and planning pupil's course and work experiences, selecting and organizing related instructional materials in I.C.T. Programs. Prerequisite: I.E. 660.

662. Industrial Course Construction. Credit 3(3-0)

Selecting, organizing and integrating objectives, content, media and materials appropriate to industrial courses. Strategies and techniques of designing and implementing group and individual teaching-learning activities to develop interest awareness of specialization. Prerequisites: IE 462, 463, 465.

663. History and Philosophy of Industrial Education. Credit 3(3-0)

Chronological and philosophical development of industrial education with special emphasis on its growth and function in American schools.

GRADUATE COURSES IN INDUSTRIAL EDUCATION

These courses are open only to graduate students. See the bulletin of the Graduate School for descriptions.

715. Comprehensive General Shop. Credit 3(2-2)

717. Industrial Arts Problems I. Credit 3(3-0)

718. Industrial Arts Problems II. Credit 3(3-0)

719. Advanced Furniture Design and Construction. Credit 3(2-2)

731. Advanced Drafting Techniques. Credit 3(2-2)

762. Construction and Use of Instructional Aids. Credit 3(2-2)

763. General Industrial Education Programs. Credit 3(3-0)

764. Supervision and Administration of Inudstrial Education. Credit 3(3-0)

765. Testing in Industrial Subjects. Credit 3(3-0)

766. Curriculum Laboratory in Industrial Education. Credit 3(3-0)

767. Research and Literature in Industrial Education. Credit 3(3-0)

768. Industrial Education Seminar. Credit 3(3-0)

769. Thesis Research in Industrial Education. Credit 3 hrs.

SAFETY AND DRIVER EDUCATION

The purpose of the Safety and Driver Education program is to prepare qualified individuals as safety and driver education teachers, safety supervisors for school districts, state and federal safety personnel, research personnel and safety personnel in industry. Both the baccalaureate and master's curricula are offered.

The programs are responsive to regulatory efforts of the state and federal government in preparing safety specialists to cope with the hazards produced in part by the advancements in technology.

CURRICULUM FOR SAFETY AND DRIVER EDUCATION MAJORS

Freshman Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
History 100, 101	3	3
Math 111, 112	4	4
Biological Science 100	4	—
Physical Education Electives	1	1
English 100, 101	3	3
Education 100	—	1
Elective	2	3
	17	15

Sophomore Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
Safety and Driver Education 254, 353 ...	3	3
Physical Science 100	4	—
Psychology 320	3	—
Humanities 200, 201	3	3
Health Education 200	—	2
Physics 201	—	3
Education 300, 301	2	2
Speech	—	2
Elective	2	2
	17	17

Junior Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
Safety and Driver Education 356, 454 ...	3	3
Safety and Driver Education 455, 456 ...	3	3
Safety and Driver Education 557, 558 ...	3	3
Economics 301	3	—
Education 400	3	—
Psychology 436	—	3
Sociology 100	3	—
Industrial Technology 231	—	3
Elective	—	2
	18	17

Senior Year

Course and Number	*Fall Semester Credits*	*Spring Semester Credits*
Safety and Driver Education 561	—	3
Safety and Driver Education 655	3	—
Safety and Driver Education 657	3	—
Education 500	—	3
Education 560	—	6
Education 644	3	—
Elective	3	—
	12	12

COURSES IN SAFETY AND DRIVER EDUCATION

Undergraduate

254. Basic Safety and Driver Education 3(2-2)

This course is designed to present the traffic problem in today's society with an overview of the concepts used in traffic accident prevention. Human, vehicle, and environmental factors are studied in their relationship to the total problem. Laboratories experiences will be designed to improve driving attitudes, skills, and knowledge.

353. Techniques of Laboratory Instruction 3(2-2)

This course is designed to provide the student with the techniques of the in-car, simulation, and range methods of laboratory instruction. Practical experience with beginning drivers will be arranged. Prerequisite: S.D.Ed. 254.

356. Behavioral Aspects of Accident Prevention. 3(3-0)

This course is designed to study the philosophical and theoretical bases of accident prevention efforts in various areas of activities. The behavioral task is analyzed from the physiological, medical and physical, psychological, sociological, and cultural aspects. A critical analysis of attempt to affect safe behavior. Evaluation and written reports required. Planned in consultation with instructor. Prerequisite: S.D.Ed. 353.

454. First Aid and Emergency Care of the Injured. 3(3-0)

A combination of methods and procedures for the emergency care of the injured with special emphasis on the traffic related problems. First aid care, emergency care during disaster, transportation of the injured, and civil defense are stressed.

455. Legal Aspects in Safety Education. 3(3-0)

A study of federal and state laws and judicial interpretations, having application to school, industrial, and traffic programs, will be stressed. Problems such as teacher liability, workmen's compensation, insurance, and traffic laws will be dealt with in respect to their involvement with the industrial and school traffic safety program. (Consultation with instructor.)

456. Alcohol and Drugs—In Safety and Driver Education. 3(3-0)

This course will consist of an investigation into the physiological, psychological, and sociological problems presented by the use of alcohol and drugs. The problem of alcoholism and drug addiction will be treated; efforts of cure and rehabilitation will be explored. Emphasis on the role of alcohol in traffic safety and the role of the school in alcohol education.

555. Shop Safety Education. Credit 2(2-0)

This course provides the necessary lesson units and methods of teaching school shop safety, as well as plans for developing complete shop safety education programs.

557. Police and Traffic Court Administration. 3(3-0)

A study of the police and court functions in traffic administration with emphasis on records, direction and control, accident investigation, and procedures. Some attention will also be given to parking, pedestrian control, and violations bureau operation. Prerequisite: S.D.Ed. 455.

558. Introduction to Highway Traffic Administration. 3(3-0)

Examination of the United States' highway system, emphasizing efficient, safe operation; activities and agencies concerned with increasing efficiency; and systems' development, components, social, economic and political impacts. Survey of present and future needs. (Consent of instructor.)

561. Methods of Teaching Safety and Driver Education. 3(2-2)

Emphasis is placed on methods and techniques of teaching Safety and Driver Education in the high schools. Areas of investigation include classroom, in-car, range, and simulation methods of instruction. Programmed instruction, team teaching, and other innovative methods will be examined with a view to their use in driver education programs. Organization and administration of the high school program will also be covered. Prerequisite: S.D.Ed. 356.

Advanced Undergraduate and Graduate Courses

651. Driver Ed. and Teacher Training. Credit 3(2-2)

This course provides the student with the necessary preparation to administer the in-car phase of high school driver education. Special attention will be given to methods of developing safe driving skills and habits.

652. Advanced Driver Education and Teacher Training. Credit 3(2-2)

Advanced professional preparation in teaching driver education. Laboratory experiences with the multiple car range and driving simulator. Prerequisite: S.D.Ed. 651 or its equivalent.

653. Driver Education and General Safety. Credit 3(3-3)

Designed to present facts and information concerning the cost, in money and human suffering, of accidents in the home, industry, school, and transportation. Included is the establishment of knowledge and background conductive to the development of personal activities and practices which reduce accidents.

654. Highway and Transportation Systems. 3(3-0)

A description and analytical study of the various transportation systems that have developed in this country. Special emphasis will be given to transportation and its role on economic and social development of communities within this country.

655. Automotive and Technology for Safety and Driver Education. 3(2-2)

A study of the functional systems of the automobiles as they relate to traffic safety.

656. Highway Traffic Administration. 3(3-0)

This course is to study the origin of traffic laws, the administration of motor vehicles and the adjudication resulting from traffic offenses. A critical analysis of traffic management procedure: past, present, and future. Also explore the agencies involved with traffic study. (Consent of instructor.)

657. Traffic Engineering in Safety and Driver Education. Credit 3(3-0)

An investigation of the vehicle and environmental components of the various types of highway transportation systems. Particular emphasis is given to highway engineering in relation to the flow of traffic in congested and non-congested areas. Traffic studies are performed within the traffic engineering functions, and traffic planning to improve the efficiency of traffic flow and control, and to meet future needs of society.

I.E. 658. Curricula Integration of Safety Education. Credit 3(3-0)

Integration of safety concepts and principles in the kindergarten through grade twelve curricula. Philosophy and psychology of safety; strategies, techniques, and materials appropriate for the various grade levels.

I.E. 659. Motorcycle Safety Education. Credit 3(2-2)

Theory and laboratory sessions in motorcycle safety education. Emphasis on laws, maintenance, skills, and safe riding habits and practices.

GRADUATE COURSES IN SAFETY AND DRIVER EDUCATION

These courses are open only to graduate students. See the Graduate School bulletin for descriptions.

750. Innovations in Safety and Driver Education. Credit 3(3-0)

651. Psychological Factors in Safety and Driver Education. Credit 3(3-0)

752. Alcohol and Safety and Driver Education. Credit 3(3-0)

755. School and Occupational Safety. Credit 3(3-0)

756. Seminar in Safety and Driver Education. Credit 3(3-0)

757. Administration and Supervision of Safety and Driver Education. Credit 3(3-0)

758. Independent Project in Safety and Driver Education. Credit 3(3-0)

759. Thesis Research in Safety and Driver Education. Credit 3(3-0)

DEPARTMENT OF INDUSTRIAL TECHNOLOGY

Andrew W. Williams, *Chairman*

The department offers one baccalaureate degree program with four options in major technology areas. The Bachelor of Science in Industrial Technology embodies a curriculum to select and prepare technologists for specialization and professional responsibilities in the technical-management phase of industry. The principal curriculum areas of the degree are as follows:

1. Major Technology (Option)
2. Physical Science
3. Business Management
4. General Education

The major technology option is chosen from construction, electronics, automotive or manufacturing and prepares the student for specialization in the chosen field of industrry. A good foundation in the physical sciences and mathematics establishes a base upon which continued study and educational

advancement may be built. Study in the area of business management affords the students opportunities for advancement in the managerial and supervisory concomitants of his chosen technical option. The general education requirements aid the student in the cultural and social maturity providing a basis for understanding and performing his role in society.

ADVANCED STANDING GRANTED A.S. DEGREE HOLDERS

Graduates of Technical Institutes and Community Colleges who have earned the Associate in Science Degree in the following areas may be admitted to the Industrial Technology programs as juniors: Civil Engineering, Electrical Engineering, Electronics Engineering, Manufacturing Engineering, Mechanical Engineering and Mechanical Drafting and Design. (Graduates of other Technologies are invited to submit their credits for consideration). Specific course requirements for these students will have to be made on an individual basis after their previously earned credits have been assessed. The typical student in this program will be required to take at least 62 additional semester hours. In effect such students will be engaged in a 2 + 2 year program culminating in earning the B.S. degree here.

Graduates of our Industrial Technology program have been among the most sought after alumni of our University in recent years and are holding responsible positions within this country and abroad.

DEPARTMENTAL OBJECTIVES

The objectives of the Department of Industrial Technology are as follows:

1. To develop an understanding of industry and methods of production and the influence of industrial products and services upon the pattern of modern social and economic life.
2. To develop an appreciation of good design and workmanship in their application to construction and to manufactured products.
3. To experience a challenging program of instructional activities designed to meet the requirements of employment in modern technology, including science and business management.
4. To acquire a high degree of competence in his chosen technical elective.

INDUSTRIAL TECHNOLOGY CURRICULUM

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
Mathematics 111, 112	4	4
Phy. Science 100, Bio. Science 100	4	4
M.E. 101, 102	3	3
Ind. Technology 271, 272	2	2
	16	16

*Chemistry 100, 101 may be substituted for Bio. Science and Physical Science.

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
History 100, 101	3	3
I.T. 210	3	—
I.T. 253	—	3
Drafting Electives	3	3
Physics 211, 212	4	4
Humanities 200, 201	3	3
	16	16

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Health Education 200	2	—
Mathematics 240	3	—
Ind. Ed. 263	—	3
Speech 250	—	2
Accounting 221**	—	3
Ind. Tech. 230	3	—
Technical Electives	4	4
B.A. 204	—	3
Elective	3	—
	15	15

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Ind. Tech. 476	2	—
Ind. Tech. 411	—	2
Psychology 320	3	—
B.A. 305, 569***	3	3
Ind. Tech. 575	3	—
Ind. Ed. 555	—	2
Technical Electives	4	4
Electives	2	2
	17	13

TOTAL: 124 Semester Hours

**The business courses listed in the Junior and Senior year are recommended. Other business or Economics courses may be acceptable.
***Psychology 445 may be substituted.

NOTE: Military or Air Science is optional.

TYPICAL 2 YEAR CURRICULUM IN INDUSTRIAL TECHNOLOGY FOR ASSOCIATE IN SCIENCE GRADUATES

NOTE: First two years of academic credits earned at Technical Institutes or Community Colleges.

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Phy. Sci. 100, Bio. Sci. 100, Soc. Sci. 100, 101 Western Civilization I & II	4	4
Tech. Electives (Breadth Courses)*	3	3
Humanities 200, 201	4	4
Mathematics 240 (Computer Science)	3	3
Health Education 200 Personal Hygiene	—	3
	2	—
	16	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Accounting 221 Principles of Accounting	3	—
Ind. Ed. 263 Modern Industry	—	3
I.T. 411 Communicating Technical Spec.	—	2
I.T. 476 Industrial Plant Planning and Management	2	—
Psychology 320, 445 (or B.A. 569)	3	3
B.A. 304, 305 Intro. To Business & Prin. of Mgt.	3	3
Ind. Ed. 555, Safety Education	3	—
Electives	2	2
	16	13

TOTAL: 62 Semester Hours

*To be selected from courses in Construction, Engine Power Electronics or Manufacturing where prior credits have not been earned.

COURSES FROM WHICH TECHNICAL OPTIONS MAY BE CHOSEN

(Minimum 16 semester credit hours from the options listed below)

	Semester Credit Hours
CONSTRUCTION:	
215 Introductory Processes for Construction Projects	4
216 Masonry Construction	4
217 Construction Estimating	4
412 Mechanical Equipment for Buildings	2
413 Personnel Relations in the Construction Industry	4
414 Major Construction Systems	4
415 Finishing Construction Projects	4
571 Heating, Ventilation and Refrigeration	4
ELECTRONICS:	
231 Electronic Circuits	3
234 Electronic Instrumentation	4
235 Semi-Conductor Electronics	3
430 Video Electronics	4
431 Electronic Amplifiers	2
432 Electric Communication	2
433 Electronic Controls	3
434 Industrial Electronics	4
571 Heating, Ventilation and Refrigeration	4
AUTOMOTIVE	
254 Automotive Engine Technology	4
255 Power Trains and Hydraulic Systems	4
451 Automatic Transmissions	4
452 Advanced Diagnostic Testing and Servicing	4
455 Auto Body Rebuilding and Finishing	4
571 Heating, Ventilation and Refrigeration	4
MANUFACTURING:	
472 Manufacturing Processes—Production I	4
473 Manufacturing Processes—Production II	4
474 Dimensional Metrology	3
475 Manufacturing Processes—Metallurgy	4
570 Mechanical Design and Manufacturing Problems	4
571 Heating, Ventilation and Refrigeration	4

COURSES IN INDUSTRIAL TECHNOLOGY
CONSTRUCTION

210. Construction Technology Credit 3(2-6)
(Formerly 3522)

This course is designed to give students experiences about the man-made world we live in. It will involve the acquisition and processing of natural materials, and how they are molded into the several types of structures to satisfy man's wants. It will be concerned, also, with the development (history) of the materials and processes that changed construction from its crude beginning to its modern trend.

213. Wood Technology Credit 3(2-6)

A study of woods, forest products, tools and equipment related to the woodworking industry. Attention is given to the practical, natural and industrial characteristics of the common species of woods that make them desirable for specific manufacturing processes and products. Practicability for home consumption is also given consideration. Fastening devices and adhesives used in the assembly of furniture and other wood products, as well as the various paint materials used in wood finishing are studied.

215. Introductory Processes For Construction Projects Credit 4(2-4)

A basic course on the important procedures and planning necessary to initiate construction projects. Included are such things as site selection and acquiring real estate, surveying and mapping, soil testing and site preparation, earth moving and stablizing earth for construction.

216. Masonry Construction Credit 4(2-4)

A study of the kinds and uses of masonry units used in building construction, specifically brick and concrete. The course covers interpreting working drawings and specifications, layout and methods of construction and estimating. Construction supervision is also included as it relates to job production and quality workmanship.

217. Construction Estimating Credit 4(4-0)

This course is designed to enable the student to gain competency in estimating the amount of materials, time, labor and equipment required to complete a construction project. A practical approach is made of the modern procedures of the estimating process to simplify and systematize the preparation of a formal estimate.

410. Human Relations Credit 3(3-0)

A study of problems in the work-a-day world which will aid one in getting along with people on the job, in the community and the home. These units of work include: habits one may acquire in order to improve human relations, privileges, rights and obligations as a citizen, obtaining and holding a job, labor problems, social and commercial insurance and the use of leisure time.

411. Communicating Technical Specifications Credit 2(2-0)

This course includes industrial contracts, specifications, codes and other statutory regulations, bidding, technical relations and coordinating plans with engineers in the areas of Industrial Technology.

412. Mechanical Equipment of Buildings Credit 2(2-0)

The basic principles and advanced practices in the selection, installation, operation and maintenance of equipment in the general areas of water supply and sanitation, heating systems and electrical materials, appliances and communications systems.

413. Personnel Relations in the Construction Industry Credit 4(4-0)

This is a general course in working as a contractor, apprenticeship programs, hiring personnel, working conditions, advancing, collective bargaining, strikes and duties of the foreman.

414. Major Construction Systems Credit 4(2-4)

Modern construction superstructure systems are studied and evaluated including preparations of foundations, erection of mass superstructures of steel, wood framing, roofing, enclosing exterior walls, insulation, ceilings and flooring.

415. Finishing Construction Projects Credit 4(2-4)

This is a course in the final phases of typical construction projects including exterior and interior trim, painting and decorating, installing accessories, completing the site, landscaping, transfer and servicing procedures.

ELECTRONICS

230. Electricity and Electronics Credit 3(1-5)

Types, characteristics, and operation of tubes and semi-conductors. Power supplies, detectors, amplifiers, oscillators and associated circuits. Practice in assembling and testing electrical and electronic devices.

231. Electronics Circuits and Systems Credit 3(1-5)

Operating principles and characteristics of communication and navigational systems. A.M., F.M., T.V., Radar, Sonar, Transmission and reception. Practice in assembling, testing and analysis of circuits. Prerequisite I.T. 230.

233. Electric Wiring Credit 2(1-3)

The study of materials, methods and nomenclature used in residential and commercial wiring including a study of National codes, layouts, plans and specifications.

234. Electronic Instrumentation Credit 4(4-0)

This course emphasizes a variety of electronic instruments such as the V.O.M., V.T.V.M., Ohm meters, watt meters, impedance meters, inductance checkers, V.U. meters, signal generators, signal tracers, tube testers, simulators, analog computer meters, spectrophotometers and oscilloscopes. Their application to electronic analyzation and research is emphasized.

235. Semi-Conductor Electronics Credit 3(3-0)

This is a general course in transistor theory. It includes the study of semiconductor physics, zener diodes, silicon diodes, photo-diodes, and phototransistors as these relate to electronic circuits. Prerequisite: 231.

430. Video Electronics Credit 4(2-4)

A study of deflection signals, amplifiers, synchronization systems, integrating networks; microwave, facsimle, R.F. high voltage, pulse circuits and monochrome networks in video transmitters and receiver systems. Prerequisite: 235.

431. Electronic Computer Amplifiers Credit 2(2-0)

This course is designed to cover industrial computer amplifiers, audio frequencies and magnetic power amplifiers in R.F., V.H.F., and U.H.F., systems. Prerequisite: 430.

432. Electronic Communication Credit 2(2-0)

The theory of electronics utilized in commercial communication systems with the fundamental regulation of the F.C.C. first and second class licenses with emphasis on A.M., C.B., F.M. broadcast microphone, recorders and tape machines, remote facilities, F.M., T.V. transmitters and monitors. Prerequisite: 431.

433. Electronic Control Credit 3(2-2)

A study of combined control systems utilizing A.C. and D.C. control thyratrons, three phase rectification, phase shift preaking transformers and motorspeed controls.

434. Industrial Electronics Credit 4(3-2)

A survey of industrial electronic computers, microelectronic, solid state device, servomechanism, synchros, staturable reactors, ignitrons, and frequency guidance systems.

AUTOMOTIVE

251. Small Engine Credit 2(1-3)

The principles of engine operations, service and maintenance, trouble shooting, adjustments, overhaul and storing of small engines.

252. Automotive Car and Engine Care Credit 2(1-3)

A course designed to study basic car maintenance service and the function and operation of the modern car's electrical and mechanical components.

253. Power Technology Credit 3(2-4)

Introduction to principles and concepts of transmissions. Control of power through mechanical, fluid and electrical devices. Emphasis is placed on the industrial aspects of power transmission systems.

254. Automotive Fundamentals Credit 4(2-4)

A study of the evolution and the latest automotive engine designs. Emphasis on operating principles and fundamental concepts of physics, chemistry and electricity related to engine operating systems.

255. Automotive Power Transmission Credit 4(2-4)

A study of fundamental principles of the automobiles power train components. Emphasis on mechanical and fluid power principles of transmitting power and the controlling components brake, steering and etc.

451. Automotive Instrumentation & System Analysis
Prerequisite I.T. 254 Credit 4(2-4)

An introduction to automotive instrumentation and environmental controls. Emphasis is on presenting the anatomy and functions of automobile system and their effect on the environment, with specific praxiology of modern test instruments for systems malfunctions diagnostics and corrections.

452. Automotive Service Management Credit 4(2-4)
Prerequisites I.T. 254, 255, 451

An introduction to automotive management full service concepts. Emphasis is on the application of management skills, technics, methods of problem solving for efficient and effective management and marketing controls.

455. Auto Body Repairs and Refinishing Credit 4(2-4)

A basic course in auto body repairs and construction. Modern methods of painting automobiles. Color matching and blending.

456. Automobile Body Designs and Repairs Credit 4(2-4)

A study of auto body designs and decisions on repairs or replacements. Estimating rebuilding cost. Study of facilities and equipment.

MANUFACTURING

271. Introduction to Industrial Technology Credit 2(2-0)

An introductory course to the world of modern Industrial Technology including a brief history of manufacturing processes and related technology. Occupations in Industrial Technology and educational requirements for entering and advancing in the field are covered. Emphasis will be placed on the field of electronics, manufacturing, construction and power technology.

272. Industrial Technology Processes Credit 2(2-0)

An introduction to typical problems encountered in industrial technology operations including metal manufacturing, power technology, electronics, and construction. The use of the slide rule as an aid in problem solving is emphasized.

275. Fundamentals of Metal Joining I Credit 2(1-4)

The basic course of theory and practice in gas welding, brazing, soldering, cutting, fundamentals of electric arc welding.

276. Fundamentals of Metal Joining II Credit 2(1-4)

Continuation of 275 with emphasis on heliarc welding, spot welding, tig welding, and the latest techniques of metal joining, X-ray and testing.

470. Manufacturing Industries Credit 3(1-4)

A basic course in metal mfg. processes involving planning and design and general metals including bench and sheet metal, forging and foundry, basic machine tool operations and finishing.

471. Manufacturing Industries Credit 3(1-4)

Advanced study of machine tool operations, heat treating, inspection and assembly. Simulated assembly lines and mass production techniques.

472. Manufacturing Processes—Production I Credit 4(2-4)

Basic manufacturing techniques with machine tools and precision measuring instruments. Emphasis is placed on the basic machine tool including the lathe milling machine ahd shaper. Related technical knowledge and new trends in the manufacturing process are covered including numerical control, chemical milling, etc.

473. Manufacturing Processes-Production II Credit 4(2-4)

A study of Plastics and other Materials and their use in Modern Manufacturing Processes. Tooling, Fabrication Methods and Physical properties, required production equipment, etc.

474. Dimensional Metrology Credit 3(2-2)

A basic course in the history of measurement, the science of measurement and the language. Modern practices emphasized.

475. Manufacturing Processes (Metallurgy) Credit 4(3-2)

A basic course in metallurgy consisting of a study of raw materials, ferrous and non-ferrous metals and their manufacture. Basic applied metallurgy operations.

476. Industrial Plant Planning and Material Handling Credit 2(2-0)
(Formerly 4142)

The principles and techniques of plant layout as applied to modern industry. Problems involved in planning new, remodeling old, and expanding present industrial facilities that they may better serve their intended purposes. The roles of management, materials, man and machinery are stressed. Special attention is given to the handling and moving of materials.

477. Co-operative Training in Industry I Credit 4

Student must be in Industry full-time for one semester in his major field of work and complete any University Co-op requirements. He will be evaluated on reports from industry and the University Co-op Coordinator. The hours earned will be credited toward required technical electives in the Industrial Technology curriculum. Four semester hours credit is the maximum to be earned under this arrangement in any one semester. Eight semester hours is the maximum to be earned in the co-op arrangement in the Industrial Technology Department.

478. Co-operative Training in Industry II Credit 4

The description of this course is the same as I.T. 477 and is normally the second Co-op experience of the student.

570. Mechanical Design and Manufacturing Problems Credit 4(2-4)

A basic course in mechanical design procedures and problems of manufacturing. Some recent advances are covered including critical path scheduling and man machine relations. Prerequisite: 473, 475.

571. Heating, Ventilation and Refrigeration Credit 4(2-4)

A study of principal equipment; design, load calculations for cooling and heating, layouts and controls employed in various types of systems. This course is augmented by a practical design problem.

572. Commercial Refrigeration, Heating and Ventilation Credit 4(2-4)

A study of steam systems; hot water systems; warm air systems and electrical systems used in heating buildings. Load calculation for walk-in cooler and deep freezers and drinking water fountains. Special refrigerating devices and applications.

573. Conditioned Air Systems I Credit 4(2-4)

A study of fundamentals involved in the conditioning of air for comfort. Sensible and latent heat transfer, states of matter and humanity.

574. Conditioned Air Systems II Credit 4(2-4)

Continuation of 573 with emphasis on controls, heat loads and special types of systems.

575. Mechanics of Materials Credit 3(0-6)

A study of physical properties of common materials of industry. Simple stresses, loads, yield strength, ultimate strength, and factors of safety. Applications are made in the areas of riveted and welded joints, pressure vessels, and beam design.

576. Independent Study Credit 3(0-6)

The student selects a technical problem in his major area for special research and study in consultation with a faculty member in his area of interest. He will spend a minimum of 6 hours per week in library research or laboratory experimentation. A technical report in standard format will be requied for completion and must be approved by two department faculty members. Prerequisites: Junior or Senior Status.

Advanced Undergraduate and Graduate

673. Advanced General Metals I Credit 3(2-2)

A course in metalwork for teachers of industrial arts. Emphasis will center on art metal (including plating, finishes, etc), advanced bench metal, sheet metal operations and machine shop. Specifications for equipment, organization of instruction sheets, special problems and materials will be covered as well as shop organization. Prerequisite: 471.

674. Advanced General Metals II Credit 3(2-2)

An advanced course in metalwork for the industrial arts teacher or other persons who may require more specialization in one area of metalwork. With the necessary prerequisites, the student may select any area of general metals for concentration and special study. Construction of projects, special assignments, etc. will be made after the area of work is selected and after consultation with the instructor. Prerequisite: 673.

For Graduates Only

651. Power Industries and Technology Credit 3(2-2)

Significance of modern power sources in Industrial Technology. Design and operating principles of steam, water, hydraulic, pneumatic, internal and external combustion units. Nuclear, hydro-electric, gasoline, diesel, turbine rocket, jet, fuel cells, solar energy and other systems. Laboratory experiences involving utilization of power equipment, testing and servicing, with major emphasis on portable power plants.

735. Electricity-Electronics Credit 3(2-2)

For teachers and prospective teachers of Industrial Arts. Emphasis placed on selection and construction of projects useful in school shops, development of selected information. Selecting equipment and supplies, course organization and instructional materials.

SCHOOL OF ENGINEERING

Students Solving Engineering Problem

SCHOOL OF ENGINEERING

Suresh Chandra, *Dean*

The School of Engineering grants Engineers' Council for Professional Development (ECPD) accredited bachelor of science degrees in architectural, electrical, and mechanical engineering. The School also grants bachelor of science degrees in engineering mathematics and engineering physics in cooperation with the Departments of Mathematics and Physics.

The curricula offerings include a five-year program in architectural engineering and four year programs in each of the other engineering disciplines.

The programs of study are aimed toward preparing a student for engineering practice in all phases of his chosen field. The specific objectives of the School of Engineering are:

1. To prepare the student for an active career in all facets of professional engineering.
2. To provide a comprehensive background in all phases of the engineering design process, namely: conception, planning, synthesis, analysis, design, and management.
3. To provide a basic knowledge of the mathematical and natural sciences upon which the practice of professional engineering depends.
4. To develop the judgment the engineer requires to effectively utilize, economically, the materials and forces of nature for the benefit of mankind.
5. To encourage the student to develop an appreciation for the process of continuing education.
6. To develop the intellectual, professional, and social characteristics of the student in such a manner as to enable him to become a responsible leader in his community.

ADMISSION TO THE SCHOOL OF ENGINEERING

The admission requirements are generally the same as those required for entrance as a freshman student. However, two units of algebra, one unit of plane geometry, and one-half unit of trigonometry are required for students who elect to pursue engineering curricula.

COOPERATIVE EDUCATION PROGRAM

A five-year cooperative program, in which students may earn a major portion of their educational expenses through a work-study arrangement with industry, is available to students with satisfactory scholastic records.

After satisfactory completion of at least two semesters in the freshman year, students in engineering, mathematics or physics may alternate semesters in industry with semesters at the University until their senior year. They then remain at the university until graduation. This arrangement enables the student to receive two years of work experience and at the same time earn educational expenses.

DEPARTMENT OF ARCHITECTURAL ENGINEERING

Departmental Objectives

William A. Streat, Jr., *Chairman*

It is the aim of the program in architectural engineering to encourage and develop students, who exhibit creative ability and who exhibit the ability to grasp and use scientific principles, for professional careers in the art and science of building. Strong emphasis is placed on training in the building sciences and on training in engineering as it applies to the design and construction of buildings.

The architectural engineering program provides considerable training in general education which is devoted to study of social and physical sciences, art, english, mathematics and the humanities. Introductory courses in architectural engineering and a large percentage of the required general education courses are scheduled in the freshman and sophomore years. This training, during the first and second years, provides background for the study of basic engineering science and the study of more professional courses which are scheduled later in the program. Instruction within the department of architectural engineering is organized under four divisions.

1. Graphics, Architectural Design and Architectural History
2. Environmental Control, Electrical and Mechanical Equipment of Buildings
3. Professional Practice, Management, Materials and Methods of Construction.
4. Structures

Each of these divisions has specific course requirements that are aimed toward the development of the architectural engineering student so that he will be able to take his place in society as a professional in the field of engineering.

The five year program in architectural engineering leads to the bachelor of science degree and is fully accredited by the Engineers' Council for Professional Development.

PROGRAM IN ARCHITECTURAL ENGINEERING

Freshman

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Architectural Engineering 111, 112	1	1
Chemistry 101	3	—
Chemistry 111	1	—
English 100, 101	3	3
Mathematics 116, 117	5	5
History 100	3	—
Physics 221	—	5
Geology 309	—	3
	16	17

Sophomore

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Architectural Engineering 321, 322	3	3
Architectural Engineering 323	—	3
Art 220, 221	2	2
History 101	3	—
Physics 222	5	—
Mathematics 330	4	—
Humanities 200		3
Mechanical Engineering 335	—	3
Mechanical Engineering 200	—	3
	17	17

Lower Junior

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Architectural Engineering 441, 442	4	4
Architectural Engineering 443, 444	3	3
Architectural Engineering 445	—	3
Architectural Engineering 446, 447	2	2
Humanities 201	—	3
Mechanical Engineering 336	4	—
Mechanical Engineering 300	—	2
Electives	3	—
	16	17

Upper Junior

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Architectural Engineering 451	4	—
Architectural Engineering 454, 455	3	2
Architectural Engineering 456, 457	3	3
Architectural Engineering 458	—	3
Economics 301	3	—
Mathematics 240	—	3
Mechanical Engineering 337	3	—
Mechanical Engineering 441	—	3
Electives	—	3
	16	17

Senior

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Architectural Engineering 561, 562	4	4
Architectural Engineering 563, 564	3	3
Architectural Engineering 565	2	—
Mechanical Engineering 443	—	3
Optional Block	4	5
Electives	3	—
	16	15

Optional blocks shall be one of the following:

Architectural Engineering	448	Architectural Engineering	452
Architectural Engineering	449	Architectural Engineering	566
Mechanical Engineering	561	Architectural Engineering	453
Architectural Engineering	566	Engineering	644
Architectural Engineering	567	Engineering	652
		Engineering	660

Architectural Engineering students may elect Chemistry 102 and 112 instead of Geology 309, and the additional one semester hour credit will be applied as an elective. All programs of study shall have the approval of the student's major advisor and the department of architectural engineering.

Freshman	— 33
Sophomore	— 34
Lower Junior	— 33
Upper Junior	— 33
Senior	— 31
TOTAL	164 semester hours

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

Courses in Architectural Engineering

Undergraduate

111. Architectural Orientation Credit 1(1-0)

Lecture, Seminar Course: Orientation to the University and the department of architectural engineering. Presentation of selected topics, student participation and discussions.

112. Architectural Seminar I. Credit 1(1-0)

Lecture, Seminar, and Laboratory Demonstration: An analysis of architectural engineering—preparation, opportunities and professional contributions. Selected lectures and laboratory demonstrations are provided. Individual and group participation of students are encouraged. Introduction to use of computers. Prerequisite: Architectural Engineering 311 or consent of the department.

321. Architectural Graphics I. Credit 3(0-6)

Orientation to architecture, the use and care of drafting instruments, line and lettering techniques, orthographic and auxiliary projections, surface intersections and development, oblique and isometric drawing. Prerequisites: Plane and Solid Geometry. (Not open to entering freshmen—open only to majors in architectural engineering).

322. Architectural Graphics II. Credit 3(0-6)

Laboratory-lecture course. Shades and shadows, perspective drawing, study of the architectural plan, elevation and section architectural presentation studies in pencil, pen and ink and water color. Prerequisite: Architectural Engineering 321.

323. Environmental Control Systems for Buildings I. Credit 3(2-1)

Lecture and laboratory. Electrical and mechanical systems for environmental control of buildings. Comparative analyses of various environmental systems and their relation to building design. Elements of basic theory used in the design, of electrical and mechanical systems and the controlled environment, for buildings. Prerequisite: Mathematics 117 and sophomore standing.

441. Architectural Design I. Credit 4(0-8)

Laboratory-lecture course. Designed to introduce the basic fundamentals of design, and as they are applied to architecture; influences on architecture, space relationships, form and visible structure. A series of problems is presented in the design of buildings having simple requirements. Prerequisite: Architectural Engineering 322.

442. Architectural Design II. Credit 4(0-8)

Laboratory-lecture course. Presenting a series of problems in space organization and planning with the study of composition and structure. Prerequisite: Architectural Engineering 441.

443. History of Architecture I. Credit 3(3-0)

Illustrated lecture. The early architecture and civilizations of Egypt, Western Asia, Greece and Italy; architectural developments by the Early Christian and Byzantine builders, and a beginning study of the architecture and civilizations of the Medieval period. Prerequisites: Architectural Engineering 322, and Humanities 200.

444. History of Architecture II. Credit 3(3-0)

Illustrated lecture. The architecture and civilizations of the Medieval period, and the architecture and civilizations of the Renaissance and of the Early Americas. Prerequisite: Architectural Engineering 443.

445. Structural Systems I. Credit 3(1-4)

Lectures and Laboratory work: Analysis and design of structural systems-an overview. Numerical and graphical analyses and solutions. Comparative evaluation of structural systems-environmental, aesthetic and cost considerations. Prerequisite: Mechanical Engineering 335.

446. Materials & Methods of Architectural Construction I Credit 2(2-0)

Lecture. The manufacture and use of materials for wood frame and masonry construction. The study of construction methods and the influence of building codes. Prerequisite: Architectural Engineering 322.

447. Materials & Methods of Architectural Construction II Credit 2(2-0)

Lecture. The manufacture and use of materials for fire resistive construction. The study of construction methods and the influence of building codes. Prerequisite: Architectural Engineering 446.

448. Building Sanitation. Credit 2(2-0)

Lecture-problems course. Basic Hydrostatics and Hydrodynamics. Liquid flow in pipes. Building equipment and services including water supply and distribution, fire protection, plumbing, sanitary drainage and sewage disposal. Selection and engineering design of equipment. Prerequisite: Architectural Engineering 323 and junior classification.

449. Electrical Equipment of Buildings. Credit 3(3-0)

Lecture-problems course. Characteristics of electrical distribution systems, computation of electrical power requirements for buildings, theory and design of wiring systems and lighting systems for buildings, and the selection of electrical equipment for buildings. Prerequisites: Physics 222 and Architectural Engineering 323.

451. Architectural Design III. Credit 4(0-8)

Laboratory-lecture course presenting a series of problems for study of space analysis, space organization, form and function. Integration of design and construction methods and the organization of structural components. Prerequisite: Architectural Engineering 442.

452. Architectural Design IV. Credit 4(0-8)

Laboratory-lecture course presenting a series of problems in the design, analysis, and organization of buildings. Economic and social considerations are given to problems. Group planning, mass and orientation are studied for more complex building requirements. More detailed study and presentation is required to emphasize the complete architectural complex. Prerequisite: Architectural Engineering 451.

453. History of Architecture III. Credit 2(2-0)

Illustrated lecture. An analytical study of Modern and Contemporary Architecture. Prerequisite: Architectural Engineering 444.

454. Reinforced Concrete Theory I. Credit 3(3-0)

Lecture-problems course. Reinforced concrete theory as applied to building structures. Theory of design for beams, slabs, and columns. Allowable stress and ultimate strength concepts. Bending of reinforced concrete columns. Prerequisites: Architectural Engineering 445, Mechanical Engineering 336.

455. Reinforced Concrete Theory II. Credit 2(2-0)

Lecture-problems courses. Footings and retaining walls, theory of design for continuous reinforced concrete beams and slabs. Prerequisite: Architectural Engineering 454.

456. Theory of Structures I. Credit 3(3-0)

Lecture problems course. Reactions, shears, and moments, truss analysis, influence lines and criteria for maximum moving load conditions. Introduction to space frames. Portal and cantilever approximate methods of analysis. Moment area theorems and deflections. Prerequisites: Architectural Engineering 445, Mechanical Engineering 336.

457. Theory of Structures II. Credit 3(3-0)

Lecture problems course. Elastic weights and the conjugate beam. Virtual work solutions, Maxwell's Law and Williot-Mohr methods of analysis. Analysis of statically indeterminate problems by consistent deformation, fixed points, Castigiliano's theorems, three moment equations, slope deflection, moment distribution. Computer solutions. Prerequisite: Architectural Engineering 456.

458. Production Drawings. Credit 3(0-6)

Laboratory course: Design development drawings and architectural working drawings. Production of small scale general drawings including plans and elevations, large scale detail drawings and schedules. Prerequisites: Architectural Engineering, 442, 447.

561. Structures I. Credit 4(2-4)

Lecture and Laboratory: Theory and design of structural components: tension members, compression members and beams. Connections-Design of statically determinate systems. Prerequisite: Architectural Engineering 456.

562. Structures II. Credit 4(2-4)

Lecture and Laboratory: Multistory frames: gravity and lateral loads. Design of building frames. Limit design. Three hinged arches. Composite construction, Prerequisite: Architectural Engineering 561.

563. Statically Indeterminate Structures. Credit 3(3-0)

Lecture-problems. Analysis of continuous beams and rigid frames. Approximate methods and special techniques: slope deflection, moment distribution, column analogy. Introduction to design of statically indeterminate systems. Prerequisite: Architectural Engineering 455, 457.

564. Foundation and Soil Structures. Credit 3(1-4)

Lecture and Laboratory: Origin and composition of soils, soil structure. Flow of water through soils, capillary and osmotic phenomena. Soil behavior under stress; compressibility; shear strength. Elements of mechanics of soil masses with application to problems of bearing capacity of foundations, earth pressure on retaining walls, and stability of slopes. Prerequisite: Upper Junior Classification.

565. Professional Practice. Credit 2(2-0)

Lecture. Procedures of professional practice, registration, ethics, professional services, contracts, bonds, liens, insurance, bidding procedures, supervision, and administration of construction operations, office management. Prerequisite: Upper Junior Classification. For majors in architectural engineering only.

566. City Planning and Urban Design I. Credit 4(2-4)

Lecture and Laboratory Course: History of city planning and urban design; general problems of city planning and urban design-architectural space composition. Theory of space composition. Regional and urban planning; Scale of the plan for region and city. Transportation in the city; the city as a human unit. Greenery in the city. Location of the residential areas, in-

dustry, business and commerce, etc. Location criteria. Design of the neighborhood unit. Prerequisites: Juniors enrolled in the program of the Transportation Institute and Architectural Engineering majors of junior classification. Open to practicing design professionals.

567. City Planning and Urban Design II. Credit 5(2-6)

Lecture and Laboratory Course: New outlooks on the city and the city planning process. High-rise and flat cities, low-rise housing in the city. Space compositional factors. Places of public interest. Places of aesthetical attraction in the city. Transportation, and extension of the city. Types of housing such as row housing, twin housing, etc. High-rise city (high-flat housing); density of population, and scale of the city. Plans for high-rise housing, low income housing and industrialized technology in low income housing. Design of the city plan. Cooperation with the transportation engineer, economist, sociologist, etc. Prerequisites: Architectural Engineering 566 and 442. Open to practicing design professionals.

568. Environmental Control Systems for Buildings II. Credit 3(0-6)

Laboratory Course: Development of complete environmental systems for buildings. Includes mechanical and electrical systems, as they are integrated with architectural design, structural design, and building construction. Prerequisites: Mechanical Engineering 561, Architectural Engineering 323, Architectural Engineering 448 and Architectural Engineering 449.

ELECTRICAL ENGINEERING

Winser Alexander, *Acting Chairman*

At the undergraduate level the electrical engineering program includes training in mathematics, basic sciences, social sciences, humanities, and engineering. Each undergraduate together with his advisor develops a program to match individual needs and interests; e.g., Coop activity, evening classes, special interests in computer engineering, special interest in engineering education.

The Student Branch of the Insitute of Electrical and Electronic Engineers sponsors professional activities. An Eta Chapter of Eta Kappa Nu, the national honorary electrical engineering society, encourages scholastic and leadership development.

The department participates in offering the Master of Science in Engineering degree. Prospective graduate students should consult the Graduate School catalog.

UNDERGRADUATE CURRICULUM

A minimum of 128 semester hours is required for the Bachelor of Science degree in electrical engineering. These 128 hours are outlined as follows:

1. MATHEMATICS (21 hrs.) Math 116, 117, 300, 500, and three hours of advanced mathematics are required.
2. BASIC SCIENCES (19 hrs.) Chem. 101, 111 and Physics 221, 211 and 406 are required. The remaining hours may be chosen from Chemistry, or

Physical Science, or Biological Science, or Earth Science upon consultation with and written consent of departmental advisor.

3. SOCIAL SCIENCES AND HUMANITIES (25 hrs.) A minimum of six hours of Freshman English and three hours of History are required. Upon consultation with and written counsent of department advisor, the remaining hours must be chosen within a minimum of two departments; Art, English, Foreign Languages, Music, Economics, History and Political Science, Sociology and Social Welfare, Psychology and Guidance.
4. ENGINEERING (68 hrs.) Twelve hours of Mechanical Engineering 335, 337, 361 and 441 are required. Thirty-eight hours of Electrical Engineering including 450, 501, 565, 570 and 575 are required. (EE 100, 101, 325, 337, 448 and 452 provide the prerequisites.) Eight hours of advanced undergraduate engineering courses are required.
5. FREE ELECTIVES (5 hrs.) Chosen from any department.

See your electrical engineering advisor in the formulation of individual undergraduate program or write concerning questions and sample programs: Chairman, Department of Electrical Engineering, North Carolina A & T State University, Greensboro, N. C. 27411.

SAMPLE PROGRAM

CAUTION: This is one sample program derived from the electrical engineering UNDERGRADUATE CURRICULUM. See your advisor for planning an individual program.

Freshman

212-100 Fresh Comp I	3	212-101 Fresh Comp II	3
223-101 Gen Chem I	3	225-117 Engg Math II	5
223-111 Gen Chem Lab I	1	227-221 Gen Phy I	5
225-116 Engg Math I	5	420-101 Intf EE II	4
420-100 Intf EE I	4		
	16		17

Sophomore

420-337 Ckt Anal I	4	420-325 Prin EM Waves	3
227-222 Gen Phy II	5	420-448 Ckt Anal II	4
225-300 Ord Dif Equ	4	440-335 Mech I, Statics	3
233-100 Hist Wes Civ	3	225-500 Intro Appl Math	4
		** Elective	2
	16		16

Junior

420-450 Em Rad & M Th	3	440-361 Fluid Mech	3
420-501 Ckt Anal III	3	227-406 Mod Phy I	3
420-452 Electronics I	4	420-565 Electronics II	4
440-337 Mech II Dyna	3	** Electives	6
440-441 Thermo I	3		
	16		16

Senior

420-570 El Mach I	4		
420-575 El Engg Sem	1		
** Electives	10	**Electives	16
	15		16

UNDERGRADUATE COURSES IN ELECTRICAL ENGINEERING

Department Code—420

100. Interface to Electrical Engineering I. ..... Credit 4(3-3)

An introductory course for freshmen engineering majors. Applications of Algebra, Matrices, Trigonometric functions, etc. as engineering tools. Use of the slide rule and digital computer as computational aids. Resistive circuit theory. Coordinated laboratory work.

101. Interface to Electrical Engineering II. ..... Credit 4(3-3)

A continuation and expansion of E.E. 100. Fundamental laws and theorems of linear circuit theory coordinated laboratory work. Prerequisite: E.E. 100.

325. Principles of Electromagnetic Waves. ..... Credit 3(3-0)

Electromagnetic concepts and effects, vector analysis. Corequisite: 225-500.

337. Electric Circuit Analysis I. ..... Credit 4(3-3)

Transient and steady state solutions to first and second order linear systems in the time and frequency domains; introduction to time varying and nonlinear systems. Coordinated laboratory exercises. Prerequisite: 420-101.

441. Basic Electrical Engineering I. ..... Credit 4(3-3)

Electrical engineering, fundamentals and applications for non-electrical engineering students. Electric and magnetic fields; network theory and application; direct and alternating current apparatus. Coordinated laboratory work. Prerequisites: 227-222 and 225-117.

442. Basic Electrical Engineering II. ..... Credit 4(3-3)

Electronic circuit theory and applications; control of electrical apparatus; electro-chemical processes; electronic analog and digital computer principles. Coordinated laboratory work. Prerequisite: 420-441.

443. Electric Circuit Analysis II. ..... Credit 4(3-3)

Periodic function analysis of n'th order linear systems, Fourier series and Laplace transform techniques, and introductory synthesis techniques with coordinated laboratory work. Prerequisite: 420-337.

450. Electromagnetic Radiation and Microwave Theory. .. Credit 3(3-0)

The basic postulates of electromagentism; the integral laws of free space; the differential laws in free space; static fields; time varying fields. Prerequisite: 420-325.

452. Electronics I. ..... Credit 4(3-3)

A study of active devices with emphasis on terminal behavior. Physical electronics, linear and nonlinear modeling. Coordinated laboratory work. Prerequisite: 420-337.

501. Circuit Analysis III. ..... Credit 3(3-0)

Analysis of system responses to signals using convolution, Fourier integral, special, sampling, correlation, and probabilistic techniques. Prerequisite: 420-448 or consent of instructor.

565. Electronics II. ..... Credit 4(3-3)

A continuation of Electronics I. Principles of semiconductor electronic circuits; rectifiers and filters; amplifiers; feedback and oscillatory systems. Coordinated laboratory work. Prerequisite: 420-452.

570. Electric Machinery I. ..... Credit 4(3-3)

Electromechanical energy conversion principles; basic rotating machines; steady state and transient analysis of the ideal d-c machine, synchronous machine and induction machine. Coordinated laboratory work. Prerequisite: 420-448 and 420-450.

571. Electric Machinery II. ..... Credit 4(3-3)

Physical factors influencing performance of the realistic machine; single and three phase transformers; autotransformers; D-C machine characteristics and applications; synchronous and polyphase induction machine characteristics; fractional-horsepower a-c machines. Coordinated laboratory experience. Prerequisite: 420-570.

575. Electrical Engineering Seminar II. ..... Credit 1(1-0)

Lectures, reports and discussion on current developments and practices in the design and application of electrical and electronic components and systems.

ADVANCED UNDERGRADUATE AND GRADUATE COURSES

Descriptions for advanced undergraduate and graduate courses are located in School of Engineering Advanced Undergraduate-Graduate Courses, Code 400 Section.

DEPARTMENT OF MECHANICAL ENGINEERING

Reginald Mitchiner, *Chairman*

The mechanical engineer is concerned with the design, manufacture, and evaluation of systems for the conversion of natural resources into useful devices. He must be prepared to develop new sources of power, propulsion, and transportation; be capable of meeting the challenges of the new problems in society due to a greater awareness of the interaction between technology and the environment.

The program followed by the student in the Department seeks to develop him both liberally and professionally while preparing him to cope with the

major concerns of the profession. It prepares the student for a career in 1) research and development, 2) design of systems, 3) thermal sciences, 4) production, and 5) technical management.

Programming techniques in Fortran are introduced at an earlier stage in the student's curriculum and thereafter, continued use of electronic digital systems becomes a part of the training process. The Department encourages the use of the University Computer Science Center where programs are processed on a Control Data Corporation Model 3300 computer system.

Experimental training is given in areas such as instrumentation and fluid flow, fuels and thermal systems, metallurgy, materials testing, and vibration characteristics. Additional experience in research and experimental techniques is available through participation in the faculty- and student-research projects.

Some of the areas in which research is being conducted are: (a) Mass transit for the handicapped, (b) Creation of a ceramic handbook, (c) Ceramic liner feasibility studies, and (d) Hunting phenomenon in railway locomotives.

Students interested in earning while they learn the practical aspects of engineering may elect to participate in the Pre-Cooperative and Co-operative Education Program within the Department. Information on the program and other details may be secured by writing to the Department.

PROGRAM FOR MECHANICAL ENGINEERING MAJORS

Freshman Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
English 100, 101	3	3
History 100, 101	3	3
*Mathematics 116, 117	5	5
Mechanical Engineering 100	3	—
Mechanical Engineering 101	3	—
Chemistry 101	—	3
Chemistry 111	—	1
	17	15

Sophomore Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Humanities 200	3	—
Physics 221, 222	5	5
Mathematics 300	—	4
Economics 301	3	—
Mechanical Engineering 226	—	3
Mechanical Engineering 260, 335	3	3
**Electives	3	3
	17	18

Junior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mathematics 500	4	—
Electrical Engineering 441, 442	4	4
Mechanical Engineering 361, 336	3	4
Mechanical Engineering 337, 440	3	3
Mechanical Engineering 441	—	3
**Electives	3	3
	17	17

Senior Year

Course and Number	*Fall Semester Credit*	*Spring Semester Credit*
Mechanical Engineering 442, 443	4	3
Mechanical Engineering 560, 562	3	4
Mechanical Engineering 564, 565	3	3
Mechanical Engineering 574	—	3
**Electives	6	0
	16	13

Total Credit Hours: 130

*Students entering with a deficiency in mathematics or score low on the Mathematics Placement Examination must begin with Pre-Engineering Mathematics and the above mathematics sequence would be shifted one semester.

**At least six (6) credit hours of electives must be taken from the Humanities-Social Science Group and at least nine (9) credit hours from the Technical Group; three (3) credit hours are free electives.

COURSES IN MECHANICAL ENGINEERING

Department Code—440

Undergraduate

100. Engineering Orientation and Analysis Credit 3(2-3)

Introduction to engineering and mechanical engineering, engineering opportunities; tools and processes of engineering; applications of trigonometry, geometry, and algebra to engineering problems; introduction to slide rule and digital computer; measurements and experimental techniques, plant visits.

101. Engineering Graphics I. Credit 3(0-6)

Instrument practice: lettering; geometrical construction; projections; sections; auxiliary projection; revolution; pictorial drawing; intersection and development. Drawing of fasteners, springs and gears; detail and assembly drawings; tracing and reproduction methods.

102. Engineering Graphics II. Credit 3(0-6)

Representation of common geometrical magnitudes, with points, lines, planes, and solids; concurrent noncoplanar forces; the solution of problems; advanced intersection and development. Prerequisite: M.E. 101.

200. Engineering Analysis. Credit 3(2-2)

The introduction of technical writing, applications of mathematics and science in engineering problems, and the tools of engineering; the electronic analog computer, electronic digital computer and the slide rule are presented as tools for solving matrix problems and other related problems. Prerequisite: Math. 116; M.E. 100 or equivalent.

226. Manufacturing Processes. Credit 3(2-2)

Fabricating methods by machining, forming, casting, welding and adhesive bonding; measuring and gaging; automation; numerical control of machine tools; economics of metal manufacturing; plastics. Prerequisite: M.E. 101.

260. Materials Science. Credit 3(3-0)

Fundamental nature of materials, physical, mechanical and chemical characteristics, atomic arrangements and atomic bonding; phase diagrams; properties and engineering requirements of materials; testing and examination, review and selection of materials for specific use. Prerequisite: Consent of Instructor.

300. Plane Surveying Credit 2(1-3)

The methods of using the compass, transit, tape and level in making plane surveys. Lectures and field work. Elementary stadia work. Prerequisite: Trigonometry, Math. 110 or equivalent.

335. Mechanics I, Statics. Credit 3(3-0)

Basic vector concepts of force, moment of a force; analytical and graphical techniques in the analyses of force and moment; conditions of equilibrium in frames, trusses, machine members under static loads; law of friction; distributed forces; determination of centroid, mass center, area and mass moment of inertia. Prerequisites: Physics 221, Math. 117 and M.E. 101 or equivalent.

336. Strength of Materials. Credit 4(3-2)

Introduction to normal and shearing stresses; analysis of shear and moment distribution in beams; shear and fiber stresses in beams; deflection of beams; torsional stresses in shafts, springs, critical loads in beam-columns; analysis of combined stresses; experimental work on the mechanical behavior of material including concrete and wood; experimental determination of fatigue and impact properties; determination of hardness of various materials. Prerequisite: M.E. 335.

337. Mechanics II, Dynamics. Credit 3(3-0)

Introduction to the kinematics of particles and rigid bodies in translation, rotation and plane motion; introduction to the concepts underlying the work-energy principles and impact-momentum principles. Prerequisite: M.E. 335.

339. Engineering Practice. Credit 2(2-0)

Communication, law, human relations and professional development in the practice of engineering. Development and use of communication tools, professional understanding and contract documents. Prerequisite: Eng. 101.

361. Fluid Mechanics: Credit 3(2-2)

Principles of static and dynamic behavior of incompressible fluids with some applications to fluid machinery. Experimental work in fluid mechanics and instrumentation. Prerequisite: Math. 300.

440. Kinematics. Credit 3(2-2)

A condensed course covering relative motions, velocities and accelerations of machine parts including linkage, cams and gears. Prerequisite: M.E. 337.

441. Thermodynamics I. Credit 3(3-0)

Thermodynamic properties of substances. Development of the first and second laws on a macroscopic system basis. Application to thermodynamic processes involving ideal and real gases. Prerequisites: Math. 300, M.E. 337, and Chem. 101.

442. Thermodynamics II. Credit 4(3-3)

A continuation of Thermodynamics I including first and second law of applications to power, heating, and refrigeration cycles. The subjects of gas mixtures, psychrometrics and heat transfer are introduced. Experimental work in thermal sciences. Prerequisite: M.E. 441.

443. Production Management. Credit 3(3-0)

Systems, organization, planning, plant location, buildings, equipment, work measurement, material handling and plant layout; problems relating to the engineer's role as consultant, financial management, cost concepts, buying decisions, simple linear programming models; controls, inventory, production, quality, and maintenance; personnel management and labor relations, research development and engineering.

444. Undergraduate Projects. Variable Credit 1-3

Study arranged on engineering topics of interest to student. A faculty member will serve as project advisor. Topics may include analytical and/or experimental work and encourages independent study. Prerequisite: Permission of Department and agreement of faculty member as advisor.

450. Introduction to Nuclear Engineering. Credit 3(3-0)

A survey of the engineering applications of nuclear energy. The principles and practices of isotope separation, production of plutonium, and nuclear reactor operations are studied along with the peace-time uses of products and by-products of nuclear reactors. Major engineering problems involved in each phase of the study are defined and the special methods of approach indicated. Prerequisite: Physics 222.

461. Transportation Engineering I. Credit 3(3-0)

The transportation system and development, technological characteristics of transport modes, traffic control devices, planning studies, planning models. Prerequisites: Junior standing or consent of instructor.

462. Transportation Engineering II. Credit 3(3-0)

Traffic surveys, traffic volume and capacity studies; Designs of land, air, and water transportation facilities; Analysis and design of urban mass transit systems. Prerequisites: M.E. 461 or consent of instructor.

540. Dynamics of Machines. Credit 3(2-2)

Static and dynamic force analysis of machines, including cams and gears; Balancing of rotating and reciprocating masses; Applications to flywheels, gyroscopes, single- and multi-cylinder engines. Prerequisite: M.E. 440.

560. Metals, Ceramics, and Polymers. Credit 3(2-2)

Atomic structure and microstructure; properties of materials; alloying, heat treatment and other processing; environmental degradation; engineering uses and design with various materials; experiments of microstructures, heat treatment, mechanical properties, corrosion, oxidation and degradation. Prerequisite: M.E. 226 and M.E. 260.

561. Environmental Control. Credit 4(3-2)

Principles of heating and air conditioning and their applications to design of environmental control systems; determination of building, heating and cooling loads, principal equipment, layout and controls are discussed for various types of systems. Prerequisite: M.E. 441.

562. Heat and Mass Transfer. Credit 4(3-3)

Relation of heat transfer to thermodynamics. Conduction of heat in steady and unsteady states. Heat transfer by radiation, free and forced convection. Mass diffusion. Experimental work in heat transfer. Prerequisites: M.E. 361 and M.E. 441.

564. Machine Design I. Credit 3(2-2)

Introduction to the design process; the design and development of machine elements; computer-aided design; project work. Prerequisites: M.E. 336 and M.E. 440.

565. Machine Design II. Credit 3(2-2)

Continuation of the design and development of machine elements; analysis, synthesis and design of machine systems; project work. Prerequisites: M.E. 564 and M.E. 560.

566. Mechanical Vibrations. Credit 4(3-2)

An introduction to the dynamics of systems with and without external damping, stability, lumped and distributed. Vibration isolation mounts and control systems are analyzed with classical differential equations, electromechanical analogies and computer methods. Prerequisites: M.E. 336 and M.E. 337.

568. Gas Dynamics. Credit 3(2-2)

Principles of one-dimensional compressible fluid flow. Normal shocks. Flow with friction, heating and cooling. Introduction to two-dimensional flows. Experimental work in fluid flow. Prerequisites: M.E. 361 and M.E. 441.

572. Mechanical Engineering Seminar I. Credit 1(0-2)

Reports and discussions on special topics in mechanical engineering and related fields. Prerequisite: Senior standing in mechanical engineering.

573. Mechanical Engineering Seminar II. Credit 1(0-2)

Continuation of Mechanical Engineering 572. Prerequisite: Senior standing in Mechanical Engineering.

574. Mechanical Systems Analysis. Credit 3(1-4)

Application of the engineering and mathematical techniques in the design of mechanical systems; solution of mechanical engineering problems, or a research activity; Group problems are selected by the students from actual problems in industry and research; Lectures cover an introduction to types of design projects, the design process, decision and optimization techniques, and computer-aided design. Prerequisite: Senior standing.

GRADUATE PROGRAM IN ENGINEERING

Suresh Chandra, *Dean*

The School of Engineering offers a program of advanced study leading to the Master of Science in Engineering (M.S.E.). The central emphasis of the program is interdisciplinary—breaking with the traditional departmentalized specialization. The program has been developed in such a way as to permit a graduate engineering student to pursue advanced education which will prepare him for advanced professional practice or for further graduate study.

Formal instruction is offered in several areas of engineering such as analog and digital systems, engineering mechanics, industrial operations, mechanical and electrical systems, and structural engineering. However, the instructional areas are not limited to these topics. The programs reflect interdisciplinary emphasis and are coordinated by the student's advisory committee in such a way as to meet the professional needs and experience of each student. Both thesis and non-thesis options are offered for the M.S.E. program. A minimum of 30 approved semester hours, including 6 hours of thesis, are required for the thesis option whereas at least 33 approved hours are required for the non-thesis option. At least half of the required courses, excluding thesis, must be at 700-level. All 600 and 700-level courses are offered in the evening. The M.S.E. program may be pursued on full or part-time basis.

Further details on admission and academic requirements, financial assistance, etc. may be obtained from the Graduate School Bulletin or the Graduate Program Catalog of the School of Engineering.

Advanced Undergraduate Courses

Number and Course	*Credit*
602 Advanced Strength of Materials	3(3-0)
604 Analog Computer Applications	3(2-3)
606 Automatic Control Theory	3(3-0)

612 Communication Systems	3(3-0)
614 Communication Theory	3(3-0)
622 Electronic Engineering	4(3-3)
624 Elementary Nuclear Reactor Theory	3(3-0)
626 Engineering Research	Variable
627 Fundamentals of Logic Systems	3(3-0)
632 Information Theory	3(3-0)
634 Instrumentation-Theory and Applications	3(3-0)
642 Management, Organization & Industrial Economics	3(3-0)
644 Matrix Analysis of Structures	3(2-2)
646 Network Synthesis	3(3-0)
648 Numerical Analysis for Engineers	3(3-0)
650 Operations Research	3(3-0)
652 Plates and Shells	4(2-4)
654 Projects in Electronic Networks and Systems	3(1-6)
655 Professional Development I	Variable 1-3
656 Professional Development II	Variable 1-3
660 Selected Topics in Engineering	3(3-0)
666 Special Projects	Variable 1-3
672 Theory of Elasticity	3(3-0)
674 Transmission of Signals and Power	3(3-0)
702 Applied Numerical Methods	3(3-0)
722 Electromagnetic Wave Theory	3(3-0)
724 Electronic Systems Analysis	3(3-0)
742 Mechanical Properties and Theories of Failure	3(3-0)
744 Network Matrices and Graphs	3(3-0)
772 Theory and Design of Digital Systems	3(3-0)
603 Advanced Thermodynamics	3(3-0)
625 Engineering and Environment	3(2-3)
628 Foundation Engineering	3(2-2)
670 Semiconductor Theory	3(3-0)

Department Code—700

Graduate Courses

Number and Course	*Credit*
700 Advanced Reinforced Concrete Design	3(2-2)
701 Advanced Structural Analysis	3(3-0)
710 Boundry Layer Theory	3(3-0)
715 Continum Mechanics	3(3-0)
728 Experimental Stress Analysis	3(2-2)
735 Heat Transfer I—Conduction	3(3-0)
736 Heat Transfer II—Radiation	3(3-0)
738 Irreversible Thermodynamics	3(3-0)
740 Machine Tool Design	3(3-0)
750 Statistical Methods and Quality Control	3(3-0)

Advanced Undergraduate and Graduate Courses

400-602. Advanced Strength of Materials Credit 3(3-0)

Stress-strain in relations as applied to statically indeterminate structures, bending in curved bars, plates, shells, and beams on elastic foundations; strain energy concepts for formulation of flexibility matrix on finite elements; bending in beams and plates; introduction to cartesian tensor notation and matrix structural analysis. Prerequisite: 440-336 or equivalent.

440-603. Advanced Thermodynamics Credit 3(3-0)

Statistical mechanics and microscopic properties from statistical methods. Equilibrium information, generalized coordinates, and general variables. Prerequisite: 440-442 or equivalent.

400-604. Analog Computer Applications Credit 3(2-3)

An introduction to the analog computer; methods of programming for the solution of linear and non-linear differential equations, dynamic response of physical systems and simulation of physical systems and phenomena. Prerequisite: 225-300 or equivalent.

400-606. Automatic Control Theory Credit 3(3-0)

The automatic control problem; review of operational calculus; state and transient solutions of feedback control systems; types of servo-mechanisms and control systems; design principles. Prerequisite: 420-501 or equivalent.

400-612. Communication Systems. Credit 3(3-0)

The factors affecting the performance of communication systems, such as intermodulation noise, thermal noise, bandwidth, and the design of pulse modulation systems including delta and pulse code. Communication systems using earth satellites are covered in great detail including space communication. Prerequisite: 420-565 or equivalent.

400-614. Communication Theory Credit 3(3-0)

Fundamental principles of modulation theory commonly used in the design of communication systems; linear modulation systems—amplitude, double and single sideband, and vestigial sideband modulation; and non-linear modulation systems—frequency and phase. Prerequisites: 225-500 and 420-452 or equivalent.

400-622. Electronic Engineering Credit 4(3-3)

A study of various types of electronic circuits used in engineering practice-wave shaping and computing circuits, photosensitive devices and circuits; control and switching circuits; modulation and demodulation circuits. Coordinated laboratory work with industrial applications and special projects. Prerequisite: 420-565 or equivalent.

400-624. Elementary Nuclear Reactor Theory Credit 3(3-0)

A lecture course in the principles of chain reactors, slowing down of neutrons, neutron diffusion equations, space distribution of neutrons, conditions for criticality, reactor dimensions for simple geometries, elementary group theories, and time-dependent reactor behavior. Prerequisites: 225-300 and 440-450 or equivalent.

400-625. Engineering and Environment. Credit 3(2-3)

An examination of the engineering role, impact, and demands upon the environment relative to its conditions, limitations, chain linkages and effects. Prerequisite: Consent of instructor.

400-626. Engineering Research Credit Variable

Special investigation adapted to the special abilities of individual students. Prerequisite: Consent of Instructor.

400-627. Fundamentals of Logic Systems Credit 3(3-0)

Introduction to digital information handling concepts of counting, transfer, sequence control, selection, addressing and digital system control. Corequisite: 420-452 or equivalent.

400-628. Foundation Engineering Credit 3(2-2)

Subsoil investigations, analysis and design of foundations and other substructures. Caisson and cofferdam design and methods of construction—ground water control. Prerequisite: 410-564 or equivalent.

400-632. Information Theory Credit 3(3-0)

Probability theory and its application in the analysis of information transfer. Special attention is given to information in communications, random signals, noise processes, microscopic processes, and macroscopic events. Prerequisite: 420-501 or equivalent.

400-634. Instrumentation-Theory and Applications Credit 3(3-0)

Consideration is given to applications of software and hardware techniques of instrumentation. Attention is given to treatment of data, errors in measurements and instruments capabilities, and limitations of instruments as to precision and accuracy. Commercial instruments, transducers and their specifications are used as models to illustrate basic principles involved. Students are encouraged to design instrumentation for measurements of both electrical and non-electrical quantities in systems, subsystems and processes. Prerequisite: 420-452 or equivalent.

400-642. Management, Organization and Industrial Economics Credit 3(3-0)

The production system; fixed and variable cost systems, break-even chart, probability distribution and risk analysis. Objectives of production management; models: decision planning, behavioral and control models. Responsibility, cycle, optimality, effectiveness and efficiency. Management and technology or methodology. Industrial economy; value and utility, the economy of exchange, prices by supply and demand, quantitative and qualitative knowledge. Interest formulas, depreciation, pattern for analysis. Prerequisite: 440-443 or equivalent.

400-644. Matrix Analysis of Structures Credit 3(2-2)

Lecture and Laboratory. Review of matrix algebra; statically and kinematically, indeterminate structures; introduction to flexibility and stiffness methods; applications to beams, plane trusses and plane frames. Prerequisite: 410-457 or equivalent.

440-646. Network Synthesis Credit 3(3-0)

Use of positive real functions and linear graphs in the synthesis of passive networks. Investigation of the properties of the driving point and transfer functions of passive networks and the synthesis of one- and two-part networks using positive real functions. Linear graphs and topological aspects are introduced. Prerequisite: 420-448 or equivalent.

400-648. Numerical Analysis for Engineers Credit 3(3-0)

Scientific programming, error analysis, matrix algebra, eigenvalue problems, curve-fitting approximations, interpolation, numerical differentiation and integration, solutions to simultaneous equations, and numerical solutions of differential equations. Prerequisite: Consent of instructor.

400-650. Operations Research Credit 3(3-0)

Management decision making, queuing theory, probability and sequences, formulation of mathematical models of processes with orientation to optimizing by use of digital computers. Prerequisite: 225-224 or equivalent.

400-652. Plates and Shells Credit 4(2-4)

Lecture and Laboratory. Introduction to plane plate theory; membrane stresses in shells with axial symmetry; cylindrical shells; applications in the design of shell roofs, tanks, pipelines and pressure vessels. Prerequisite: 410-455 or equivalent.

400-654. Projects in Electronic Networks and Systems Credit 3(1-6)

Special topics and laboratory work of special interest to students in electronic networks and communications circuits; most of the work is carried on by the project method and emphasizes actual circuit construction. Prerequisite: 420-452 or equivalent.

400-655. Professional Development I Credit Variable (1-3)

Directed self-study in exploring an area both of special interest to the student and of mutual interest to Architectural Engineering faculty member(s).

400-656. Professional Development II Credit Variable (1-3)

Continuation of 400-655.

400-660. Selected Topics in Engineering Credit 3(3-0)

Selected engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Prerequisite: Consent of instructor.

440-666. Special Projects Credit Variable (1-3)

Study arranged on a special engineering topic of interest to student and faculty member, who will act as advisor. Topics may be analytical and/or experimental and encourage independent study. Prerequisite: Consent of instructor.

400-670. Semiconductor Theory Credit 3(3-0)

An examination of the phenomena of solid-state conduction and devices using band modeling. Prerequisite: 420-565 or equivalent.

400-672. Theory of Elasticity Credit 3(3-0)

Introduction; stress; strain; stress-strain relations; energy principles; special topics. Prerequisites: 440-336 and 225-300 or equivalent.

400-674. Transmission of Signals and Power Credit 3(3-0)

Generalized transmission circuits; transmission line parameters; long distance steady state transmission; transients in transmission lines; signal transmission lines; high frequency lines. Prerequisites: 420-448 and 225-300 or equivalent.

Graduate Courses

400-700. Advanced Reinforced Concrete Design Credit 3(2-2)

Advanced theory and methods applied to the design of reinforced concrete structures, including yield line methods, ultimate strength theory and limit design. Prerequisite: 410-455 or equivalent.

400-701. Advanced Structural Analysis Credit 3(3-0)

The analysis of various types of structural problems, including the applications of modern analytical methods. Prerequisite: 410-562 or equivalent.

400-702. Applied Numerical Methods Credit 3(3-0)

Numerical solutions to ordinary differential equations, initial-value and boundary-value problems, non-linear equations, numerical solution to partial differential equation, finite differences, and relaxation techniques. Stability of solutions. Prerequisite: 225-500 or equivalent.

400-710. Boundary Layer Theory Credit 3(3-0)

A study of fluid flow with effects of viscosity analyzed as a boundary layer phenomena derivation of general equations of motion, velocity potential and stream function, perturbation theory and determination of drag and lift for subsonic and supersonic flows. Prerequisite: 440-568 or equivalent.

400-715. Continuum Mechanics Credit 3(3-0)

The applications of the laws of mechanics and thermo-dynamics to the continuum: a rigorous development of the general equations applied to a continuum, the application and reduction of the general equations for specific cases of both solids and fluids. Prerequisite: 440-336 or equivalent.

400-722. Electromagnetic Wave Theory Credit 3(3-0)

Fundamental electromagnetic concepts at ultra-high frequencies and above; analysis of transmission lines and networks; Maxwell equations and their applications; wave guides and radiating systems. Prerequisite: 420-450 or equivalent.

400-724. Electronic Systems Analysis Credit 3(3-0)

An analytical approach involving mathematics and graphical methods is used to arrive at solutions of problems encountered in interconnecting electrical, electronic, mechanical, and physical components to form a workable system. The formulation of compatible interfaces and transformation functions to make a workable system is the objective of the problems considered. Model and simulation theory is also utilized. Prerequisite: 420-565 or equivalent.

400-728. Experimental Stress Analysis Credit 3(2-2)

Principles and methods of experimental stress analysis. Photo-elastic and micromeasurement techniques applied to strain and stress investigations. Experiments using structural models. Prerequisite: 410-457 or 400-602 or equivalent.

400-735. Heat Transfer I—Conduction Credit 3(3-0)

The development and application of the general energy equations. Heat transfer through walls, cylinders, real boundary conditions, and numerical procedures. Prerequisite: 440-562 or equivalent.

400-736. Heat Transfer II—Radiation Credit 3(3-0)

A study of energy transfer by means of thermal radiation. Black body radiation, gray body radiation, gas radiation, and real body radiation. Prerequisite: 440-562 or equivalent.

400-738. Irreversible Thermodynamics Credit 3(3-0)

A study of processes which are inherently entropy producing. Development of general equations, theory of minimum rate of entropy production, mechanical processes, life processes, and astronomical processes. Prerequisite: 440-603 or equivalent.

400-740. Machine Tool Design Credit 3(3-0)

Basic principles of single point and multiple point tools, materials, forces, velocities, and power requirements. Dies and punches; material and manufacture; die and assemblies design clearances; supports, stops and pilots; strippers and knockouts. General requirements of a machine tool; design principles of machine tools; stiffness and rigidity standardization of speeds and feeds; layout of speed change gears; design of some constructional elements. Prerequisite: 440-226 or equivalent.

400-742. Mechanical Properties and Theories of Failure Credit 3(3-0)

Static properties in tension and compression; stress and combined stresses; fatigue, impact, creep and temperature. Various theories of failure under the above loading conditions. Applications. Prerequisite: 440-336 or equivalent.

400-744. Network Matrices and Graphs Credit 3(3-0)

Use of vector space techniques in the description, analysis and realization of networks modeled as matrices and graphs. The course investigates vector space concepts in the modeling and study of networks. The system concept of networks is introduced and explored as a dimensional space consideration in terms of matrices and graphs. Prerequisite: 420-501 or equivalent.

400-750. Statistical Methods and Quality Control Credit 3(3-0)

Statistical series; frequency distribution and its analysis; central tendency; arithmetic mean; dispersion and skewness; time series analysis; the least squares methods, linear and non-linear. The normal curve, theory of sampling, index numbers. Collection of data, statistical tables, graphical presentation. Control charts for measurements and attributes, acceptance sampling by attributes and by variables. Prerequisite: 225-624 or equivalent.

400-755. Plastic Analysis and Design Credit 3(3-0)

Behavior of structural steel beyond the elastic limit. Ultimate load theory, the analysis and design of steel-framed structures and components. Strength and behavior or structures stressed in the plastic range. Prerequisites: 410-457 and 410-461 or equivalent.

400-757. Physical Metallurgy of Industrial Alloys Credit 3(3-0)

Review of principles of alloying and heat treatment and their application to commercially important alloy systems. Principles of corrosion. Prerequisites: 440-226 and 440-560 or equivalent.

400-759. Prestressed Concrete Theory and Design Credit 3(3-0)

Theory and methods of design for prestressed concrete structures. Material and construction techniques, ultimate-strength design. Prerequisite: 410-455 or equivalent.

400-764. Rheology Credit 3(3-0)

Study of the flow and deformation of matter. A rigorous analysis of the various modes of deformation of matter, space, deformation, strain, stress, strain-rate, creep, non-Newtonion fluids, and plasma flows. Prerequisite: Consent of instructor.

400-767. Structural Dynamics Credit 3(3-0)

A study of structures subjected to dynamic loading. Formulation of mass-lumped and consistent, stiffness and damping matrices. Equivalent structural damping and elastic-plastic effects on response. Prerequisite: 400-644 or equivalent.

400-772. Theory and Design of Digital Systems. Credit 3(3-0)

Digital system concepts of language models, algorithms, manipulative schemes, information structures, and pulse networks. Prerequisite: Consent of instructor.

400-774. Theories of Manufacturing Processes Credit 3(3-0)

Review of metal cutting and forming, material behavior characteristics related to cutting and forming. Metal cutting analysis, mechanics of chip formation, thermal aspects of cutting, prediction of tool wear and tool life. Metal forming analysis, hot-working and cold-working, upper and lower bound solutions, slip line theory, plane strain. Applications to rolling, forging, wire drawing, extrusion, deep drawing and bending. Prerequisite: 440-226 or equivalent.

400-776. Theory of Plasticity Credit 3(3-0)

Basic concepts of plastic deformation, trusses and beams; plane shear theory; axially symmetric problems; torsion, limit analysis, and extremum principles. Prerequisite: 400-672 or equivalent.

400-777. Thesis Credit Variable (1-6)

400-778. Theory of Vibrations Credit 3(3-0)

Vibration analysis of systems with one, two, or multi-degrees of freedom. Instrumentation, continuous systems, computer techniques. Prerequisite: 440-566 or equivalent.

400-779. Advanced Structural Steel Design Credit 3(2-2)

Modern methods and advanced theory applied to the design of steel structures. Project design includes the solution to various types of framed structures. Prerequisites: 410-457 and 410-563 or equivalent.

400-788. Research Credit Variable (1-3)

Advanced research in an area of interest to student and instructor.

400-789. Special Topics Credit Variable (1-3)

Study of advanced topics selected prior to the offering and pertinent to student's programs of study.

SCHOOL OF NURSING

Classroom Instruction

THE SCHOOL OF NURSING

Naomi W. Wynn, *Dean*

The School of Nursing offers a program leading to the Bachelor of Science Degree in Nursing. The first two years of study encompass most courses generally labeled general education. The last two years of study are largely devoted to the Nursing Major.

PHILOSOPHY

The faculty in Nursing subscribe to the beliefs and assumptions related to the system of concepts that describe, explain, and predict man's behavior. We believe that man is a unique human being with certain basic needs; that he is affected, influenced, and changed by his heredity, environment and experiences; that there are variations in intensity and resources which hamper him from time to time in meeting his basic needs.

The faculty believes that education is a continuous process which provides opportunity for the development of the person to his maximum capacity for functioning in a dynamic society and that learning is a continuous modification of behavior through interaction with the environment. The faculty, with student involvement, assumes responsibility for the planning, interpretation, implementation, and evaluation of the educational program.

Nursing education is the systematic and deliberate preparation of an individual to fulfill the role, function, and responsibility of the professional nurse. It provides opportunity for personal growth which helps the learner in humanistic and professional endeavors. In addition, nursing education provides learning experiences which aid the learner in utilizing the problem solving method to meet the present and future nursing needs of society.

The faculty recognizes that nursing and other health professions are affected by the rapid expansion of knowledge and the social factors which influence change in the society. We view our responsibility as a collaborating enterprise to develop and improve the professional nursing roles of the learner, practitioner, collaborator, teacher, and leader.

The practice of professional nursing offers opportunity to make contributions to the welfare of people. As a member of the community health group and a leader of the nursing team, the professional nurse must have knowledge of the methods of critical inquiry and participate in the development of nursing knowledge.

We believe that the person prepared to render professional nursing practice utilizes knowledge and skills in assessing and making judgments to guide the nursing action. We further believe that the person prepared in this program has the foundation to pursue graduate nursing education.

Accreditation:

The program offered by the School of Nursing is accredited by the North Carolina Board of Nursing and the National League For Nursing. The School of Nursing is an agency member of the National League For Nursing in the NLN Council of Baccalaureate and Higher Degree Programs.

Admission

In addition to meeting the admission requirements of the University a prospective student must satisfy the following requirements for admission to the School of Nursing:

1. Have a predicted grade point average of 1.9 on a 4.0 scale based on rank in class, the verbal score and the mathematics score earned on the Scholastic Aptitude Test.
2. Present a satisfactory health record.

A student applying for admission to the nursing major by transfer must meet the same requirements that are met by other transfer students.

All applications for admission to the nursing major must be reviewed and approved by the Dean of the School of Nursing and the Faculty Committee on Admission.

Progression

In order to enter the nursing major as a sophomore and register for Nursing 200 and 201, a student must complete 30 semester hours of required courses during the freshman year with a grade point average of 1.8 on a 4.00 scale.

Nursing courses and the following supporting courses must be taken and passed with a grade of "C" or above during the sophomore year: Human anatomy and Physiology 461, Micro-biology 121, General Psychology 320 and Nutrition and Dietetics 337.

A grade of "C" or above in Nursing 201, 210, 211 is required for enrollment in 300 level nursing courses.

A grade of "C" or above in all 300 level nursing courses is required for enrollment in the 400 level nursing courses.

CURRICULUM

Guide For Nursing Majors

Freshman Year

Course and Number	*Credit Hours*
Freshman Mathematics 101 & 102	6
Ideas and Expressions 100 & 101	6
General Chemistry 104 & 105	6
General Chemistry Lab. 114 & 115	2
General Zoology 160	4
Human Anatomy & Physiology 461	4
Nursing Orientation 100	1
Physical Education 101 & 102	2
or	
Personal Hygiene 200	2

Sophomore Year

Western Civilization 100 & 101	6
Humanities 200 & 201	6
General Psychology 320	3
Principles of Sociology 100	3
Nutrition & Dietetics 337	3
General Microbiology 121	4
Nursing Competency Laboratory 201 & 211	2
Nursing Process (Introduction) 210	4
Historical Perspective of the Nursing Profession 200	1
	32

Junior Year

Psychosocial Needs of Children & Adults 300	5
Pathophysical Needs of Man 310	5
Nursing Competency Laboratory 301 & 311	2
Nursing Practice 302 — 312	8
Speech Fundamentals	2
Abnormal Psychology	3
Electives (Behavioral Sciences)	6
	31

Senior Year

The Pathophysical Needs of Man 400	6
The Sociocultural Needs of Families 410	6
Nursing Practice 401 & 411	12
Nursing Seminar 563	2
Electives	6
	32

COURSES IN NURSING

200. Historical Perspective of the Nursing Profession 1(1-0)

The study of Nursing as a profession and how it has developed. Emphasis is on the cultural, social, economic, and religious factors which promoted nursing to its current status in society.

201. Nursing Competency Laboratory I 1(0-2)

The focus is on development of a personal philosophy of nursing practice. A limited number of psychomotor skills will be introduced to enhance the students self-reliance in health care settings.

210. Introduction to the Nursing Process 4(3-3)

The study of the components of the nursing process with limited experience in assessing and planning nursing care. The student acquires knowledge of man's basic needs and is expected to identify obvious problems and manifestations and plan care in a systematic way for selected patients or clients.

211. Nursing Competency Laboratory II 1(0-2)

The focus is on development of selected basic nursing skills, selected health care terminology, and essential mathematical and measurement skills.

300. The Psychosocial Needs of Children and Adults 5(5-0)

The study of the nature of health and illness. The focus is on the life process from infancy through adolescence within the context of the family and the community.

301. Nursing Competency Laboratory III 1(0-2)

The focus is on acquisition of skills pertinent to ministering care to individuals with developmental problems or problems in crisis situations.

302. Nursing Practice I 4(0-12)

The focus is on the application of the nursing process in identifying needs, planning, nursing intervention, and therapeutic use of self in selected nursing practice settings.

310. The Pathophysical Needs of Man I 5(5-0)

The study of the nature of health and illness with emphasis on the biophysical and psychological spheres.

311. Nursing Competency Laboratory IV. 1(0-2)

The focus is on acquisition of skills pertinent to ministering care to individuals experiencing interferences in the biological and psychological spheres.

312. 4(0-12)

The focus is on the application of the nursing process in situations where interferences occur in the biophysical, psychological spheres. The nursing practice involves assessment, planning, and intervention in roles of learner, practitioner, teacher, and collaborator.

400. The Pathophysical Needs of Man II 6(6-0)

The focus is on acquisition of knowledge related to complex problems of the ill and disabled. Theories of management are included.

401. Nursing Practice III 6(0-18)

Focus is on application of the nursing process in meeting the nursing needs in complex situations and nursing leadership roles.

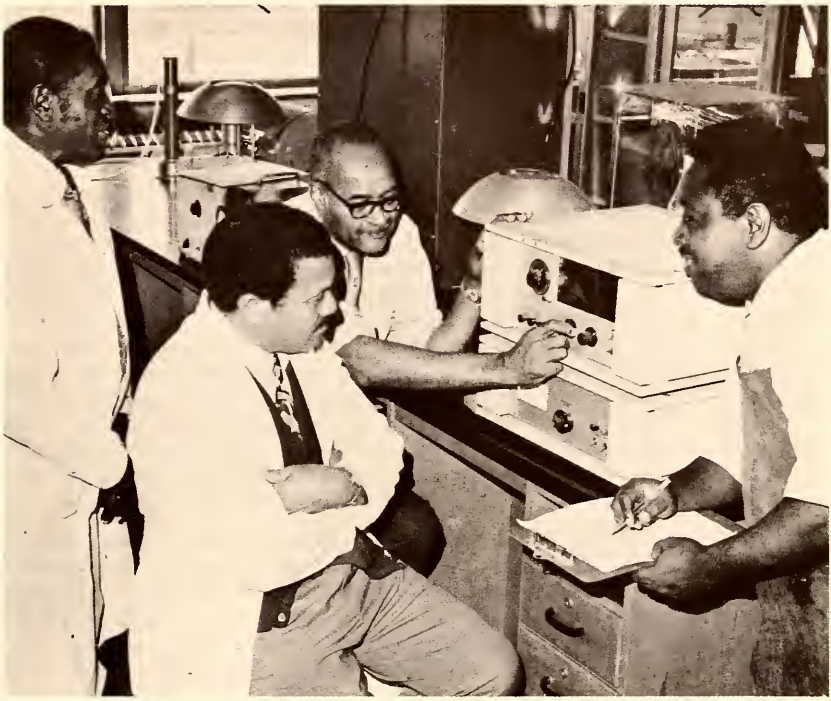
410. The Sociocultural Needs of Families 6(6-0)

Focuses on the life process in man from conception through the postpartum newborn period within the context of the family and the community. Embraces some concepts of the expanded role of the nurse.

411. Nursing Practice IV. 6(0-18)

Focus is on application of the nursing process in meeting the nursing needs of individuals, families, and groups in a variety of situations. Practice activities include greater utilization of research methodology and more opportunity for independent functioning.

THE GRADUATE SCHOOL



Graduate Faculty Members Discussing Research Project

THE GRADUATE SCHOOL

Albert W. Spruill, *Dean*

Graduate education at North Carolina Agricultural and Technical State University was authorized by the North Carolina State Legislature in 1939. The authorization provided for graduate training in agriculture, applied science and allied areas of study. An extension of the graduate program, approved by the General Assembly of North Carolina in 1957, provided for enlargement of the program to include teacher education as well as such other programs of a professional or occupational nature as might be approved by the State Board of Higher Education.

OBJECTIVES OF THE GRADUATE SCHOOL

The Graduate School of North Carolina Agricultural & Technical State University offers advanced study for qualified individuals who wish to improve their competence for careers in professions related to agriculture, applied science, education, science research, technology, the humanities and the social sciences. Such study of information and techniques is provided through courses of study leading to the Master of Science degree and through institutes, workshops, and individual courses designed for those who are not candidates for a higher degree but who desire advanced work in certain fields of study. Second, the Graduate School provides the foundation of knowledge and of techniques required for those who wish to continue their education in doctoral programs at other institutions. Third, the Graduate School assumes the responsibility of stimulating and encouraging scholarly research among students and faculty members.

It is expected that, in the course of their studies, graduate students (1) will have acquired special competence in at least one field of knowledge; (2) will have developed further their ability to think independently and constructively; and (3) will have developed and demonstrated the ability to collect, organize, evaluate, and report facts which will enable them to make a contribution in their field of study.

Degrees Granted

The Graduate School of North Carolina Agricultural and Technical State University offers the Master of Science in the following fields:

1. Agricultural Education
2. Chemistry
3. Education
   - A. Administration
     - (1) Option for principles
     - (2) Option for supervisors
   - B. Audiovisual Media
   - C. Elementary Education
     - (1) Early Childhood Education
     - (2) Elementary Education (general)
     - (3) Intermediate Education
   - D. Secondary Education
     - (1) Art
     - (2) Biology
     - (3) Chemistry

(4) English
(5) French
(6) Guidance or Counselor Education
(7) History
(8) Mathematics
(9) Physical Education
(10) Reading
(11) Science
(12) Social Science

4. Engineering
5. Food and Nutrition
6. Industrial Education
   A. Industrial (Arts) Education
   B. Safety and Driver Education

ADMISSION TO GRADUATE STUDY

All applicants for graduate study must have earned a bachelor's degree from a four-year college. Application forms may be obtained from the office of the Graduate School and must be returned to that office with two transcripts of previous undergraduate and graduate studies. Processing of applications cannot be guaranteed unless they are received, with all supporting documents, in the Graduate Office at least fifteen days before a registration period. Applicants may be admitted to graduate studies unconditionally, provisionally, or as special students.

Unconditional Admission. To qualify for unconditional admission to graduate studies, an applicant must have earned an over-all average of 2.6 on a 4 point system (or 1.6 on a 3 point system) in his undergraduate studies. In addition, a student seeking a degree in Agricultural Education, Industrial Education, or Secondary Education must posses, or be qualified to posses, a Class A Teaching Certificate in the area in which he wishes to concentrate his graduate studies. A student seeking a degree with concentration in Administration and Supervision, Elementary Education, or Guidance must possess, or be qualilied to possess a Class A Teacher Certificate.

Provisional Admission. An applicant may be admitted to graduate studies on a provisional basis if (1) he earned his baccalaureate degree from a noncredited institution or (2) the record of his undergraduate preparation reveals deficiencies that can be removed near the beginning of his graduate study. A student admitted provisionally may be required to pass examinations to demonstrate his knowledge in specified areas, to take special undergraduate courses to improve his background, or to demonstrate his competence for graduate work by earning no grades below "B" in his first nine hours of graduate work at this institution.

Special Students. Students not seeking a graduate degree at A. and T. State University may be admitted in order to take courses for self-improvement or for renewal of teaching certificates. If a student subsequently wishes to pursue a degree program, he must request an evaluation of his record. The Graduate School reserves the right to refuse to accept as credit for a degree program hours which the candidate earned while enrolled as a special student; in no circumstances may the student apply towards a degree program

more than twelve semester hours earned as a special student.

Admission to Candidacy for a Degree. Admission to graduate studies does not guarantee admission to candidacy for a degree. In order to be qualified as a candidate for a degree, a student must have a minimum over-all average of 3.0 in at least nine semester hours of graduate work at the University, must have removed all deficiencies resulting from undergraduate preparation, and must have passed the Qualifying Essay. Some departments require additional qualifying examinations. For details, see the *Graduate School Bulletin.*

Credit Requirements. The minimum course requirements for a graduate degree are thirty semester hours for students in thesis programs and non-thesis programs. It is expected that a student can complete a program by studying full-time for an academic year and a summer or by studying full-time during four nine-week summer sessions. A graduate student normally carries twelve to fifteen semester hours each semester of an academic year. If he is teaching full-time, he may not pursue more than six semester hours during the academic year. During the summer he may not earn more than one hour of credit for each week of residence. A student who does not complete his degree within six successive calendar years may lose credit for hours earned more than six years prior to his application for graduation.

Other Requirements. All students must pass a final comprehensive examination.

Fees. Fees for graduate students are listed in General Information section of this catalogue.

Financial Assistantships. A limited number of assistantships are available. These positions may require teaching, laboratory supervision, research, or general assistance to a department or to a faculty member.

THE GRADUATE SCHOOL BULLETIN

General requirements for the Master's degree, curricula, course descriptions, and other information about graduate study will be found in the *Graduate School Bulletin,* which may be obtained from the Graduate Office.

DEPARTMENT OF MILITARY SCIENCE AND AEROSPACE STUDIES

ROTC Drill Team

DEPARTMENTS OF MILITARY SCIENCE AND AEROSPACE STUDIES

The Reserve Officers' Training Corps (ROTC) at A&T State University consists of those students enrolled for training in the Department of Military Science or in the Department of Aerospace Studies. These Departments are integral academic and administrative subdivisions of the institution. The Senior Army Officer and Senior Air Force Officer assigned to the University are designated as Professor of Military Science (PMS) and Professor of Aerospace Studies (PAS), respectively. These senior officers are responsible to the Department of Defense and the Institutional Coordinator of Military Training for conducting the training and academic programs. Army officers who are assigned to the University as ROTC Instructors are designated Assistant Professors of Military Science; Air Force officers, as Assistant Professors of Aerospace Studies. Noncommissioned officers of the Army are assigned as Assistant Instructors and administrative personnel. Noncommissioned officers of the Air Force are assigned as Specialists, Technicians, and Supervisors in the areas of Administration, Education, Personnel and Supply.

DEPARTMENT OF MILITARY SCIENCE

Lt. Colonel Lawrence A. Lipscomb
Professor of Military Science

The general purpose of the Army Reserve Officers Training Corps (ROTC) program at this institution is to procure and produce junior officers, who through education, attitude, and inherent qualities are suitable for continued development as officers in the United States Army.

OBJECTIVES

The objectives of the ROTC program are:

1. To attract, motivate, and prepare selected students with potential to serve as commissioned officers in the Regular Army or US Army Reserve.
2. To provide an understanding of the fundamental concepts and principles of military art and science.
3. To develop the ability to evaluate situations, to make decisions, to understand people, and practice those attributes considered to be essential in a leader.
4. To develop a basic understanding of associated professional knowledge, a strong sense of personal integrity, honor and individual responsibility.
5. To develop an appreciation of the requirements for national security.

PROGRAMS OF INSTRUCTION

Programs of instruction for the Army ROTC include a four year program and a two year program. The four year program consists of a two year basic course, a two year advanced course and the Advanced ROTC Summer Camp. The two year program includes a Basic ROTC Summer Camp, a two year advanced course and the Advanced ROTC Summer Camp.

BASIC COURSE: The basic course 15 elective for all physically fit male and female students who are not less than 14 years of age and it is normally taken during the freshman and sophomore years. The purpose of this instruction is to introduce the student to basic military subjects: Military History; familiarization with basic weapons, (female students do not have to take this phase of training) equipment and techniques; military organization and functions; and the techniques of leadership and command. It is from the men and women who successfully complete this instruction that the best qualified are selected for the Advanced Course which leads to an Officer's commission.

ADVANCED COURSE: The advance course is designed to produce officers for the Army of the United States, both the active Army and the Reserve. Admission to the Advanced Course is on a best qualified basis. Successful completion of the Advanced Course and completion of academic degree requirements qualified the student or a commission as a Second Lieutenant in one of the following branches of the United States Army Reserve: Adjutant General Corps, Armor, Infantry, Military Intelligence and Security, Field Artillery, Air Defense Artillery, Chemical Corps, Military Police Corps, Ordinance Corps and Quartermaster Corps, Signal Corps, Medical Service Corps.

Flight instruction is offered to students, male and female, in the second year of the Advanced Course. Under this program, the Army will pay for flight training for selected qualified ROTC students. To participate, students must have an aptitude for flying, and meet the required physical qualifications for the program.

Flight training under the ROTC program is given at an airfield near the institution by a civilian flying school which has the approval of the Federal Aviation Agency, Department of the Army, and the University.

Students who successfully complete the program of instruction may qualify to take the FAA examination for a private pilot's license.

All textbooks, flight clothing and equipment required for the program are furnished at no cost to the student. Transportation between the University and airfield is also provided.

TWO YEAR PROGRAM: This program is designed for Junior College students or sophomores at four year institutions who have not taken ROTC. A basic six-week summer training period after the sophomore year takes the place of the basic course required fo students in the traditional foru year program. When a student with two years of college has successfully completed the basic summer training, he is eligible for the Advanced ROTC course in his junior and senior years. The Advanced Course, which leads to an Officer's commission is the same for students in either the four year program or the two year program.

Requirements for enrollment in Basic ROTC:

1. Be a citizen of the United States
2. Be not less than 14 years of age
3. Be physically qualified under standards prescribed by the Department of Army
4. Be a regularly enrolled student of the University
5. Be morally qualified as prescribed by the Department of the Army.

6. Be eligible to qualify for appointment as Second Lieutenant prior to reaching 28 years of age
7. Must sign a loyalty oath for ROTC students

Requirements for enrollment in Advance ROTC:

1. Be a citizen of the United States
2. Be selected by the PMS and the President of the University
3. Enlist in a Reserve Component. Parents or guardians consent is necessary if under age 21.
4. Must sign a contract. Parents or guardians consent is necessary if the applicant is under 21 years of age.
5. Agree to accept a commission if offered and serve for the period prescribed.
6. Successfully complete the first two years of a four year course; or complete a summer camp of at least six weeks duration; or receive credit in lieu of as a result of previous military service.
7. Must satisfactorily comply with loyalty requirements
8. Meet requirements prescribed by the Department of the Army

TRANSFER CREDIT

A student may be allowed transfer credit for military training pursued at the service academies or other institutions with ROTC units. Record of a student's prior military training will be obtained from the institution concerned. A student who has served at least six months of active duty service, or at least one year active duty service in any branch of the Armed Forces may receive credit for part of the basic course, or credit for the entire basic course, respectively.

SELECTIVE SERVICE DEFERMENTS

Basic Army ROTC cadet (freshmen and sophomores) are provided draft deferments through the Army ROTC Department. Under present law, military deferment precludes the student from being drafted as long as he meets the requirement of the University and the ROTC program.

OBLIGATION AFTER COMMISSION

The student who receives commission may be required to serve on active duty for two (2) years and thereafter four (4) years in a reserve status. Selected officers are offered the opportunity to serve their military obligation through participation in the Active Reserve in conjunction with a three to six (3-6) month period of Active Duty for Training (ADT). The recipient of a Regular Army Commission serves a minimum of three (3) years on active duty and three (3) years in a reserve status. ROTC students who complete the Flight Training Program also have a three (3) year active service commitment.

The Officer who elects to pursue a civilian career after his active service, has many opportunities to continue military education while completing his obligation in a reserve status. Service schools are open to the reservist at all

stages of his career. Selected individuals may go to civilian school (i.e., med, law, graduate) at the expense of the Armed Forces while in active duty service, if so a further obligation is incurred.

UNIFORMS AND EQUIPMENT

Uniforms, textbooks, and equipment are provided the student at government expense. A uniform deposit of ten ($10.00) dollars is required of all students at time of registration. The deposit is refunded when complete uniforms are returned. The student is responsible for the care, safeguarding, and cleaning of property issued to him. He is financially responsible for the loss, excessive wear, breakage due to carelessness, or unauthorized use of clothing and equipment.

All ROTC property must be returned to the Military Property Custodian at the end of the school year or when the student withdraws from the program.

CADET WELFARE FUND

All Army ROTC cadets are automatically members of the Cadet Welfare Fund. A membership fee of five ($5.00) dollars is charged payable at initial registration each year to Army ROTC faculty and staff.

FINANCIAL AID

Students enrolled in the Advanced Course are paid subsistence pay (nontaxable) at the rate of $100.00 per month ($8.50 per hour of class).

Students attending the Basic ROTC Summer Camp and the Advanced ROTC Summer Camp are paid at the rates established by the Secretary of the Army. One, two, three, and four year Army ROTC scholarships are available for selected students. Details on scholarships may be obtained from the Department of Military Science, NC A&T State University. All scholarship students receive $100.00 per month subsistence pay. The Army pays tuition, laboratory fees and book costs for scholarship students.

ORGANIZATION OF THE ARMY ROTC

The Army ROTC is organized into an Army ROTC Cadet Battalion. The Battalion consist of a Headquarters Detachment, Company A and Company B. The Drill Team and Bushmasters are part of Company B. These units receive additional training and perform as the honor guard for special ceremonies both on and off campus.

DISTINGUISHED MILITARY GRADUATE (DMG) PROGRAM

This is a competitive program which permits outstanding ROTC students to apply for Regular Army commissions. At the end of the junior year and prior to the Advanced Course summer camp, selected ROTC cadets are identified as potential Distinguished Military Students (DMS). A student who maintains the same high standards throughout summer camp and is subsequently designated a DMG may apply for a Regular Army Commission.

ENROLLMENT IN ROTC

To remain within the ROTC program, the student must be enrolled as a full time student here at the University. Should difficulties be encountered and

the student falls below a 12 hours semester load, the military advisor must be notified prior to dropping any course. Those students not carrying the minimum load of 12 hours, may be dropped from the program.

WOMEN IN ROTC

Army ROTC enrolls female students in the programs. Specific information to females enrolling in ROTC is provided as follows:

a. Branch Selection:

1. It is Army policy to assign each graduating female to a branch after considering her personal preference, academic major, physical qualifications, ROTC training and demonstrated abilities, so far as possible. Women may not be assigned to Infantry Armor, or Field Artillery. Women are not allowed to participate in Airborne or Ranger Training but during the senior year of ROTC, women may enroll in the Flight Instruction Program.

2. Women are encouraged to take math courses or to obtain a "good" background in statistical analysis, which prepares them for a variety of branches (i.e., Air Defense Artillery, Signal Corps, Finance Corps, etc.)

3. Women who desire to be commissioned in the Army Nurse Corps should take the Basic ROTC Courses.

b. Enrollment Age:

1. Female enrollees must have attained 17 years of age. If under 21, they must obtain parental consent unless their state of legal domicile has granted women legal majority at an earlier age. Women must be under 28 years of age to be commissioned through the ROTC program.

c. Scholarships:

1. Same as the information listed under financial aid section.

ACADEMIC ENRICHMENT: AN ROTC REQUIREMENT

ROTC students are required to enroll in an academic enrichment course during each year enrolled within the program. These enrichment courses (electives) are a prerequisite before a commission can be offered.

It is important to understand that these academic enrichment courses are "in addition to those electives required in the students academic major."

Deviations from this requirement are not permitted. Academic enrichment courses selected, must be approved by the students' Military Advisor. Adherence to the above procedure and requirement will be closely monitored.

Requirements for academic enrichment are as listed below:

MS I Two (2) semester hours per year
MS II Two (2) semester hours per year
MS III Three (3) semester hours per year
MS IV Three (3) semester hours per year

GRADUATE STUDIES

An ROTC graduate who receives a reserve commission may delay his active military service to pursue a full time course of instruction leading to an advance degree. The top five (5) per cent of all non-scholarship Distinguished Military Graduates selected for Regular Army may elect, if qualified, to attend Graduate School for a Master Degree in the field of study for which the Army has a valid requirement. Officers in this category will be on active duty with full pay and allowances.

ROTC graduates are assigned positions of responsibility which take full advantage of their college education and leadership training. Officers, especially those who have background in scientific and technical fields, may qualify for graduate study at government expense after they enter active service.

NATIONAL SOCIETY OF THE PERSHING RIFLES

Founded in 1884, by General of the Army, John J. Pershing the society is a military social fraternity committed to the highest ideals of excellence in leadership and manhood.

DRILL TEAM

All basic course students are eligible to compete for participation on the ROTC Drill Team. A unit whose specialities are tricks and fancy drills. The Drill Team conducts demonstrations both on and off the campus throughout the school year.

BUSHMASTERS

The Bushmasters (Counterinsurgency Unit) is an elite group of Army ROTC Cadets, organized to provide training in counterinsurgency operations. This unit consist of all voluntary cadets. Members of this unit must maintain at least a 2.00 grade point average each semester.

THE ASSOCIATION OF THE US ARMY (AUSA)

The Association of the US Army (AUSA) is a non-profit, educational organization whose members, civilian and military, firmly believe that a thoroughly professional Army, supported by the American people, is essential to our national defense. The organization supports every man or woman who wears the Army green—Active, Reserve or National Guard.

SCABBARD AND BLADE

The National Society of Scabbard and Blade was founded 1904. The primary purpose of Scabbard and Blade is to raise the standard of military education in American colleges and universities; to unite in closer relationship their military departments; to encourage the essential qualities of good and efficient officers; and disseminate knowledge of military education to the students and people of the country—acquaint the people with our national defense needs.

COURSES IN MILITARY SCIENCE

FALL SEMESTER

***101. Introduction of the Citizen/Soldier** Credit 1(1-1)

An introduction to the mission, organization, and history of ROTC; Military and civilian obligation in relation to National Security; Individual Arms and Marksmanship Techniques; Emergency Medical Treatment.

SPRING SEMESTER

*102. Introduction to United States Military Forces in Support of National Defense Credit 1(1-1)

A discussion of the mission and responsibilities of the United States Military Forces in support of National Security with emphasis on the role of the individual participating citizen.

FALL SEMESTER

***201. Chronological Events in American Military History** Credit 1(1-1)

A comprehensive survey of American Military from the beginning of the United States Army to the present, with emphasis on the factors which led to the organizational, tactical, logistical, operational, strategical, social and similar patterns found in the present day Army, including the principles of war.

***202. Orienteering and Leadership Development** Credit 1(1-1)

A detailed study of orienteering to include basic fundamentals of map reading, grid systems, scale and distance, elevation and relief, military symbols, direction and location, and utilization of the declination diagram. Emphasis will also be placed on some selected enrichment subjects and evaluation of leadership development and a basic introduction to military term theory.

FALL SEMESTER

***301. Introduction to Military Team Theory** Credit 2(2-2)

Fundamentals to the offensive and defensive tactics. Introduction to small unit communication systems. Internal defense operations. The role of each branch of the Army.

SPRING SEMESTER

***302. Leadership Training** Credit 2(2-2)

Special emphasis on the psychological, physiological, and sociological factors which affect human behavior. Military teaching principles and how they affect the student. Presummer Camp training.

FALL SEMESTER

***401.** Seminars in leadership Management and Professional Development Credit 2(2-2)

The relationship between commander and staff, utilization and employment of military intelligence principles, introduction to unit management and administration, introduction to military law; seminar on service life and career planning for commissioned officers.

SPRING SEMESTER

***402. Advance Military Team Theory and Active Duty Orientation** Credit 2(2-2)

A study of world change and military implications. A detailed study of Army and special type units. Introduction to various Army installations within the United States and abroad.

DEPARTMENT OF AEROSPACE STUDIES

Lt. Colonel Charles E. Summers
Professor of Aerospace Studies

The United States Air Force maintains a permanent Air Force Reserve Officers Training Corps at this institution for the purpose of conducting leadership training, military training, and flight training. The specific objective is to conduct a modern academic program keyed to the development of the Professional Officer. This program is offered in two divisions. The lower division for Freshmen and Sophomores is termed the General Military Course. The upper division, established as the Professional Officer Course, is designed to continue the training of Juniors and Seniors so as to provide a complete four-year officer preparatory program. The entire Aerospace Studies curriculum is designed to commission quality young men and women who are not only educated in the academics of their university, but who have a competency in certain military skills, and a strong motivation for active duty and an Air Force Career.

PROGRAM OF INSTRUCTION

GENERAL MILITARY COURSE(GMC). This course is open to freshmen and sophomores and is designed to provide the student with a basic foundation in the history and development of air power and the organization and mission of the U.S. Air Force. Those students who successfully complete this course are eligible to attend Field Training and to enroll in the Professional Officer Course (discussed below).

FIELD TRAINING. AFROTC Field Training is offered during the summer months at selected Air Force bases throughout the United States. Students in the four-year program participate in four weeks of Field Training during the summer, usually between their sophomore and junior year. The major areas of study in the four-week Field Training program include junior officer training, aircraft and aircrew orientation, career orientation, survival training, base functions and Air Force environment, and physical training.

Students applying for entry into the two-year program must successfully complete six weeks of Field Training prior to enrollment in AFROTC. Application for the two year program must be made during the Fall (or early Spring) Semester of the sophomore year. The major areas of study included in the six-week Field Training program are essentially the same as those conducted at four-week Field Training and in the General Military Course, including Leadership Laboratory.

PROFESSIONAL OFFICER COURSE (POC). Entry into the Professional Officer Course is competitive in nature. Applicants must attain a satisfactory result on the Air Force Officers Qualifying Test, as well as an Air Force medical examination, and be selected by an interview board of Air Force officers. The first year of the POC explores the role of the professional officer in modern society and deals with the formulation and implementation of American defense policy. The final year is a study of management, leadership, and the military law system.

LEADERSHIP LABORATORY. Leadership Laboratory is taken an average of one hour per week throughout the student's four years of enrollment in AFROTC. Two-year program students participate while in the Professional

Officer Course. Instruction is conducted within the framework of an organized cadet corps with a progression of experiences designed to develop each student's leadership potential. Leadership Laboratory involves a study of Air Force customs and courtesies; drill and ceremonies; career opportunities in the Air Force; and the life and work of an Air Force junior officer. Students develop their leadership potential in a practical, supervised laboratory, which typically includes field trips to Air Force installations throughout the U.S.

UNIFORMS AND EQUIPMENT

All regularly enrolled cadets of the Air Force ROTC are furnished cost-free, Air Force ROTC uniforms, equipment, and textbooks. A deposit of ten dollars ($10.00) is required of all cadets at the time of registration as security for clothing and equipment. This fee will be refunded upon return of all items issued. Each cadet is responsible for the maintenance and security of property. All property issued, must be returned at the end of the normal school year or upon withdrawal from school.

TRANSFER CREDIT

Transfer credit is permitted cadets entering the Air Force ROTC, from another advanced ROTC program (Air Force, Army or Navy), at any college, university or academy.

FINANCIAL AID

A subsistance fee of $100.00 per month is paid advanced cadets (Juniors and seniors) during the entire normal academic year while a member of the Air Force ROTC.

Scholarships may be granted for periods of two, three and four years. Details on scholarships will be published by the Department of the Air Force and by the Department of Aerospace Studies, NC A&T State University. All students on scholarship receive $100.00 per month tax-free allowance and the Air Force pays tuition, laboratory fees and book costs.

STRUCTURE OF THE CADET GROUP

The Air Force ROTC Cadet Group, commanded by a Cadet Lieutenant Colonel, consists of three squadrons (nine flights). Within the structure of this group are such special functions as: the Drill Team, the elite Arnold Air Society and Angel Flight.

SPECIAL HONORS

Outstanding performance in the Air Force ROTC Training Program, on the part of certain selected cadets can bestow on them the honor of Distinguished Cadets or Distinguished Graduate. Other honors are the Commandant's Award, the Vice-Commandant's Award, and the Air Force Association Award.

CADET WELFARE FUND

All AFROTC Cadets are members of the Cadet Welfar Fund. A membership fee of $5.00 is charged payable at initial registration each year. These fees are used to defray expenses for various cadet social activities.

AIR FORCE ROTC OFFICERS CLUB

The Cadet Officers Club provides advanced cadets with an opportunity to demonstrate organizational leadership ability and to promote social and cultural activities. Each advanced (POC) cadet is requested to become a member of the club and is obligated to pay club dues. The amount of the dues will be determined by club members each school year.

SELECTIVE SERVICE AND THE AIR FORCE ROTC

Individuals who have registered with Selective Service will be issued a deferment at the time of their enrollment, if they so elect, or at any time thereafter at the cadet's request.

COURSES IN AEROSPACE STUDIES

General Military Course (Basic)

AEROSPACE STUDIES (Courses for Freshmen)

101. U.S. Military Forces in the Contemporary World I. Credit 1(1-0)

A study of the doctrine, mission, and organization of the United States Air Force; U.S. Strategic offensive and defensive forces; their mission and functions; employment of nuclear weapons. (Fall Semester)

102. Leadership Laboratory Credit 0(0-1)

Must be taken in conjunction with A.S. 101.

103. U.S. Military Forces in the Contemporary World II. Credit 1(1-0)

A study of aerospace defense; missile defense; U.S. general purpose and aerospace support forces; the mission, resource, and operation of tactical air forces, with special attention to limited war; review of Army, Navy, and Marine general purpose forces. (Spring Semester)

104. Leadership Laboratory Credit 0(0-1)

Must be taken in conjunction with A.S. 103.

AEROSPACE STUDIES (Course for Sophomores)

201. The Development of Air Power I. Credit 1(1-0)

An introduction to the study of Air Power. The course is developed from a historical perspective starting before the Wright Brothers and continuing through World War II. The text *U.S. Air Power: Ascension to Prominence* describe the development of air power from Kitty Hawk through WW II. (Fall Semester)

202. Leadership Laboratory. Credit 0(0-1)

Must be taken in conjunction with A.S. 201.

203. The Development of Air Power II. Credit 1(1-0)

A study of a quarter century of Air Power begins with the Berlin Airlift and includes major events through Vietnam in 1971. Chapters in the text, *A Quarter Century of Air Power,* were written by various military and civilian Air Force historians specifically for this course. (Spring Semester)

204. Leadership Laboratory Credit 0(0-1)

Must be taken in conjunction with A.S. 203.

Professional Officer Course (Advanced)

AEROSPACE STUDIES (Courses for Juniors)

401. Nat. Security Forces In Contemporary Am. Society I. Credit 3(3-0)

This course is conceptually focused on the Armed Forces as an integral element of society with emphasis on the broad range of American Civil-Military relations and the environmental context in which U.S. defense policy is formulated and implemented. The student will be expected to prepare individual and group presentations for the class, write reports, and otherwise participate in group discussions, seminars, and conferences. (Fall Semester)

402. Leadership Laboratory Credit 0(0-1)

Must be taken in conjunction with A.S. 401.

403. Nat. Security Forces In Contemporary Am. Society II. Credit 3(3-0)

This course is a continuation of AS 401. The student will be expected to use the analytical skills gained in AS 401 to predict the outcome of situations in the world. Special themes include: societal attitudes towards the military; the role of the professional military leader—manager in a democratic society, the fundamental values and socialization processes associated with the Armed Services; the requisites for maintaining adequate national security forces; political, economic and social constraints on the national defense structure. The student will be aware of the impact of technological and international development of strategic preparedness. (Spring Semester)

404. Leadership Laboratory Credit 0(01-)

Must be taken in conjunction with A.S. 403.

AEROSPACE STUDIES (Course for Seniors)

501. The Professional Officer I. Credit 3(3-0)

An integrated management course emphasizing the individual as a manager in an Air Force environment. Individual motivation and behavioral processes, communication, and group dynamics are covered to provide a foundation for the development of the junior officer's professional skills. The basic managerial processes involving decision-making, planning, organizing, and controlling are emphasized. (Fall Semester)

502. Leadership Laboratory Credit 0(0-1)

Must be taken in conjunction with A.S. 502.

503. The Professional Officer II. Credit 3(3-0)

A study of leadership theory and its application to real-world problems. Traces the development of leadership theory and emphasizes the leadership role of Air Force officers. Military justice and administrative law are discussed within the context of the military organization. (Spring Semester)

504. Leadership Laboratory Credit 0(0-1)

Must be taken in conjunction with A. S. 503.

505. Flight Training—Ground School Credit 3(3-0)

Academic instruction devoted to Federal Aviation Regulations, Meteorology, Navigation, Computers, and Radio Navigation. (Required of all Pilot Trainees, open to all other students).

506. Flight Training—Flying Credit 3(3-0)

Flight instruction provided to teach the fundamentals to take-offs, landings, stalls, steep turns, traffic patterns, air discipline, basic flight maneuvers, emergency procedures and cross-country flights. (Required for all Pilot Trainees. Only advanced POC Cadet Pilot Trainees will be offered Flying training at afrotc expense.)

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Ivery, Marilyn, B.A. ..... *Stenographer, Economics*
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May 5, 1974

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BACHELOR OF SCIENCE IN MATHEMATICS EDUCATION

Jimmie Bradley
Dorothy L. Harris
Melvin R. Jackson
Marcus D. Lamberth
Cynthia A. Martin
Rosetta Morrison
Jacqueline C. Smith
Deborah A. Woodard

BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING

Carey Baldwin
*David L. Carmon
Winthrop E. Cottingham
Andrew Davis
Jerome Gilbeaux
‡Fred B. Goodnight
Charles S. Grady
*James G. Hardy
Thomas S. Hicks
†Kwan L. Lee
Bobby H. Miller
Charles D. Miller, Jr.
‡Chukwubike Onubogu
Phillip A. Page
†Michael W. Perry
Kenneth M. Price
*Praful M. Shah
Charlie E. Taylor
James C. Watson
Steven Wilkins

BACHELOR OF SCIENCE IN MUSIC EDUCATION

Beverly L. Bennett
Priscilla A. Blackmon
*Rudolph V. Boone, Jr.
Daniel L. Edwards, Jr.
Asalee D. Mosley
Danniette H. Murray
Larry Pender
Melvin L. Rose
Melvin Rouse
William N. Wells, Jr.

BACHELOR OF SCIENCE IN NURSING

Mary H. Bell
Audrey F. Best
Cecelia D. Bost
Janice Y. Greene
*Bettie W. Herring
Madylin D. Hinton
Patricia L. Scott
Patricia Shelton
Gale E. Simmons

*Cum Laude †Magna Cum Laude ‡Summa Cum Laude

Sandra J. Bristow
Bernadene B. Britt
Beatrice J. Cheek
*Corine Cook
Marietta S. Douglas
Elois J. Garner
Anita W. Gillespie
Sandra Y. Gillins
Mary L. Givens
Joan S. Graham
LaSonia F. James
Judy L. Johnson
Wilhelmenia S. Jordan
Stephanie T. Loadholt
†Ernestine Mann
Dorothy Merritt
†Faith T. Nettles
India Nichols
Mary M. Palin
Diane Roberts
†Erma J. Smith
†Linda F. Strayhorn
*Marjorie Strong
E. Juanella Thaxton
Cecilia E. Uche
Darnice Watt
Antoinette Weaver
†Carolyn D. Wilkes
†Glenda Williams
Anntoiniette L. Young

BACHELOR OF SCIENCE IN OFFICE ADMINISTRATION

Joan M. Alexander
Sandra D. Dunn
Phyllis C. Grimsley
Brenda M. Hinson
Denise E. Hoffler
Toni G. Jones
Priscilla L. Keel

BACHELOR OF SCIENCE IN POLITICAL SCIENCE

James E. Aldridge, Jr.
Willie C. Bethea
†Hazel O. Best
*Quentin Z. Brooks
Robert L. Brooks, Jr.
Asa A. Brown
Gwendolyn C. Burton
William A. Burton, III
Tony J. Cash
*Pamela W. Chandler
*Levi D. Chapman
Silas C. Christian
Daniel A. Coleman
Lovett M. Corley, Jr.
Yvette H. Davis
*Hurley W. Derrickson, Jr.
Vivian A. Diggs
William N. Duke
Jules W. Evans
*James G. Grant
Thomas E. Graves
Willie F. Harrison, Jr.
Richard E. Holton
*John A. Houston
Lawrence B. Hudson
Johnnie Jacobs, Jr.
Clifton G. Johnson
Clarence L. Jones, III
Milton F. Jones
†James C. Lacy
Lemonte Langley
Joseph E. Lindsay, Jr.
George M. Love
Maceo C. Meade, Jr.
*Willie L. Middlebrooks
*Lane W. Miller
Ronald K. Murphy
William B. Neal, III
George M. Parker
Gregory G. Pridgeon
Isaac H. Ramsey, Jr.
*Tercolia Reaves
Deborah O. Rogers
MacArthur C. Sims
Sharon C. Smith
Tyrone L. Stephenson
Kernist T. Stovall, Jr.
†Sandra Stringfield
John O. Taylor
Jerry L. Toms
Keith T. Troutman
Milton H. Waddell
*Floyd D. Weatherspoon
James J. Weaver
*Gregory A. Weeks
Ardrey W. White, Jr.
†Curtis L. White
†Elvira M. White
Beverly J. Whitest
*Wayman A. Williams
Spencer L. Wilson
William E. Wright, III
Napoleon Yarn, Jr.

BACHELOR OF SCIENCE IN PSYCHOLOGY

Dolores J. Armstrong
‡Johnnie M. Blakeney
Barbara L. Brown
Tony J. Cash
Ciesta L. Cato
Lila M. Covington
Wally Q. Crosby
*Gail C. Dickens
Charles E. Drake
Carolyn A. Foster
Annie M. Gerald
Clyde O. Harris
†Jacquelyn L. Harris
*Martha E. Jackson
*Juanita James
Angeline E. Johnson
†Velma M. Lewis
Earlene McKeithan
Theresa R. McLain
Deborah L. Marble
Gilda W. Mendenhall
Melvin D. Murphy
Peggy B. Norman
Aurles U. Pigford
Clarence Ponds
Kaye F. Roberts
John H. Sapp, Jr.
James E. Steadman, Jr.
Cassandra N. Thompson
Gregory F. Thompson
Lucretia A. Wearring
‡Judy K. Wellington
Deborah E. Williams

*Cum Laude †Magna Cum Laude ‡Summa Cum Laude

BACHELOR OF SCIENCE IN RECREATION

Wade A. Blackwell
Kenneth M. Brandon
Carl D. Collins
James E. Cunningham
Richard C. Demerit, Jr.
James D. Draper, Jr.
Bobby Goodwin
Phyllis E. Smith
Phoebe M. Staples
Reginald T. Strickland

BACHELOR OF SCIENCE IN SOCIAL SERVICE

Carolyn D. Battle
Deborah L. Borum
Robert Broadnax, Jr.
Gregory S. Brown
Marilyn A. Burnette
LaVerne Cathey
James L. Correll, II
‡Carolyn J. Cousin
Linda P. Dixon
Linda L. Dumas
*Marion D. Lacewell
Carolyn D. Lang
‡Cynthia M. Lee
*Chauncey B. Melton
Brenda J. Moses
*Betty L. Murray
Deborah J. Peterson
†Annette Smith
Earnest R. Stallings
William Treadwell, Jr.
Iris L. Troxler
Mary E. Tucker
Denise P. Watson
Gloria M. Westmoreland
Donna R. Williams
Patricia D. Williams
Andrea E. Wright

BACHELOR OF SCIENCE IN SOCIOLOGY

Marvin L. Hamilton
Flora Y. McDonald
†Carolyn Pinckney

BACHELOR OF SCIENCE IN SOICAL STUDIES

Jaovelene B. Leak

BACHELOR OF SCIENCE IN SPEECH AND THEATER EDUCATION

Yvonne L. Mitchell
Dorothy Sherman
Phyllis A. Williams

BACHELOR OF SCIENCE IN VOCATIONAL INDUSTRIAL EDUCATION (DRAFTING)

*Larry R. Penn

DEGREES CONFERRED

May 5, 1974

MASTER OF SCIENCE IN AGRICULTURAL EDUCATION

Plummer Fletcher Hardy, Jr., B.S., North Carolina A. and T. State University 1956
Clarence Linwood Pender, B.S., North Carolina A. and T. State University 1968
Felton S. Ray, B.S., North Carolina A. and T. State University 1972
Henry Revell, Jr., B.S., North Carolina A. and T. State University . . 1955
Bobby Gene Spencer, B.S., North Carolina A. and T. State University. . 1963
Clinton Kaye Turner, B.S., North Carolina A. and T. State University. . 1967

MASTER OF SCIENCE IN ENGINEERING

Anil G. Bhadsavle, B.S., Indiana Institute of Technology 1972
Benny Lee Elliott, Jr., B.S., Spring Garden College 1971
David Alan Grider, B.S., Kansas State University 1968
Irvin Manuel Hodge, B.S., North Carolina A. and T. State University. . 1970

*Cum Laude †Magna Cum Laude ‡Summa Cum Laude

MASTER OF SCIENCE IN FOOD AND NUTRITION

Mary Lester Hampton, B.S., North Carolina A. and T. State University. 1958
Wilda D. Wade, B.S., North Carolina A. and T. State University 1967

MASTER OF SCIENCE IN INDUSTRIAL EDUCATION

Johnnie Lee Gripper, B.S., North Carolina A. and T. State University. . 1967
Frank Jeffries, Jr., B.S., Tuskegee Institute 1955
Ellis Eugene Lawrence, B.S., North Carolina A. and T. State University 1971
Guy L. Loftin, Jr., B.S., North Carolina A. and T. State University . . 1969
Theodore Alexander Orr, Jr., B.S., High Point College 1952
Kenneth Eugene Page, B.S., North Carolina A. and T. State University. 1970
Bobby Robertson, B.S., Maryland State College 1957

MASTER OF SCIENCE IN INDUSTRIAL EDUCATION SAFETY AND DRIVER EDUCATION

William Michael Wiggins, B.S., Norfolk State College 1967

MASTER OF SCIENCE IN EDUCATION ADMINISTRATION

Robert Eugene Boles, B.S., High Point College 1961
Harold Jones Benson, B.S., Benedict College 1960
Floyd William Caldwell, Jr., B.S., Fayetteville State University 1950
Elon Saunders Cook, B.S., High Point College 1956
Reuben Dixon, B.S., Winston-Salem State University 1957
James Edward Dunn, A.B., Elon College 1965
Walter W. Farabee, Jr., B.S., Hampton Institute 1960
Linwood Faulcon, B.S., Winston-Salem State University 1965
Leon Franklin Goolsby, B.S., North Carolina A. and T. State University 1966
Romie Lee Grantham, B.S., Shaw University 1956
Richard James Harris, II, B.S., Livingstone College 1953
Freddie Roscoe Johnson, B.S., Elizabeth City State University 1959
Daniel Jolly, B.S., Livingstone College 1958
Samuel Robert Kennington, B.A., East Carolina University 1969
LaVerne Madison, B.S., North Carolina A. and T. State University . . 1962
Owen Bryant Martin, B.S., Winston-Salem State University 1950
Joby Wayne Mathews, B.A., Wake Forest University 1963
Liborio Picart-Curet, B.S., Campbell College 1972
Dorothy Tatum Richmond, B.S., North Carolina A. and T. State University 1961
James Arthur Rousseau, B.S., Knoxville College 1962
Hasan Ahmal Siddiqi, B.S., University of Karachi-Pakistan 1965
John Linwood Simmons, B.S., Elizabeth City State University 1962
John William Thompson, B.S., Livingstone College 1966
Gilbert Walston, B.S., Fayetteville State University 1962
Timothy Watson, Jr., Allen University 1964
William Henry Whitaker, B.S., North Carolina A. and T. State University 1961

BIOLOGY

Ella Rose Abram, B.S., Barber-Scotia College 1967
Alice V. Bowens, B.S., Albany State College 1963
Donald Garrett Brandon, B.S., North Carolina A. and T. State University 1971
Odis Alexander Carmon, B.S., North Carolina A. and T. State University 1971
Luvenia Turner Chaivs, B.S., Bennett College 1960
Elvertta Fleming Coker, B.S., Voorhees College 1968
George B. Edwards, B.S., South Carolina State College 1964
Frederick Windfield Fowler, B.S., Benedict College 1963
Veda Faye Patrick Gardner, B.S., Bennett College 1970
Edward Charlie Garner, B.S., North Carolina A. and T. State University 1972
Ruthie M. Gause Green, B.S., South Carolina State College 1967
Dennis Wayne Hairston, B.S., North Carolina A. and T. State University 1969
Thomas Max Holland, Jr., University of Southern California 1963
James Willie Jacobs, B.S., Morris College 1960
Flora Page Jenkins, B.S., Morris College 1965
Dorothy Gooch Lee, B.S., North Carolina A. and T. State University ... 1964
D'jaris Ann Ragland Moore, B.S., Bennett College 1969
Annie Alexander Owens, B.S., Livingstone College 1967
James Douglass Shell, A.B., Johnson C. Smith University 1959
Claude Tidwell, B.S., South Carolina State College 1964
Elizabeth Patterson White, B.S., Bennett College 1970
James Russell Williams, B.S., Fayetteville State University 1966

CHEMISTRY

Arthur R. Klingerman, B.S., Valparaiso University 1953
Bruce Vernon White, Jr., B.S., Rust College 1962

EARLY CHILDHOOD EDUCATION

Cecelia McLeod Boykin, B.S., Barber Scotia College 1954
Cynthia Congleton Drayton, B.S., North Carolina State University 1971
Sarah Lee Brooks Gamble, B.S., Bethune Cookman College 1951
Martha Hairston Johnson, B.S., North arolina A. and T. State University 1955
Helen Jessup Howell, B.S., North Carolina A. and T. State University .. 1971
Vivian Marie Schenck, B.S., Barber-Scotia College 1963

ELEMENTARY EDUCATION

Edna Rubina Benson, B.S., Allen University 1964
Thomas Edward Bolden, B.S., Winston-Salem State University 1961
Fannie Little Fountain, B.S., Morgan State College 1948
Gracie Mae Freeman, B.S., Allen University 1964
Dallis Estella Gibson, B.S., Benedict College 1964
Clara McClinton Hauser, B.S., Winston-Salem State University 1964
Lucious E. Jones, B.S., Benedict College 1966
Annie Lee McNair McLean, B.S., Winston-Salem State University 1956
Natalie Louise Mitchell, B.S., Shaw University 1969
Annie Singletary Searles, B.S., Allen University 1957

Gloria Hester Smith, B.S., Winston-Salem State University 1965
Margie Jean Henderson Smith, B.S., Fayetteville State University 1960
Linda Carol Triplin, B.S., Bennett College 1970

INTERMEDIATE EDUCATION

Phillis Kimbrough Baldwin, B.S., Winston-Salem State University 1970
Dexter Stephens, B.S., Winston-Salem State University 1962

ENGLISH

Mark Donald Campbell, B.S., North Carolina A. and T. State University 1970
Delois Brown Cottingham, B.S., North Carolina A. and T. State University 1973

GUIDANCE

Daniel Bell, B.A., North Carolina Central University 1972
Brenda G. Best, B.S., North Carolina A. and T. State University 1973
Shelia Leonia Bowles, B.S., North Carolina A. and T. State University.. 1970
Norman Brinkley, Jr., North Carolina A. and T. State University 1954
Paul E. Brown, B.S., North Carolina A. and T. State University 1971
Esther Vandora Campbell, A.B., Johnson C. Smith University 1965
Patricia Ann Chalmers, B.S., North Carolina A. and T. State University 1970
James Robert Chambers, B.S., North Carolina Central University 1960
Odell Delano Clanton, Jr., B.S., North Carolina A. and T. State University 1972
Charlie Lee Clifton, B.S., Winston-Salem State University 1955
Calvin Coolidge Crawford, B.S., Morehouse College 1951
James Calvin Crawford, B.S., Winston-Salem State University 1968
Shirley Williams Dunlap, B.S., Winston-Salem State University 1962
Michael Louis Farrow, B.S., North Carolina A. and T. State University 1971
Mary Leak Ferguson, B.S., North Carolina A. and T. State University .. 1971
Yvonne Clemontyne George, B.S., North Carolina A. and T. State University 1968
Marie Crews Harris, B.S., The University of North Carolina at Greensboro 1971
Argertha Nevora Jackson, B.S., North Carolina A. and T. State University 1958
Gladys L. Dodd Jones, B.S., North Carolina A. and T. State University 1953
Madeline Knight Jones, A.B., Livingstone College 1961
Nellie F. Jones, B.S., North Carolina A. and T. State University 1966
Lokie Kee, Jr., B.S., North Carolina A. and T. State University 1964
Vivian Beatrice Logan, B.S., North Carolina A. and T. State University 1972
Rosa Best McGowan, B.S., North Carolina Central University 1972
William Theodore McNeil, B.S., North Carolina A. and T. State University 1972
William Madrey, Jr., B.S., Elizabeth City State University 1964
Daisy Daniels Meachem, B.S., North Carolina A. and T. State University 1950
Glenda Thompson Mitchem, B.S., North Carolina A. and T. State University 1971

Gerald R. Morgan, B.S., North Carolina A. and T. State University 1971
Evelyn Muldrow, B.S., Allen University 1970
Deborah Iristine Newsome, B.A., Defiance College 1972
Henry Perry, A.B., Agricultural Mechanical and Normal College 1965
Willie L. Pinkney, B.S., Winston-Salem State University 1972
Willie Roosevelt Pollard, B.S., Prairie View A. and M. College 1967
Johnny Evans Poole, B.S., Winston-Salem State University 1970
Robert Jefferson Rush, B.S., Livingstone College 1956
Voulynne Brazalia Small, B.S., North Carolina A. and T. State University 1971
Clarence Hill Smith, Jr., B.S., North Carolina A. and T. State University 1971
Norma Jene Sutton, B.S., North Carolina A. and T. State University ... 1972
Gloria M. Swann, B.S., North Carolina A. and T. State University 1951
Madie Joyce Torrence, B.A., Bennett College 1965
Charlie Williams, Jr., B.S., North Carolina A. and T. State University .. 1969
Thelma Louise Williams, B.S., North Carolina A. and T. State University 1972
Margie Elaine Young, B.A., Bennett College 1972

HISTORY

Walter A. Brown, B.S., North Carolina A. and T. State University 1970
Sandra Stafford Carpenter, B.A., North Carolina Central University ... 1966
Mary Hines Griffin, B.S., North Carolina A. and T. State University ... 1971
Fred A. Lloyd, B.S., North Carolina A. and T. State University 1971
Franklin Carlwell Reaves, B.S., Fayetteville State University 1967
Earl Edward Short, B.S., Elon College 1950

MATHEMATICS

Donald Lowell Bailey, Sr., B.S., St. Augustine's College 1952
John Foust, Jr., B.S., Shaw University 1969
Baxter Doyce Holman, Jr., North Carolina Central University 1959

PHYSICAL EDUCATION

Elwood Bertis Baker, B.S., Pembroke State University 1967
Charlie Belvin, B.S., Saint Augustine's College 1968
Sandy Ray Gann, B.S., Guilford College 1966
Coleen Greathel McCullough, B.S., North Carolina A. and T. State University 1956
Luther Harrison Smith, Jr., B.S., Georgia Southern College 1969
Howard Nathaniel Walker, Jr., B.S., North Carolina A. and T. State University 1963
William Hannah Whites, B.S., North Carolina A. and T. State University 1963
James E. Wilkins, B.S., Fayetteville State University 1972

READING

Frances L. Bliss, B.S., Oakwood College 1948
Barbara Jones Cook, B.S., Winston-Salem State University 1969
Virginia Anne Harper, B.S., North Carolina A. and T. State University 1955
Teresa Long Knight, B.S., Virginia Union University 1968
Annie R. Moore, B.S., Morris College 1958

Lolita Cannon Page, B.S., North Carolina A. and T. State University .. 1971
Mildred Yvonne Reed, B.S., North Carolina A. and T. State University.. 1972
Lalor Armstrong Smith, B.S., Winston-Salem State University 1966
Genevieve Laverne Williams, B.A., Bennett College 1966

SOCIAL SCIENCE

William Edward Banks, B.S., Saint Augustine's College 1953
Dariel Leroy Burchfield, B.G.E., University of Nebraska at Omaha 1958
Loren Charles Davis, B.A., Western Carolina University 1969
Paul James Glenn, B.S., Morris College 1954
Mary Gilchrist Leazer, A.B., Livingstone College 1949

HONORARY DEGREES

DOCTOR OF HUMANE LETTERS

John H. Johnson

DOCTOR OF LAWS

Russell Mawby

COMMISSIONED AS SECOND LIEUTENANTS IN THE UNITED STATES AIR FORCE

Cadet Commissioned June 6, 1973

Robert O. Thornton, II, *Supply Officer*

Cadet Commissioned July 21, 1973

Milton R. Robinson, *Administrative Management Officer*

Cadets Commissioned December 19, 1973

Garry L. Cooper, *Pilot*
Oscar Harts, Jr., *Pilot*
John O. Taylor, *Missile Launch Officer*

Cadets Commissioned May 5, 1974

Carey Baldwin, *Missile Launch Officer*
*William B. Bradford, *Pilot*
William L. Brown, *Personnel Officer*
Harvey V. Bush, *Navigator*
Larry D. Cannon, *Pilot*
James A. Caraway, *Pilot*

*Distinguished Military Graduates

*Gaylord K. Carlton, *Pilot*
Tony J. Cash, *Administrative Management Officer*
Levi D. Chapman, *Pilot*
Silas C. Christian, *Pilot*
Preston L. Cottman, *Missile Launch Officer*
Ernest L. Davis, *Pilot*
Michael J. Davis, *Pilot*
Steven T. Dudley, *Pilot*
Ralph E. Ervin, *Accounting & Finance Officer*
Cynthia A. Fleming, *Munitions Officer*
Thomas E. Graves, *Pilot*
Alexandre D. Hilliard, *Security Police Officer*
Veronica Johnson, *Munitions Officer*
James E. Kinsey, *Navigator*
Marvin L. Lamberth, *Pilot*
Howard L. Linyear, *Procurement Officer*
Leon Mayo, *Administrative Management Officer*
Theresa R. McLain, *Personnel Officer*
Sterling O. McLughlin, *Missile Launch Officer*
*Clarence Ponds, *Pilot*
Deborah O. Rogers, *Air Traffic Controller*
William H. Smith, *Missile Launch Officer*
*Kernist T. Stovall, *Officer of Special Investigations*
*Milton H. Waddell, *Pilot*
*Edwin Watkins, *Pilot*
James W. Younge, III, *Pilot*

COMMISSIONED AS SECOND LIEUTENANTS IN THE UNITED STATES ARMY

UNITED STATES ARMY RESERVE APPOINTMENT AND BRANCH

Cadet Commissioned July 20, 1973

Melvin Parker, *Field Artillery*

Cadets Commissioned May 5, 1974

*Willie C. Bethea, *Signal Corps*
*Rudolph V. Boone, Jr., *Air Defense Artillery*
*Thomas E. Brown, *Corp of Engineer*
James L. Correll, II, *Quartermaster*
Ronald M. Gay, *Field Artillery*
*John A. Houston, *Transportation Corps*
Robert E. Johnson, *Medical Service Corps*
Robert E. Jones, *Air Defense Artillery*
Larry E. McMillian, *Signal Corps*
*George M. Parker, *Infantry*
*Ronald S. Powell, *Adjutant General Corps*
*Bruce T. Tyson, *Finance Corps*
Franklin L. Varnedoe, *Infantry*

REGULAR ARMY APPOINTMENT AND BRANCH

Cadet Commissioned May 5, 1974

*William B. Neal, III, *Infantry*

RECOGNITIONS AND AWARDS

The Merrick Award to the graduating senior for all-round excellence in Industrial Arts.

Samuel Edward Crowder, Jr.

The Saslow's Incorporated Medal Award to the graduating senior with the best record in the Social Sciences.

Carolyn Jean Cousin

The Saslow's Incorporated Medal Award to the graduating senior with the best record in the School of Arts and Sciences.

Janice Evon Smith

The Florence Nightingale Award given by the Women's Auxiliary to the Greensboro Medical, Dental and Pharmaceutical Society to the most promising junior in the School of Nursing.

Janice M. Williams

The Elihue A. Barden Award to the Mechanical Engineering Student in the junior class, maintaining the highest scholastic average and who exemplifies high moral character.

This award was established by his widow.

Janet Rowena Barden

LOU DONALDSON AWARD-for excellence in instrumental music.

William N. Wells, Jr.

The Band Awards for Four Years of Meritorious Service in the University Band.

Malinda Allen
Matthew Atkinson
Beverly Bennett
Rudolph V. Boone, Jr.
Barry W. Garrett
Alford Johnson
Cynthia Martin
Gwendolyn S. Robinson
William N. Wells, Jr.

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*Distinguished Military Graduate

Certificates of Merit for Service in the James B. Dudley Chapter of the Student National Education Association.

Ruth D. Allen
Mayola Barrow
Lorraine H. Foddrell
Betty Holeman
Mary Mack
Delores Mitchell
Belinda Shaw
Mattie S. Shepard
Myrtle N. Solomon
Lloyd Stiles
George Towns

Gate City Chapter Scholastic Award for the graduating high school senior in the Gate City Area.

Howard T. Moore

Philadelphia Chapter, Alumni Association Trophy Award to the Most Outstanding Athlete of the Year.

Daniel Coleman

Four Years of Meritorious Service in the University Choir.

Priscilla Blackmon
Asalee Mosley
Bernice Nelson

Three Years of Meritorious Service in the University Choir.

Gloria Hinson
Dirk Thomas
Linda Thomas

Distinguished Service Award for Four Years in the Fellowship Gospel Choir.

Patricia A. B. Alston
Annie Courtney
Charles Edward Drake
Frances Driver
Sybella Vone Ferguson
James G. Grant
Betty Jean Holeman
Delores Mitchell
Frederick P. Quick, II
Lloyd Ray Stiles

Honorable Mention Award for Service in the Fellowship Gospel Choir.

Dorothy Elizabeth Alston
Louis William Brown
Tony Jiroid Cash
Mary Louise Givens
Willie L. Middlebrooks, Jr.
Mattie Shyann Shepard
Denise P. Watson
Antoinette L. Young

Meritorious Service Award in Religious Activities Other Than the Fellow-Gospel Choir.

Josetta Delores Lowe
Laura Laevenia Dupree
Cassandra E. Wynn

Certificates awarded to Graduating Seniors Who Successfully Completed the Cooperative Education Program.

Carey Baldwin
Reginald Booker
Edith Glendora Brown
Thomas Earl Brown
Stephanie April Carter
Kenneth Jerome Crawford
Cornelius M. Hinton
Letitia B. Johnson
Jean I. Lucas
Raymond McCoy
Wyman McCoy
Phillip A. Page
James Edward Patten
Kenneth Melvin Price
Jerome Sims
Alan B. Underwood

NATIONAL SCHOLASTIC PRESS ASSOCIATION AWARDS FOR HIGH JOURNALIST ACHIEVEMENT

THE STAR—for superior service to the A&T State University Register, a twice weekly publication with a First Class rating in the National Critical Service of the Associated Collegiate Press.

Janice Smith
Marjorie Strong
Cassandra Wynn

EDITORS AWARD—for experienced, dedicated, competent workmanship to the Register.

Blannie Bowen
Michael Braye
Robert Brooks
Betty Holeman
Gregory Phillips
Rosie Stevens
Lance Van Landingham

JOURNEYMAN AWARD—for second-year staff members who show skill and craftmanship in their work for the Register.

Patricia Everett
Mary Faison
Doris Forbes
Phyllis Mittman
Ted Mangum
Yvonne McDonald

CUB AWARD—for first-year staff members who showed exceptional dedication to the Register.

Yvonne Anders
Mary Cropps
Jacqueline Dunn
Benjamin Forbes
Bennie Glover
Michael Hailey
Walter Lowe
Romeo Morrisey
Johnny Rogers
Howard Russell
Cynthia Shipley
June Smith
Nepolia Smith
Floyd Weatherspoon

SERVICE AWARD—for recognition of service rendered.

Ruth Allen
Rose Artis
Dexter Battle
Carlese Blackwell
Nancy Chadwick
Linda Cooper
Debra Daniels
Carol Evans
Brinkley Faulcon
Willie Ferguson
Dorothy Freeman
Geraldine Gill
Patricia Ingram
Earl Jones
John Kearns
Mary LeGrand
Calvin Lowe
Dorothy McLaughlin
Sandra Midgett
Delores Mitchell
Brenda Olds
Ronald Penny
Hilda Pennix
Phyllis Richmond
Andrew Small
Cathy Smith
Rosalind Speight
Coker Stewart
Edward Thomas
Gaynell Thomas
Darnell Williams
Cassandra Wright

ALUMNI ASSOCIATION AWARDS for outstanding service with Future Alumni Activities Committee.

Randolph Blue (2 years)
Quentin Brooks (4 years)
Dwight Brower (2 years)
Pamela Chandler (2 years)
James Grant (2 years)
Waymon Williams (2 years)

GRADUATING SENIORS HOLDING MEMBERSHIPS IN HONOR SOCIEITIES

ALPHA CHI NATIONAL SCHOLARSHIP HONOR SOCIETY

Margaret Adedeji
Rose M. Alexander
Ruth Allen
Dorothy Alston
Bobby Belfield
Hazel Best
Johnnie Blakeney
Joan Boykin
Millicent Brister
Quentin Brooks
William Brown
Carol Cherry
Carolyn Cousin
James J. Davis
Sandra Dudley
Sybella Ferguson
James Grant
Lemuel Hinton
Lloyd Inman
Martha Jackson
Mary E. Jenkins
Lorna Lawrence
Velma Lewis
Flora McDonald
Mary Mack
Delores Mitchell
Frank Morris
Sandra Richardson
Belinda Shaw
Annette Smith
Virginia Smith
Howard Snipes
Myrtle Solomon
Lloyd Stiles
Norma Sutton
Alice D. Williams
Claudia Young

ALPHA KAPPA MU HONOR SOCIETY

Ruth Allen
Dorothy Alston
Bobby Belfield
Johnnie Blackney
Millicent Brister
William Brown
Carolyn Cherry
Carolyn Cousin
Sandra Dudley
Sybella Ferguson
Jacqueline Harris
Betty Herring
Betty Holeman
Lloyd Inman
Letitia Johnson
Lorna Lawrence
Cynthia Lee
Delores Mitchell
Sandra Richardson
Belinda Shaw
Kathyrn Skeens
Annette Smith
Erma Smith
Janice Smith
Rosaline Speight
Lloyd Stiles
Norma Sutton
Judy Wellington
Carolyn Wilkes

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Haywood L. Brown
Brenda C. Foster

KAPPA DELTA PI HONOR SOCIETY IN EDUCATION

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Ruth D. Allen
Connie Baggett
Mayola Barrow
Daniel Bell
Rudolph V. Boone, Jr.
Evelyn C. Boyette
Joan Boykin
Johnnie S. Brown
Nell Burwell
Carol Cherry
Linda Cooper
Marilyn Davis
Vivian Ewards
Yvonne George
Betty Holeman
Dannette Ingram
Lloyd Inman
Marcus Lambert
Mary Mack
Delores Mitchell
Deborah Newsome
Cora Perkins
Pamela A. Price
Phyllis Sanders
Belinda Shaw
Yvonne Simpson
Janice E. Smith
John Smith
Myrtle Soloman
Lloyd Stiles
Sabra E. Walston
Cassandra Wynn

PHI ALPHA THETA INTERNATIONAL HONOR SOCIETY IN HISTORY

Bobby Belfield
Betty Holeman
Yvonne Simpson
Winston O. Watson

I OMEGA PI NATIONAL HONOR SOCIETY IN BUSINESS TEACHER EDUCATION

Mayola Barrow
Jacqueline Briscoe
Vicki Henderson
Myrna Hines
Joseph Horton
Dannette Ingram
Sabra Walston Mazyck
Rosa Lee Perry
Joyce Quick
Mattie S. Shepard
Judy Webb

ENROLLMENT BY COUNTIES IN NORTH CAROLINA

1973-74

Alamance	67	Jones	20
Alexander	1	Lee	26
Anson	30	Lenoir	49
Beaufort	11	Lincoln	9
Bertie	10	McDowell	1
Bladen	35	Martin	37
Brunswick	19	Mecklenburg	115
Buncombe	35	Montgomery	18
Burke	4	Moore	46
Cabarrus	40	Nash	34
Caldwell	18	New Hanover	25
Carteret	14	Northampton	62
Caswell	27	Onslow	30
Catawba	8	Orange	27
Chatham	37	Pamlico	20
Cherokee	1	Pasquotank	8
Chowan	6	Pender	28
Cleveland	22	Perquimans	3
Columbus	58	Person	41
Craven	46	Pitt	103
Cumberland	117	Polk	1
Currituck	2	Randolph	26
Davidson	37	Richmond	50
Davie	3	Robeson	50
Duplin	40	Rockingham	84
Durham	133	Rowan	53
Edgecombe	57	Rutherford	9
Forsyth	185	Sampson	61
Franklin	44	Scotland	44
Gaston	56	Stanly	20
Gates	12	Stokes	6
Graham	1	Surry	7
Granville	30	Tyrrell	3
Greene	11	Union	18
Guilford	1089	Vance	29
Halifax	74	Wake	119
Harnett	20	Warren	34
Haywood	3	Washington	8

Henderson	6	Wayne	83
Hertford	39	Wilkes	5
Hoke	20	Wilson	47
Hyde	4	Yadkin	1
Iredell	16		
Jackson	1		
Johnston	23	TOTAL	3972

SUMMARY OF ENROLLMENT

1973-74

Senior Class	913	Special Students	38
Junior Class	1103	Graduate Students	600
Sophomore Class	958		
Freshman Class	1139	TOTAL	4751

Total Enrollment, Excluding duplicates, Regular Session 1973-74	4751
Summer Sssion, Undergraduates, 1974	1951
Summer Session, Graduate Students, 1974	911
GRAND TOTAL 1973-74	7613

ENROLLMENT BY STATES

1973-74

Alabama	4	Virginia	119
Arkansas	1	West Virginia	1
California	2	Wisconsin	4
Colorado	1	Wyoming	1
Connecticut	21	Territories	1
Delaware	9		
District of Columbia	52		
Florida	27	FOREIGN STUDENTS	
Georgia	35	Bahama	1
Illinois	5	Burmuda	1
Indiana	2	Ethiopia	4
Kentucky	2	Ghana	6
Maryland	41	Hong Kong	7
Massachusetts	2	India	6
Michigan	5	Iran	2
Minnesota	4	Jamaica	6
New Hampshire	1	Liberia	2
New Jersey	71	Pakistan	1
New York	72	Nigeria	10
North Carolina	3972	Sierra Leone	3
Ohio	5		
Pennsylvania	70		
Rhode Island	2		
South Carolina	165		
Tennessee	5	TOTAL	4751

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