CAUTION: The course offerings and requirements of the University are continually under examination and revision. This catalog presents the offerings and requirements in effect at the time of publication, but is no guarantee that they will not be changed or revoked. Current information may be obtained from the following sources:

Admission Requirements —Director of Admissions
Course Offerings —Department offering course
Degree Requirements —Office of the Registrar, faculty adviser, head of major department, College Advising Center, or dean of college/school
Fees and Tuition —Office of the Treasurer

EEO/TITLE IX/SECTION 504 STATEMENT
The University of Tennessee, Knoxville does not discriminate on the basis of race, sex, color, religion, national origin, age, handicap, or veteran status in provision of educational opportunities or employment opportunities and benefits.
UTK does not discriminate on the basis of sex or handicap in the education programs and activities which it operates, pursuant to the requirements of Title IX of the Education Amendments of 1972, Pub. L. 92-318; and Section 504 of the Rehabilitation Act of 1973, Pub. L. 93-112; respectively. This policy extends to both employment by and admission to the University.
Inquiries concerning Title IX and Section 504 should be directed to the Office of the Vice Chancellor for Planning and Administration, 525 Andy Holt Tower, 974-4391. Charges of violation of the above policy should also be directed to the Office of the Vice Chancellor for Planning and Administration.
Contents

Calendar for 1978-79 and 1979-80 4, 5
Knoxville Administration 6
Board of Trustees 7
University Administration 8

The University
Programs of Study 9
Colleges and Schools 9
Map of Knoxville Campus 10
Faculty 12
Physical Facilities 13
Historical Background 13

Academic Policies and Costs
Admission to the University 14
Academic Regulations 24
Degree Requirements 27
Fees and Expenses 29
Housing 31
Student Financial Aid 31
Scholarships and Grants 31
Student Loans 32
Student Employment 33
Honors and Awards 36
Campus Honorary and Professional Fraternities 38

Student Affairs and Services
Vice Chancellor for Student Affairs
Office 39
Career Planning and Placement Service 39
Admissions and Records Office 39
Student Activities Office 39
Student Conduct and Orientation Office 40
International Student Affairs Office 40
University Center 40
Office of Recreation 40
Aquatics 41
Student Activities 41
Student Health Service 42
Student Counseling Services Center 42
Student Rights and Responsibilities 42
Religious Influences 42
Student Organizations 42
Social Fraternities and Sororities 42
Ombudsman Office 43
Hearing and Speech Services 43
Vehicle Operation and Parking 43
Cultural Opportunities 43
Athletics 44
Student Publications 44
Traditions 45
Memorial Research Center and Hospital 45
University Publications 45
Learning Research Center 45
University of Tennessee Press 45

Colleges, Schools, and Other Academic Units
The Graduate School 46
Graduate School of Biomedical Sciences 49
Graduate School of Library and Information Science 50
Graduate School of Planning 51
Graduate School of Social Work 52
Space Institute 53
Water Resources Development 54
Institute of Agriculture 55
College of Agriculture 56
College of Veterinary Medicine 70
School of Architecture 74
College of Business Administration 81
College of Communications 97
Division of Continuing Education, Knoxville 102
Division of Continuing Education 245
Air Force Aerospace Studies 242
Military Science 243
University Library 247
Public Service 249
General Summary 251
Index 253
Academic Calendar for 1978-79

Summer Quarter 1978
- June 14: Orientation (Transfer)
- June 15: Orientation (Freshman)
- June 15-16: Registration, First or All Terms
- June 19: Classes Begin
- July 4: Independence Day (No Classes)
- July 6: Drop Deadline, (First Term)
- July 20: Classes End, First Term
- July 19-21: Registration, Second Term
- July 24: Classes Begin, Second Term
- July 24: Drop Deadline, Full Term
- August 10: Drop Deadline, Second Term
- August 23: Classes End
- August 25: Commencement

Fall Quarter 1978
- September 15: Orientation (Transfer)
- September 18: Orientation (Freshman)
- September 18-19: Upperclassmen & Graduate Registration
- September 19-20: Freshman and Transfer Registration
- September 21: Classes Begin
- October 25: Drop Deadline
- October 27: East Tenn. Educ. Assoc. (No Classes)
- November 18: Homecoming (No Classes)
- November 23-25: Thanksgiving (No Classes)
- December 5: Classes End
- December 8: Commencement

Winter Quarter 1979
- January 3: Orientation (Transfer & Freshman)
- January 3-4: Registration
- January 5: Classes Begin
- February 8: Drop Deadline
- March 15: Classes End
- March 19: Commencement

Spring Quarter 1979
- March 26: Orientation (Transfer & Freshman)
- March 26-27: Registration
- March 28: Classes Begin
- April 13-14: Easter (No Classes)
- May 1: Drop Deadline
- June 7: Classes End
- June 12: Commencement
Academic Calendar for 1979-80

Summer Quarter 1979
- June 18: Orientation (Transfer and Freshman)
- June 18-19: Registration, First or All Terms
- June 20: Classes Begin
- July 4: Independence Day (No Classes)
- July 9: Drop Deadline, First Term
- July 20: Classes End, First Term
- July 19-23: Registration, Second Term
- July 24: Classes Begin, Second Term
- July 24: Drop Deadline, Full Term
- August 10: Drop Deadline, Second Term
- August 22: Classes End
- August 25: Commencement

Fall Quarter 1979
- September 17: Orientation (Transfer)
- September 18: Orientation (Freshman)
- September 17-18: Upperclassmen and Graduate Registration
- September 18-19: Freshman and Transfer Registration
- September 20: Classes Begin
- October 24: Drop Deadline
- October 26: East Tenn. Educ. Assoc. (No Classes)
- November 22-24: Thanksgiving (No Classes)
- December 4: Classes End
- December 7: Commencement

Winter Quarter 1980
- January 3: Orientation (Transfer and Freshman)
- January 3-4: Registration
- January 7: Classes Begin
- February 11: Drop Deadline
- March 15: Classes End
- March 18: Commencement

Spring Quarter 1980
- March 24: Orientation (Transfer and Freshman)
- March 24-25: Registration
- March 26: Classes Begin
- April 4-5: Easter (No Classes)
- April 29: Drop Deadline
- June 5: Classes End
- June 10: Commencement
THE UNIVERSITY OF TENNESSEE, KNOXVILLE

Administrative Officers

Chancellor, Jack E. Reese, A.B., A.M., PH.D.
Executive Assistant to the Chancellor,
Sammie S. Puett, B.S., M.S.
Assistant to the Chancellor, Donald R. Eastman III,
A.B., PH.D.
Vice Chancellor for Academic Affairs, Walter R. Herndon,
B.S., M.S., PH.D.
Associate Vice Chancellor for Academic Affairs,
Hardy Liston, Jr., B.S., M.E.A.
Associate Vice Chancellor for Academic Affairs,
Ralph V. Norman, Jr., A.B., B.D., M.A., PH.D.
Vice Chancellor for Business and Finance,
Homer S. Fisher, B.S., M.B.A.
Vice Chancellor for Graduate Studies and Research,
L. Evans Roth, A.B., M.S., PH.D.
Vice Chancellor for Planning and Administration,
Luke Ebersole, A.B., A.M., PH.D.
Assistant Vice Chancellor for Planning and
Administration, Betsey B. Creekmore, A.B., M.A.,
M.A.L.S.
Vice Chancellor for Student Affairs, Howard F. Aldmon,
B.S., A.M., ED.D.
Assistant Vice Chancellor for Student Affairs,
James L. McAuliffe, B.A., M.S.

General Administrative Officers

Athletics, Director, George R. Woodruff, B.S.
Development, Director, Jack E. Williams, B.S.
Finance, Director, Harold B. Whitehead, B.S., CPA
Graduate Studies, Dean, Margaret N. Perry, B.S., M.S., PH.D.
Physical Plant, Director, Clarence P. Lefler, B.S.
Public Relations, Director, David H. Lauver, B.S.
Research, Dean, Carl O. Thomas, A.B., M.A., PH.D.
Student Affairs:
Admissions and Records, Dean, John J. McDow,
B.S., M.S., PH.D.
Auxiliary Enterprises, Director, James L. McAuliffe
B.A., M.S.
Career Planning and Placement Service, Director,
Howard H. Lumsden, B.S.
International Student and Cultural Affairs, Director,
Dixon C. Johnson, B.S., M.A., PH.D.
Intercollegiate Athletics for Women, Director,
Gloria S. Ray, B.S., M.S.
Student Activities, Dean, Philip A. Scheurer,
B.A., M.S.
Student Conduct and Orientation, Dean,
Charles R. Burchett, B.S., M.A.
Student Counseling Center and Special Services,
Director, Richard L. Nash, B.A., M.S., ED.D.
Student Health Service, Administrator,
Fred E. Young, Jr., A.B., M.C.

Colleges and Schools

AT KNOXVILLE

Graduate School
Vice Chancellor for Graduate Studies and Research,
L. Evans Roth, A.B. M.S., PH.D.

Institute of Agriculture
Dean, College of Agriculture, O. Glen Hall,
B.S., M.S., PH.D.
Dean, College of Veterinary Medicine,
Willis W. Armistead, D.V.M., M.S., PH.D.

School of Architecture
Dean, Donald D. Hanson, B.ARCH., M.ARCH.
College of Business Administration
Dean, C. Warren Neel, B.S., M.B.A., PH.D.
College of Communications
Dean, Donald G. Hileman, B.S., M.S., PH.D.

Division of Continuing Education
Dean, Joseph P. Goddard, B.S., M.S., ED.D.

College of Education
Dean, William H. Coffield, B.S., M.A., PH.D.
School of Health, Physical Education, and Recreation
Director, Madge M. Phillips, B.S., M.S., PH.D.

College of Engineering
Dean, and Director of Engineering Experiment
Station, Fred N. Peebles, B.S. in CH.E., M.S., PH.D.

College of Home Economics
Dean, Lura M. Odland, B.S., M.S., PH.D., D.SC.
College of Law
Dean, Kenneth L. Penagar, A.B., J.D., LL.M.
College of Liberal Arts
Dean, Robert G. Landen, B.A., M.A., PH.D.
School of Library and Information Science
Director, Gary R. Purcell, A.B., M.L.S., PH.D.

College of Nursing
Dean, Sylvia E. Hart, B.S.N., M.S.N., PH.D.

School of Planning
Director, James A. Spencer, A.B., M.C.P.
School of Social Work
Dean, Ben P. Granger, B.A., M.P.A., M.S.S.W., PH.D.

Independent Departments
Air Force Reserve Officers’ Training Corps
Professor of Air Science, James E. Hiteshew,
B.G.E., M.A.E.D., Colonel, USAF
Army Reserve Officers’ Training Corps
Professor of Military Science, Daniel H. Bauer,
B.A., M.A., Colonel, USA

AT OAK RIDGE
Oak Ridge Graduate School of Biomedical Sciences
Director, W. E. Barnett, B.S., M.S., PH.D.

AT TULLAHOMA
Space Institute
Dean, Charles H. Weaver, B.S., M.S., PH.D.

Other Educational and Public Service Units

Division of International Education
Director, Dixon C. Johnson, B.S., M.A., PH.D.
Libraries
Director, Donald R. Hunt, B.A., M.A., M.A.L.S.
THE UNIVERSITY OF TENNESSEE BOARD OF TRUSTEES

Legal Title: The University of Tennessee
His Excellency, THE GOVERNOR OF TENNESSEE Ex-Officio
The Commissioner of Education Ex-Officio
The Commissioner of Agriculture Ex-Officio
The President of The University Ex-Officio
The Executive Director of Tennessee Higher Education Commission Ex-Officio

From Congressional Districts

Buford Goldstein, Elizabethton
A. B. Long, Jr., Knoxville
Leonard Raulston, Lookout Mountain
William M. Johnson, Sparta
Amon Carter Evans, Nashville
Clyde M. York, Columbia
Ben Douglass, Lexington
Tom Elam, Union City
R. Lee Winchester, Jr., Memphis

From Anderson, Bedford, Coffee, Franklin, Lincoln, Moore, and Warren Counties
Don O. Shadow

From Davidson County
Elaine McReynolds

From Hamilton County
Paul J. Kinser

From Knox County
Ann Baker Furrow
Frank P. Bowyer

From Shelby County
Harry W. Laughlin
Marcus J. Stewart

From Weakley County
Wayne Fisher

Student Member
James Morris Powers, Jr.

Officers of the Board
Governor Ray Blanton, Chairman
Tom Elam, Vice Chairman
Edward J. Boiling, President
Brodie Baynes, Treasurer
Beauchamp E. Brogan, Secretary
Carol Bailey, Assistant Secretary

<table>
<thead>
<tr>
<th>From Congressional Districts</th>
<th>District</th>
<th>Began</th>
<th>Term Expires</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buford Goldstein, Elizabethton</td>
<td>First</td>
<td>1975</td>
<td>June 1, 1984</td>
</tr>
<tr>
<td>A. B. Long, Jr., Knoxville</td>
<td>Second</td>
<td>1977</td>
<td>June 1, 1986</td>
</tr>
<tr>
<td>Leonard Raulston, Lookout Mountain</td>
<td>Third</td>
<td>1957</td>
<td>July 1, 1979</td>
</tr>
<tr>
<td>William M. Johnson, Sparta</td>
<td>Fourth</td>
<td>1975</td>
<td>June 1, 1978</td>
</tr>
<tr>
<td>Amon Carter Evans, Nashville</td>
<td>Fifth</td>
<td>1975</td>
<td>June 1, 1982</td>
</tr>
<tr>
<td>Clyde M. York, Columbia</td>
<td>Sixth</td>
<td>1953</td>
<td>July 1, 1981</td>
</tr>
<tr>
<td>Ben Douglass, Lexington</td>
<td>Seventh</td>
<td>1951</td>
<td>July 1, 1979</td>
</tr>
<tr>
<td>Tom Elam, Union City</td>
<td>Eighth</td>
<td>1956</td>
<td>June 1, 1986</td>
</tr>
<tr>
<td>R. Lee Winchester, Jr., Memphis</td>
<td>Ninth</td>
<td>1975</td>
<td>June 1, 1984</td>
</tr>
</tbody>
</table>

| From Anderson, Bedford, Coffee, Franklin, Lincoln, Moore, and Warren Counties |  | 1970 | June 1, 1979 |
| From Davidson County |  | 1975 | June 1, 1984 |
| From Hamilton County |  | 1969 | June 1, 1978 |
| From Knox County |  | 1971 | June 1, 1980 |
| Frank P. Bowyer |  | 1959 | June 1, 1980 |
| From Shelby County |  | 1953 | July 1, 1981 |
| Marcus J. Stewart |  | 1970 | July 1, 1981 |
| From Weakley County |  | 1953 | July 1, 1981 |
| Wayne Fisher |  | 1977 | July 1, 1978 |
Committees
The President is a member ex-officio of all standing committees.
Executive: York (Chairman), Fisher (Vice Chairman), Bowyer, Laughlin.
Finance and Business: Laughlin (Chairman), Johnson (Vice Chairman), Elam, Raulston.
Buildings and Grounds: Fisher (Chairman), Kinser (Vice Chairman), Douglass, Long, Winchester, York.
Academic Affairs: Furrow (Chairman), Elam, (Vice Chairman), Bowyer, Brown, Fisher, Goldstein, Powers.
Agriculture: York (Chairman), Douglass (Vice Chairman), Fisher, Laughlin, Porter, Shadow, Stewart.
Athletics: Elam (Chairman), Furrow (Vice Chairman), Bowyer, Johnson, Raulston, York.
Development, Alumni Affairs, and Public Relations: Bowyer (Chairman), Goldstein (Vice Chairman), Elam, Evans, McReynolds, Raulston, Stewart, York, Powers.
Medical Affairs: Stewart (Chairman), Bowyer (Vice Chairman), Evans, Furrow, Laughlin, Long, Winchester.
Student Affairs: Laughlin (Chairman), McReynolds (Vice Chairman), Fisher, Furrow, Ingram, Johnson, Long, Raulston, Shadow, Powers.
Public Service and Continuing Education: Raulston (Chairman), Evans, Kinser, Long, McReynolds, Stewart, Winchester.
Faculty and Staff Affairs: Douglass (Chairman), Shadow (Vice Chairman), Brown, Goldstein, Kinser, Long.

THE UNIVERSITY OF TENNESSEE
ADMINISTRATION AND SERVICE
President, Edward J. Boling, B.S., M.S., ED.D.
Executive Vice President and Vice President for Development, Joseph E. Johnson, A.B., A.M., ED.D.
Vice President for Academic Affairs, John W. Prados, B.S., M.S., PH.D.
Vice President for Agriculture, Webster Pendergrass, B.S.A., M.S., D.P.A.
Vice President for Business and Finance, Emerson H. Fly, B.S., CPA
Vice President for Continuing Education, Charles H. Weaver, B.S., M.S., PH.D.
Vice President for Health Affairs, and Chancellor of the Center for the Health Sciences, T. Albert Farmer, B.S., M.D.
Vice President for Public Service and Chancellor, UT at Nashville, Charles E. Smith, B.S., A.M., PH.D.
General Counsel, Beauchamp E. Brogan, B.S., J.D.
Executive Assistant to the President, Andrew J. Kozar, B.S., A.M., PH.D.
Treasurer, Brodie Baynes, B.S., CPA

Emeriti Administrators:
Emeritus President, Andrew David Holt, A.B., M.S., LL.D., LITT.D., SC.D., PH.D.
Emeritus Vice President for Business and Finance, W. Harold Read, B.S., M.B.A., CPA
Emeritus Vice President for Academic Affairs, Kenneth L. Knickerbocker, A.B., A.M., PH.D.
Emeritus Vice President for Academic Affairs, Herman E. Spivey, A.B., A.M., PH.D.
The University

The University of Tennessee is a multi-campus, multi-purpose system of higher education encompassing all Tennessee. It is the state’s official State University and Federal Land-Grant Institution—frequently called “the capstone of the state’s educational system.” The institution is owned and supported by the people of Tennessee. It also receives some federal support for certain programs sponsored cooperatively by the state and federal governments.

The central administrative staff consists of the president and seven vice presidents who have the responsibility of administering the affairs of the statewide educational organization. The five primary campuses are under the direct supervision of chancellors.

In carrying out its unique responsibilities, The University of Tennessee has a statewide mission beyond the scope of any other institution of higher learning in Tennessee. The University seeks to develop human and material resources of the state through three broad programs: instruction, research, and extension and public service.

Instruction

As the most comprehensive institution in the state’s public education system, the University has the responsibility of providing the young people of Tennessee with the educational opportunities they need to become intellectually prepared for responsible and successful citizenship. Students may specialize in a great number of professional and occupational fields, thus helping to fill the state’s needs for trained personnel in medicine, business, law, agriculture, industry, and other vocations essential to the welfare and progress of the citizens of Tennessee.

In addition to fulfilling this traditional role, the University also offers a wide range of quality programs in continuing education which help contribute to the personal and professional growth of students of all ages.

Programs of Study

In student enrollments and the scope of its academic programs, The University of Tennessee ranks among the larger institutions of higher education in the United States. In the fall of 1977, a total of 49,864 students enrolled on the five campuses of The University of Tennessee System. This total included 30,468 enrolled at Knoxville and Centers; 2,126 at the Center for the Health Sciences (Memphis); 4,957 at Martin; 6,628 at Chattanooga; and 5,668 at Nashville.

To serve the academic needs of all of these students, the University system offers 106 degree programs at the bachelor’s level, 121 at the master’s level, and 47 at the doctoral level. The degree programs offered by colleges and schools at the UT, Knoxville campus are described in this catalog. Degree programs offered by the Center for the Health Sciences (at Memphis) and at Martin, Chattanooga, and Nashville are described in special catalogs issued from those campuses.

The various colleges, departments, and administrative offices of the University hold membership in more than 60 regional and national education associations. The University as a whole is fully accredited by the Southern Association of Colleges and Schools. Individual colleges and departments are accredited by appropriate professional accrediting agencies.

Colleges and Schools

The University’s academic programs consist of thirty-one colleges and schools which offer studies on five primary campuses at Knoxville, Memphis, Martin, Chattanooga, and Nashville. The Knoxville campus also offers programs at Oak Ridge, Tullahoma, Memphis, and Kingsport. These colleges and schools and other academic units are as follows:

- UT, KNOXVILLE
  - Graduate School (offering programs leading to the master’s or the doctor’s degree)
  - College of Agriculture
  - School of Architecture
  - College of Business Administration
  - College of Communications
  - Division of Continuing Education
  - College of Education
  - School of Health, Physical Education, and Recreation
  - College of Engineering
  - College of Home Economics
  - College of Law
  - College of Liberal Arts
  - Graduate School of Library and Information Science
  - College of Nursing
  - Graduate School of Planning
  - Graduate School of Social Work
  - College of Veterinary Medicine

- At Oak Ridge
  - Oak Ridge Graduate School of Biomedical Sciences
  - Oak Ridge Evening School
  - Oak Ridge Resident Graduate Program

- At Tullahoma
  - Space Institute
  - Graduate Center
  - At Chattanooga
    - Graduate Engineering Center

- At Memphis
  - University Center for the Health Sciences

- At UT CENTER FOR THE HEALTH SCIENCES
  - College of Basic Medical Sciences
  - College of Community and Allied Health Professions
  - College of Dentistry
  - College of Medicine
  - College of Nursing
  - College of Pharmacy
  - Graduate School—Medical Sciences

Other academic units associated with the Center for the Health Sciences
The educational policies of the institution are established by the faculty. It determines the entrance requirements for students, prescribes and defines courses of study, establishes the requirements for degrees, determines rules for the academic guidance of students, and recommends to the administration the candidates for degrees who have completed prescribed courses of study.

**Extracurricular Opportunities**

In addition to a broad scope of specialized studies, the University offers numerous extracurricular opportunities that contribute to educational development. Students may take part in religious activities, social and cultural programs, and recreational and avocational activities. More than two hundred different extracurricular organizations and activities are maintained on the University's Knoxville campus.

**Research**

As Tennessee’s most broadly based institution of higher education, the University has the skilled personnel, the laboratories and libraries needed for its role as the state’s official research center. University research is conducted to find solutions to problems confronting the people of Tennessee, and to discover new knowledge leading to greater development of human and material resources.

Funding of sponsored research at the University totaled more than $13.6 million in fiscal year 1977. This growth in the dollar value of grants and contracts parallels growth in the quality and diversity of research programs of importance to the Volunteer State and the entire nation.

Increased crop yields, improved industrial processes, more effective medical services, and greater citizen understanding of our environment and our society are but a few of the benefits resulting from the practical applications of University research.

**Research Organizations**

The University’s research is strengthened by a number of special organizations, within the colleges and schools, which sponsor and coordinate studies and experimentation in broad areas of investigation. These are:

- **Agricultural Experiment Station** (with research units at Knoxville, Oak Ridge, and Martin; six branch stations at Crossville, Greeneville, Jackson, Lewisburg, Springfield, and Spring Hill; and five field stations at Grand Junction, Wartburg, Chattanooga, Tullahoma, and Milan)
- **Bureau of Educational Research and Service**
- **Engineering Experiment Station**
- **Center for Business and Economic Research**
- **Bureau of Public Administration**
- **Memorial Research Center and Hospital at Knoxville**
- **Center for the Health Sciences at Memphis**—all divisions have organized research programs.
- **Water Resources Research Center**

The Graduate School—embraces almost all departments in all colleges and is founded upon research; graduate students are required to do research as part of their study programs.

**Extension and Public Service**

The University’s teaching programs and research findings extend beyond the limits of the campuses to reach people in every community and county in Tennessee. Extension and public service programs are part of the work of every University department, and the institution
has three large divisions created specifically to promote and coordinate statewide activities to meet the need that can be served by its educational resources. These special divisions are: Agricultural Extension Service, specializing in agriculture and home economics, sponsored jointly by the U.S. Department of Agriculture. Agents to assist farmers and homemakers are stationed in every Tennessee county. District offices are maintained at Chattanooga, Cookeville, Jackson, Knoxville, and Nashville.

Division of Continuing Education, which serves in nondegree areas of education. The Division's statewide services are effected through its Center for Extended Learning, Head Start State Training Office, Library Services, Radio Services, Teaching Materials Center, and Televison Services.

Division of Continuing Education, Knoxville, extends academic programs and services from UTK to persons throughout the state through evening School, Off-Campus Credit Programs, Workshops and Non-Credit Programs, and Office of Conferences and Institutes. The Division utilizes services of the Statewide Division of Continuing Education and cooperates with all other campuses of the University in statewide extension activities.

Institute for Public Service, which provides a system-wide focal point for the University's programs in the fields of industry, government and urban development. Units of the Institute are the Municipal Technical Advisory Service, the County Technical Advisory Service, the Center for Government Training, the Center for Industrial Services, and the Technical Assistance Center. In addition, the Institute jointly supports with UT, Knoxville two specialized research and service units, the Environment Center and the Transportation Center.

Physical Facilities of the University

The University of Tennessee's physical plant—its land, buildings, and equipment—has a book value in excess of $372,791,000. A total of 180 major buildings, 39,480 acres of land, more than $62,819,000 worth of equipment, about $11,000,000 worth of books, and hundreds of small buildings and miscellaneous items constitute the physical plant.

The Knoxville campus is valued at approximately $153,729,000 and the Memorial Research Center and Hospital at $16,829,000. Facilities of the Center for the Health Sciences at Memphis are valued at approximately $43,756,000; the Martin campus, $37,100,000; the Chattanooga campus, $30,100,000; and the Nashville campus, $6,130,000. Facilities at the Tullahoma Space Institute are valued at $3,130,000. Experimental farms, livestock, and other facilities throughout the state have a value of $6,182,000.

Buildings on the main campus and agriculture campuses at Knoxville are shown on the map printed in this catalog. A map of the state showing locations of the University's academic campuses and other physical facilities is located on page 12. Maps or aerial photographs showing buildings on the Center for the Health Sciences campus at Memphis and the Martin and Chattanooga campuses are printed in the catalogs issued by those units of the University.

Historical Background

The University of Tennessee traces its origin back to the days when George Washington was President of the United States, before Tennessee became a state. In 1794, two years before statehood was achieved, the Legislature of the Federal Territory which later became Tennessee granted a charter to Blount College, the earliest predecessor of the University at Knoxville. Blount College was named in honor of William Blount, Governor of the Territory, and was located near the center of Knoxville's present district.

With its founding as Blount College, the University is listed as one of the older institutions of higher education in the nation. Blount College had some unusual qualities. It was strictly nonsepararian in character, which was unique among institutions of higher education in that day. The institution has remained nondenominational to the present time and is said to be the oldest such institution west of the Appalachian Divide. Moreover, Blount College for a few years admitted women as students, thus becoming the first coeducational college in the United States, though it is probable these first coeds studied in a subordinate department. The institution later restricted enrollment to men, but retained its present coeducational status in 1892.

In 1807 the institution began to widen the scope of its service area. During that year the State Legislature changed the institution's name to "East Tennessee College" and made it the recipient of one-half of the proceeds of the sale of land set aside by Congress for the support of two colleges, one in East and the other in Middle Tennessee. In 1826 the present site at Knoxville, the 40-acre tract known as "The Hill," was acquired by East Tennessee College.

In 1840 the State Legislature changed the institution's name to "East Tennessee University." The Civil War forced the institution to close for a period; its buildings were used as a hospital for Confederate troops and were later occupied by Union troops. After the war East Tennessee University opened again, and from that time to the present the institution has enjoyed its most significant advances.

In 1869 East Tennessee University was selected by the State Legislature as Tennessee's Federal Land-Grant Institution, under terms of the Morrill Act passed by Congress in 1862. This selection meant the establishment of an Agricultural and Mechanical College as part of the University, supported by an endowment resulting from the sale of land warrants received by Tennessee from the Federal Government. Thus the efforts of the institution to broaden its offerings from a college to a true university were given a tremendous boost.

Ten years later, in 1879, East Tennessee University was chosen by the State Legislature as Tennessee's State University and its name was changed to "The University of Tennessee." By this act the University became pledged to the service and interest of the entire state, the head and an integral part of the public education system. By this act the state pledged to the University its own name and reputation and promised the institution a future in keeping with the prestige of the state.

Since its establishment, the University has grown into an institution consisting of thirty-one different colleges and schools, and it has become statewide in its physical locations as well as its services. The College of Arts and Sciences, founded in Nashville and taken over by the University in 1879, was moved to Memphis in 1911. The Martin campus was established in 1900 as a private institution, Hall-Moody Junior College, and it became a part of The University of Tennessee in 1927. The School of Social Work at Nashville became part of the University in 1951. A fourth primary campus was established at Chattooga in 1969 with the merger of the University with the University of Chattanooga. In 1971 the University's Nashville Center, established in 1947, was made a primary campus. Down through the years Agricultural Experiment Stations were established at Jackson, Spring Hill (Columbia), Springfield, Lewisburg, Crossville, Wartburg, Oak Ridge, Greeneville, and Grand Junction. The system Division of Continuing Education coordinates all continuing education programs offered by the five primary campuses, and the Division of Continuing Education, Knoxville, conducts evening classes, conferences, and institutes for the Knoxville campus. The Agricultural Extension Service has district offices at Jackson, Nashville, Chattanooga, and Knoxville and has agricultural extension leaders and agents in every one of Tennessee's ninety-five counties.

In 1968 the Board of Trustees reorganized the institution into a university system, giving a central administrative staff responsibility for the entire statewide functions of the University and establishing chancellors on the primary campuses, responsible for their respective campuses.

State Legislators and Governors of Tennessee, particularly those of the past half century, have shown an active interest in the development of The University of Tennessee. As a result, the University has been able to broaden and strengthen its programs to meet the educational and research needs of the people of Tennessee and has become one of the leading institutions of higher education in the nation—an institution with international prestige.
Academic Policies and Costs

Admission to the University of Tennessee, Knoxville

Applications, credentials, and inquiries should be directed as follows:

For admission to all undergraduate programs, including the University Evening School and the College of Veterinary Medicine:

Director of Admissions
The University of Tennessee
Knoxville, Tennessee 37916
(615) 974-2184

For readmission of former undergraduate students:

Director of Readmissions
The University of Tennessee
Knoxville, Tennessee 37916

For admission to the College of Law (see College of Law Bulletin for information on admission to the College of Law):

Dean, College of Law
The University of Tennessee
Knoxville, Tennessee 37916

For admission to the Graduate School (see Graduate Catalog for information on admission to the Graduate School):

Graduate School
The University of Tennessee
Knoxville, Tennessee 37916
(615) 974-3251

For admission to the Colleges of Basic Medical Sciences, Dentistry, Medicine, Nursing (except Knoxville College of Nursing), and Pharmacy, and programs in the allied health professions, administered by The University of Tennessee Center for Health Sciences in Memphis (see Health Sciences Catalog for information on admission to these colleges):

Director of Admissions
The University of Tennessee
Center for the Health Sciences
62 South Dunlap
Memphis, Tennessee 38103

Deadlines for Applications

Applications for undergraduate admission and all supporting credentials must be received by the Director of Admissions no later than August 1 for fall quarter admission, and no later than three weeks before the start of classes for admission to any other quarter, except as noted below.

Applications for the College of Veterinary Medicine must be received by the Director of Admissions by January 31 for admission into the fall quarter.

Applications for the School of Architecture must be received no later than March 1 for admission to the summer and fall quarters. Selection will be made by April 1. November 1 is the deadline for applications for the spring quarter; enrollment is closed for the winter quarter. Applications for the College of Nursing must be received by March 1. Selection will be made by April 1; enrollment is closed for the winter and spring quarters.

Former students who have been dropped from the University for academic deficiency or disciplinary reasons must apply for readmission to the Director of Readmissions no later than six weeks before the start of classes of the quarter the student wishes to enter.

Undergraduate Admissions Requirements

Applicants for undergraduate admissions to the University must meet the following:

1. general requirements as indicated below,
2. requirements for the applicant's specific admissions category as shown in Table I, and
3. requirements of the academic college or school the applicant seeks to enter as shown in Table II.

ACADEMIC CREDENTIALS

Freshman Applicants—Transcript of high school credits and score report of the American College Testing Program (ACT). These should be received at the University preferably in the fall of the senior year; a supplementary high school credit sheet of final senior grades should be sent after graduation.

ACT tests are administered five times each year, in October, December, February, April and July. Score reports must be sent directly from ACT to the University. Information concerning ACT may be obtained from high school guidance counselors or by writing American College Testing Programs, P.O. Box 186, Iowa City, Iowa 52240.

Transfer Applicants—Complete transcripts of all college work at each college or university attended.

EVIDENCE OF GOOD CHARACTER

Freshman Applicants—Recommendation of high school principal.

Transfer Applicants—Character report from college student personnel officer(s).

AMERICAN HISTORY

All Applicants—Effective July 1, 1978, and afterwards, all students receiving a bachelor's degree must have completed one unit of American history on the high school level or nine quarter hours of collegiate American history in order to receive a bachelor's degree as required by the General Assembly of the State of Tennessee.

Residency Classification

Students are classified as in-state or out-of-state for the purpose of determining fees and tuition on the basis of regulations established by the Board of Trustees. Basically, these regulations state that:

1. Students receiving support from their parents are residents of the same state as their parents, and
2. Students independent of parental support may establish Tennessee residency for fee purposes by producing evidence of domicile to the Office of the Vice-Chancellor for General Science, proving that they came to Tennessee for reasons other than obtaining an education for themselves or their spouses.

A student's residency classification for fee purposes also determines whether the student will be considered under in-state or out-of-state admissions requirements. Children of alumni and scholarship recipients are admitted under the same requirements as in-state students, even though they may be required to pay out-of-state tuition. Inquiries concerning residency should be addressed to the Director of Admissions.

Residency classification may be appealed to the following University offices or persons in order as listed.

(1) Undergraduate Admissions Office—Residence Classification Coordinator, 320 Student Services Building, and (3) Residency Classification Committee, 320 Student Services Building.

Admission to the University's professional programs (health professions [see p. 180], law, etc.) is becoming increasingly restricted to Tennessee residents. An out-of-state student completing a pre-professional program at the University of Tennessee, Knoxville does not gain preferential priority in admission to a professional program.

High School Subjects That May Be Offered

Group A

<table>
<thead>
<tr>
<th>Subject</th>
<th>Maximum Units</th>
<th>Minimum Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>Art</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Biology</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Business English</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Civics</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Commercial Law</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Distribution</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dramatics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Economics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>English</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>French</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Geography</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Geology</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Geometry</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Group B

<table>
<thead>
<tr>
<th>Subject</th>
<th>Maximum Units</th>
<th>Minimum Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Distributive Education</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Engineering</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Economics</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>ROTC</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Shopwork</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Admissions Category</td>
<td>Admissions Requirements&lt;sup&gt;1,3,4&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------</td>
<td></td>
</tr>
<tr>
<td>FRESHMAN In-State</td>
<td>Graduation from an approved high school; completion of all high school units required for the program student seeks to enter, as specified in Table II; applicants having neither a high school grade point average of at least 2.25 nor an ACT composite score of at least 17 will be assigned a special adviser. ACT score report is required for counseling and advisement.</td>
<td></td>
</tr>
<tr>
<td>FRESHMAN Out-of-State</td>
<td>Same as for in-state freshman except that applicants from states in the region served by the Southern Association of Colleges and Schools, and from Arkansas, must have minimum high school grade point average at least 2.25 and ACT composite score at least 18. Applicants from other states must have high school grade point average at least 2.25 and ACT composite score at least 20.</td>
<td></td>
</tr>
<tr>
<td>FRESHMAN—GED</td>
<td>Applicant’s high school class must have graduated; must be at least 18 years old; average standard score of at least 50 on the high school level General Education Development Tests; completion of high school units required for the program student seeks to enter, as specified in Table II.</td>
<td></td>
</tr>
<tr>
<td>FRESHMAN—EARLY ADMISSION</td>
<td>Completion of junior year in high school; completion of high school units required for the program student seeks to enter; high school grade point average at least 3.50 and ACT scores at or above the 95th percentile for University of Tennessee freshman; nomination by the student’s high school principal and consent of parents; review and approval by the Director of Admissions.</td>
<td></td>
</tr>
<tr>
<td>TRANSFER In-State</td>
<td>At least 12 hours of college credit work at an accredited institution of higher learning; honorable dismissal from all such institutions attended; grade point average on all college work attempted, at least the minimum that the University of Tennessee requires of its own students for readmission (see Undergraduate Retention Standards).&lt;sup&gt;1&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>TRANSFER Out-of-State</td>
<td>Same as for in-state transfer applicants except that grade point average on all college work must be at least 2.00 to be eligible for consideration. Eligible students will be screened by the Committee on Admissions for final decision.&lt;sup&gt;4&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>SPECIAL STUDENT</td>
<td>Applicant’s high school class must have graduated; may not be candidate for bachelor’s degree; must show satisfactory evidence of preparation for courses attempted. Special students may accumulate no more than 90 hours of college credit toward a degree (including any previous college work). To enroll in a degree program, a special student must meet transfer admissions requirements. Former University of Tennessee students may not be admitted as special students unless they have already earned a bachelor’s degree.</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup>Grade point averages are expressed on a 4.00 scale.
<sup>2</sup>Applicants refused admission may appeal to the Committee on Admissions, Office of Admissions, 330 Student Services Building.
<sup>3</sup>See Special Requirements for International Students.
<sup>4</sup>Transfer applicants for the School of Architecture must have a college grade point average of 2.30. Transfer applicants for the College of Communications must have an average of at least 2.00. Transfer applicants who have attempted at least 36 quarter hours of college work must have grade point averages of at least 2.00 for admission to the College of Education, the College of Business Administration or the College of Home Economics.
<table>
<thead>
<tr>
<th>College/Degree Sought</th>
<th>English</th>
<th>One Foreign Language</th>
<th>Algebra</th>
<th>Trigonometry</th>
<th>Geometry</th>
<th>Advanced Math or Trigonometry</th>
<th>Science or Humanities</th>
<th>Minimum Group A Units</th>
<th>Total Units</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLLEGE OF AGRICULTURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A second unit of algebra may be offered in lieu of geometry.</td>
</tr>
<tr>
<td>Bachelor of Science in Agriculture</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>11</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Forestry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Agricultural</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>.5</td>
<td>11</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCHOOL OF ARCHITECTURE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>These units allow admission to first-year pre-architectural program. Ad-</td>
</tr>
<tr>
<td>Bachelor of Architecture</td>
<td>3</td>
<td>2</td>
<td>.5</td>
<td>1</td>
<td>4.5</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>mission to the second year requires: (1) satisfactory completion of first-year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>architectural program with grade point average of at least 2.3, exceptions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>may be made by petition only, (2) a personal interview and evaluation of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>applicant’s work by a designated member of the School of Architecture, (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>application to the School of Architecture no later than June 15 preced-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ing the start of the second year.</td>
</tr>
<tr>
<td>COLLEGE OF BUSINESS ADMINISTRATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Business Administration</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>A unit of advanced mathematics or trigonometry may be offered in lieu of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>the second unit of algebra or the unit of geometry.</td>
</tr>
<tr>
<td>COLLEGE OF COMMUNICATIONS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Communications</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>A second unit of algebra may be offered in lieu of geometry.</td>
</tr>
<tr>
<td>COLLEGE OF EDUCATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLLEGE OF ENGINEERING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Three units of science, including physics, are recommended.</td>
</tr>
<tr>
<td>Bachelor of Science in Engineering</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>.5</td>
<td>12</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLLEGE OF HOME ECONOMICS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Home Economics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLLEGE OF LIBERAL ARTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A second unit of algebra may be offered in lieu of geometry. See College</td>
</tr>
<tr>
<td>Bachelor of Arts; general and pre-professional curricula</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Fine Arts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ments.</td>
</tr>
<tr>
<td>Bachelor of Music</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three-year pre-dentistry, pre-medical technology, and pre-physical therapy programs</td>
<td>3</td>
<td>2</td>
<td>1.5</td>
<td>1</td>
<td>13</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Science in Chemistry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A second unit of algebra may be offered in lieu of geometry; a unit of</td>
</tr>
<tr>
<td>Two-year pre-pharmacy program</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>history or social science is required.</td>
</tr>
<tr>
<td>Two-year pre-nursing program</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>A second unit of algebra may be offered in lieu of geometry.</td>
</tr>
<tr>
<td>COLLEGE OF NURSING (Knoxville)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A second unit of algebra may be offered in lieu of geometry. One unit of</td>
</tr>
<tr>
<td>Bachelor of Science in Nursing</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td>chemistry is recommended.</td>
</tr>
</tbody>
</table>
# MAJORS, MINORS, CONCENTRATIONS AND TRACKS

## TABLE III

<table>
<thead>
<tr>
<th>DEPARTMENT (UNIT)</th>
<th>MAJOR</th>
<th>CONCENTRATION/OPTION/TRACK/ ETC. WITHIN THE MAJOR</th>
<th>DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institute of Agriculture</td>
<td>Agricultural Business</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>College of Agriculture</td>
<td>Agricultural Economics and Rural Sociology</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Agriculture (Interdepartmental Unit)</td>
<td>Agricultural Education</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Agricultural Biology</td>
<td>Agricultural Mechanization</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Agricultural Economics and Rural Sociology</td>
<td>a. Business and Industry Option b. Production and Processing Option</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Agricultural Education (Intercollegiate program)</td>
<td>Agricultural Engineering</td>
<td>Bachelor of Science in Agricultural Engineering</td>
<td></td>
</tr>
<tr>
<td>Agricultural Engineering</td>
<td>1. Animal Science 2. Pre-Veterinary Medicine Option 3. Animal Science Curriculum with a Pre-Veterinary Option (3–1)</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Agricultural Extension Education</td>
<td>Animal Science</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Animal Science</td>
<td>1. Animal Science 2. Pre-Veterinary Medicine Option</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>3. Animal Science Curriculum with a Pre-Veterinary Option (3–1)</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Technology and Science</td>
<td>Food Technology and Science</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Forestry, Wildlife and Fisheries</td>
<td>Forestry</td>
<td>Bachelor of Science in Forestry</td>
<td></td>
</tr>
<tr>
<td>1. Forest Resource Management Option 2. Forest Recreation Option</td>
<td>Bachelor of Science in Forestry</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ornamental Horticulture and Landscape Design</td>
<td>Ornamental Horticulture and Landscape Design</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Ornamental Horticulture and Landscape Design</td>
<td>1. Animal Science 2. Pre-Veterinary Medicine Option</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>3. Animal Science Curriculum with a Pre-Veterinary Option (3–1)</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant and Soil Science</td>
<td>Plant and Soil Science</td>
<td>Bachelor of Science in Agriculture</td>
<td></td>
</tr>
<tr>
<td>Institute of Agriculture</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>College of Veterinary Medicine</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>Animal Science—Veterinary Medicine</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>Environmental Practice</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>Microbiology—Veterinary Medicine</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>Pathobiology</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>Urban Practice</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>Veterinary Medicine (Interdepartmental Unit)</td>
<td>Veterinary Medicine</td>
<td>Doctor of Veterinary Medicine</td>
<td></td>
</tr>
<tr>
<td>School of Architecture</td>
<td>Architecture(^1)</td>
<td>Bachelor of Architecture</td>
<td></td>
</tr>
<tr>
<td>Design Concentration</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Architectural Design Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History/Humanities Concentration</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Architecture History Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Criticism Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Restoration/Preservation Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration Concentration</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Management Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Production Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Development Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology Concentration</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Structure Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Environmental Controls Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Systems Building Tract</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Baccalaureate Degree Program</td>
<td>Bachelor of Architecture</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)Minor available for students in other colleges.
<table>
<thead>
<tr>
<th>DEPARTMENT (UNIT)</th>
<th>MAJOR</th>
<th>CONCENTRATION/OPTION/TRACK/ETC. WITHIN THE MAJOR</th>
<th>DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Business Administration</td>
<td>Accounting</td>
<td>Accounting Management Science Option</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Accounting and Business Law</td>
<td>General Business</td>
<td>General Business Management Science Option</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td></td>
<td>Public Administration</td>
<td></td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Business Administration (Interdepartmental Unit)</td>
<td>Economics</td>
<td></td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td></td>
<td>Finance</td>
<td>Finance Management Science Option Investments and Security Analysis Monetary Theory and Policy Public Finance and Fiscal Policy</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Industrial and Personnel Management</td>
<td>Insurance</td>
<td></td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Marketing and Transportation</td>
<td>Real Estate and Urban</td>
<td>Real Estate Management Science Option</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Development</td>
<td>Industrial Management</td>
<td>Industrial Management Science Option</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Management Science Programs</td>
<td>Personnel Management</td>
<td>Personnel Management Science Option</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Office Administration</td>
<td>Business Education</td>
<td>Shorthand Distributive Education Bookkeeping and Business Law Bookkeeping and Data Processing</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td></td>
<td>Office Administration—General</td>
<td></td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td></td>
<td>Office Administration—Secretarial*</td>
<td></td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>Statistics</td>
<td>Statistics</td>
<td>Statistics Management Science Option</td>
<td>Bachelor of Science in Business Administration</td>
</tr>
<tr>
<td>College of Communications Advertising</td>
<td>Advertising</td>
<td></td>
<td>Bachelor of Science in Communications</td>
</tr>
<tr>
<td>Broadcasting</td>
<td>Broadcasting</td>
<td>Management Sequence News and Public Affairs Sequence Production/Performance Sequence</td>
<td>Bachelor of Science in Communications</td>
</tr>
<tr>
<td>School of Journalism</td>
<td>Journalism</td>
<td>News-Editorial Sequence a. Writing b. Editing c. Writing and Editing Public Relations Sequence a. Urban or Governmental Public Relations b. Educational Public Relations c. Industrial or Corporate Public Relations d. Other Areas</td>
<td>Bachelor of Science in Communications</td>
</tr>
<tr>
<td>College of Education</td>
<td>Art Education</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Art and Music Education</td>
<td>Vocal Music (Voice Principal)</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td>Vocal Music (Piano or Organ Principal)</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td>Elementary Music Education (Voice Principal)</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td>Elementary Music Education (Piano or Organ Principal) Instrumental Music</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Continuing and Higher Education</td>
<td>*Certificate available for two-year secretarial program.</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>DEPARTMENT (UNIT)</td>
<td>MAJOR</td>
<td>CONCENTRATION/OPTION/TRACK/ETC. WITHIN THE MAJOR</td>
<td>DEGREE</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Curriculum and Instruction</td>
<td>Elementary Education or Mathematics Education</td>
<td>Joint Elementary-Mathematics Education Certification</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Elementary Education</td>
<td>Elementary Education</td>
<td>Nursery School-Grade 3 (Intercollegiate with the College of Home Economics) Kindergarten through Grade 9</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. Art</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Black Studies</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Child Studies</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Early Childhood Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Foreign Language</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Health and Physical Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Humanities</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Language Arts</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9. Library and Information Science</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>English Education</td>
<td>Foreign Language Education</td>
<td>Foreign Language Area</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foreign Language Major and Minor</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Mathematics Education</td>
<td>Mathematics Education</td>
<td>Mathematics and Physical Sciences</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mathematics and Related Sciences</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mathematics and Computer Sciences</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mathematics Major with a minor</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Science Education</td>
<td>Scientific Education</td>
<td>1. Area Majors in Science</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. Biological Science</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Earth and Environmental Sciences</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Natural Science</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Social Science Education</td>
<td>Scientific Education</td>
<td>2. Subject Majors in Science Social Studies</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Educational Administration and Supervision</td>
<td>Special Education</td>
<td>Psychology Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Special Education and Rehabilitation</td>
<td>Special Education</td>
<td>General Special Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Combined General Special Education in Elementary Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hearing Impaired</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>a. Specialization in Early Childhood Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Specialization in Elementary Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. Specialization in Secondary Education</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Specialization in Multiple Handicapped</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speech and Hearing Crippling and Special Health Conditions</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Partially Seeing</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>Vocational-Technical Education</td>
<td>Business Education</td>
<td>Business Education (Intercollegiate with College of Business Administration)</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td>Distributive Education</td>
<td>Option 1. Concentration in Trades and Industries</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td>Industrial Education</td>
<td>Option 2. Concentration in Industrial Arts</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td>DEPARTMENT (UNIT)</td>
<td>MAJOR</td>
<td>CONCENTRATION/OPTION/TRACK/ETC. WITHIN THE MAJOR</td>
<td>DEGREE</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>----------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>School of Health, Physical Education and Recreation</td>
<td>Public Health Education</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td>School Health Education*</td>
<td></td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td>Physical Education**</td>
<td>Elementary Physical Education (1-8)</td>
<td>Bachelor of Science in Education</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary Physical Education (7-12)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recreation</td>
<td></td>
</tr>
<tr>
<td>College of Engineering</td>
<td>Chemical Engineering</td>
<td>Construction Engineering</td>
<td>Bachelor of Science in Chemical</td>
</tr>
<tr>
<td>Basic Engineering and Graphics</td>
<td></td>
<td>Environmental Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td>Chemical Engineering</td>
<td>Soils Engineering—Materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metallurgical Engineering</td>
<td>Structural Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transportation Engineering</td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>Civil Engineering</td>
<td>Civil Engineering</td>
<td>Bachelor of Science in Civil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Construction Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soils Engineering—Materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Structural Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transportation Engineering</td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>Electrical Engineering</td>
<td>Biowireless Engineering</td>
<td>Bachelor of Science in Electrical</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Computer Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electromagnetic Fields and Communications</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electronics and Instrumentation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energy Conversion and Power Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plasma and Electro-Optics Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Systems and Networks</td>
<td></td>
</tr>
<tr>
<td>Engineering Administration</td>
<td>Engineering Physics</td>
<td>Biomedical Engineering</td>
<td>Bachelor of Science in Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineering Analysis and Synthesis</td>
<td>Physics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineering Materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Engineering Mechanics</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental Sciences</td>
<td></td>
</tr>
<tr>
<td>Engineering Studies</td>
<td>Industrial Engineering</td>
<td>Aerospace</td>
<td>Bachelor of Science in Industrial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Machine Design</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Propulsion</td>
<td></td>
</tr>
<tr>
<td>Mechanical and Aerospace Engineering</td>
<td>Mechanical Engineering</td>
<td>Aerospace</td>
<td>Bachelor of Science in Aerospace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Machine Design</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Propulsion</td>
<td></td>
</tr>
<tr>
<td>Aerospace Engineering</td>
<td>Aerospace Engineering</td>
<td>Aerospace</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Machine Design</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Manufacturing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Propulsion</td>
<td></td>
</tr>
<tr>
<td>Nuclear Engineering</td>
<td>Nuclear Engineering</td>
<td>1. Early Childhood Development</td>
<td>Bachelor of Science in Nuclear</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Human Development and Family Studies</td>
<td>Engineering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Nursery School—Grade 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Intercollegiate with College of Education)</td>
<td></td>
</tr>
<tr>
<td>College of Home Economics</td>
<td>Child and Family Studies</td>
<td></td>
<td>Bachelor of Science in Home</td>
</tr>
<tr>
<td>Child and Family Studies</td>
<td></td>
<td></td>
<td>Economics</td>
</tr>
<tr>
<td>Food Science, Nutrition, and Food Systems Administration</td>
<td>Food Science, Nutrition, and Food Systems</td>
<td>1. Food Science</td>
<td>Bachelor of Science in Home</td>
</tr>
<tr>
<td></td>
<td>Administration</td>
<td>2. Nutrition Science</td>
<td>Economics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Community Nutrition</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. Coordinated Undergraduate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Program in Dietetics (ADA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Food and Lodging Administration</td>
<td></td>
</tr>
</tbody>
</table>

* Minor available.
* Minor available: Driver and Traffic Safety Education.
* Minors available: Dance; Coaching.
<table>
<thead>
<tr>
<th>DEPARTMENT (UNIT)</th>
<th>MAJOR</th>
<th>CONCENTRATION/OPTION/TRACK/ETC. WITHIN THE MAJOR</th>
<th>DEGREE</th>
</tr>
</thead>
</table>
| Crafts, Interior Design, and Housing | Crafts, Interior Design, and Housing       | 1. General Professional  
2. Professional Interior Design  
3. General Crafts                                                   | Bachelor of Science in Home Economics                        |
| Home Economics Education (Intercollegiate) | Vocational Home Economics Education       | 1. Food Services Endorsement  
2. Child Care and Guidance Endorsement  
3. Clothing Management, Production and Services Endorsement | Bachelor of Science in Home Economics                        |
| Textiles and Clothing             | Textiles and Clothing                      | 1. Merchandising  
2. Textile Technology                                               | Bachelor of Science in Home Economics                        |
| College of Law                    | Law                                        | Dual J.D.—M.B.A. Degree Program                                   | Doctor of Jurisprudence      |
| College of Liberal Arts           | Anthropology*                              | Cultural Anthropology  
Physical Anthropology  
Archaeology                                                          | Bachelor of Arts                          |
| Art                               | Art                                        | Studio                                                           | Bachelor of Arts                          |
|                                   | Art History                                |                                                                 | Bachelor of Arts                          |
|                                   | Studio Art                                 | Communication Design  
Drawing  
Oil  
Painting  
Printmaking  
Sculpture  
Watercolor                                                        | Bachelor of Fine Arts                        |
| Audiology and Speech Pathology    | Audiology                                  |                                                                 | Bachelor of Arts                          |
|                                   | Speech Pathology                           |                                                                 | Bachelor of Arts                          |
| Biochemistry*                     | Biology*                                   | 1. Concentration in Cell Biology  
2. Concentration in Organismal and Systems Biology               | Bachelor of Arts                          |
| Botany                            | Botany*                                    |                                                                 | Bachelor of Arts                          |
| Chemistry                         | Chemistry*                                 | Concentration A  
Concentration B                                                        | Bachelor of Arts                          |
| Classics                          | Greek*                                     |                                                                 | Bachelor of Science in Chemistry                  |
| Computer Science                  | Computer Science*                          |                                                                 | Bachelor of Arts                          |
| Cultural Studies*                 | Cultural Studies                          | American Studies  
Asian Studies*  
Black Studies*  
Comparative Literature*  
Ancient Mediterranean Civilization  
Latin American Studies*  
Linguistics*  
Medieval Studies*  
Russian and East European Studies  
 a. Track I  
 b. Track II  
 Urban Studies*                                                      | Bachelor of Arts                          |
| Economics                         | Economics*                                 |                                                                 | Bachelor of Arts                          |
| English                           | English*                                   | Honors Program                                                    | Bachelor of Arts                          |
| Geography                         | Geography*                                 | 1. Cultural Geography  
2. Economic Geography  
3. Physical Geography  
4. Regional Geography                                                      | Bachelor of Arts                          |
| Geological Sciences               | Geology*                                   |                                                                 | Bachelor of Arts                          |
| Germanic and Slavic Languages     | German*                                    |                                                                 | Bachelor of Arts                          |
| History                           | History*                                   | Honors in History                                                  | Bachelor of Arts                          |
| Honors Program                    | Human Services*                            |                                                                 | Bachelor of Arts                          |

*Minor available.

*Minor available in Women’s Studies.
<table>
<thead>
<tr>
<th>DEPARTMENT (UNIT)</th>
<th>MAJOR</th>
<th>CONCENTRATION/OPTION/TRACK/ ETC. WITHIN THE MAJOR</th>
<th>DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics</td>
<td>Mathematics*</td>
<td>Honors Program in Mathematics Program 1 Program 2 Program 3A Program 3B Program 4A Program 4B Program 5</td>
<td>Bachelor of Arts</td>
</tr>
<tr>
<td>Microbiology</td>
<td>Microbiology</td>
<td>Bachelor of Arts</td>
<td></td>
</tr>
<tr>
<td>Medical Technology</td>
<td>Bachelor of Arts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td>Music</td>
<td>Applied Music* Music History and Literature*</td>
<td>Bachelor of Arts</td>
</tr>
</tbody>
</table>
|                  |       | Applied Music 
|                  |       | a. Multiple Woodwind Instruments 
|                  |       | b. Organ 
|                  |       | c. Piano 
|                  |       | d. Strings 
|                  |       | e. Voice 
|                  |       | f. Woodwind, Brass, and Percussion Instruments 
|                  |       | Composition Music History and Literature Music Theory Piano Literature | Bachelor of Music |
| Philosophy       | Philosophy* | Bachelor of Arts |
| Physics and Astronomy | Physics* | Health Physics | Bachelor of Arts |
| Physical Sciences | Physical Sciences* | Bachelor of Arts |
| Political Science | Political Science* | Public Administration | Bachelor of Arts |
| Psychology       | Psychology* | Concentration in General Psychology Concentration in Academic Psychology Honors Program in Psychology | Bachelor of Arts |
| Pre-Professional Programs | Pre-Professional Programs | Pre-Dental Pre-Medical Pre-Medical Technology Pre-Pharmacy Pre-Cytotechnology Pre-Dental Hygiene Pre-Histotechnology Pre-Medical Records Administration Pre-Nursing Pre-Physical Therapy Pre-Optometry Pre-Radiological Technology | Bachelor of Arts |
| Religious Studies | Religious Studies* | Basic Option Student Initiated Option | Bachelor of Arts |
| Romance Languages | Romance Languages* | Basic Option Student Initiated Option | Bachelor of Arts |
|                  | French* | Bachelor of Arts |
|                  | Italian* | Bachelor of Arts |
|                  | Spanish* | Bachelor of Arts |
| Sociology        | Sociology* | Bachelor of Arts |
| Speech and Theatre | Speech and Theatre | Concentration in Speech* Concentration in Theatre* Concentration in General Speech | Bachelor of Arts |
| Liberal Arts     | Statistics | Bachelor of Arts |
| Intracollegiate  | Intracollegiate (Intercollegiate with the College of Business Administration) | Bachelor of Arts |
| Zoology          | Zoology* | Bachelor of Arts |
| Individualized Program | Individualized Program | Bachelor of Arts |
| College Scholars Program | College Scholars Program | Bachelor of Arts |
| College of Nursing | College of Nursing | Bachelor of Science in Nursing |
| Graduate School of Library and Information Science | Graduate School of Library and Information Science* | Bachelor of Arts |

*Minor available.
*Minor available in Portuguese.
*Minor available to students in the College of Education and the College of Liberal Arts.
Units—Entrance requirements are stated in terms of units. A unit represents nine months of study in a subject in a secondary school, constituting approximately a quarter of a full year’s work. A four-year secondary school curriculum should be regarded as representing sixteen units of work as a minimum.

Unit Requirements—For admission into the university, with high school graduation, are required as specified on the following pages. Graduates of Tennessee high schools must present one unit in American history or take a comparable course during the first year in college, with college credit.

Unit Requirements for Individual Programs

A number of programs offered by the University require specific high school units for admission beyond the general University admissions requirements. These are shown in Table II.

Unclassified Students. Students who meet University admissions requirements but do not specify unit requirements of the program they seek to enter may be admitted as unclassified students. They will be assigned special advisers in the college they plan to enter. Students so admitted should remove entrance deficiencies as soon as possible, and in no event later than one year following enrollment. Students who have not removed entrance deficiencies by the start of their third year in college will not be allowed to continue at the University.

Special Requirements for International Students

In making application for admission to undergraduate study, each international student will be required to provide the following:

1. A completed application for undergraduate admission;
2. Authenticated copies of all academic records. These records should describe the course work in terms of units spent in school and types of subject matter covered, with grades earned in each subject;
3. Evidence of English proficiency according to the following requirements for students whose first language is not English:
   a. Any applicant to the undergraduate program whose first language is not English—including all transferred from any college or university in the United States—must present a TOEFL score of at least 525 (earned within two years prior to application) before being admitted; final consideration cannot be granted until test results are received by the Director of Admissions. Then the University of Tennessee English Proficiency Test must be taken prior to registration; this test will determine whether the student needs to take more English and, if so, at what level. Students assigned to special English courses must enroll the first quarter of attendance, stay continuously enrolled in the assigned courses until completion of all requirements, and should complete the requirements within the first year for continued enrollment at The University of Tennessee, Knoxville;
   b. A United States citizen or permanent resident whose first language is not English but who has graduated from a high school in the United States, or from its equivalent secondary school in a country whose first language is English, may be admitted under the conditions that apply to United States citizens whose first language is English. Any other United States citizens or permanent resident whose first language is not English must conform to the regulations stated in a. above.
   A fee of ten dollars, in addition to regular tuition and fees, will be charged each applicant who takes the University of Tennessee English Proficiency Test. The English Proficiency Test, which grants no credit, is to be distinguished from other forms of proficiency testing which do grant credit.

Advanced Standing by Examination

Students at The University of Tennessee, Knoxville may accelerate their programs through credit by examination. To receive such credit, a student must first be regularized at the Knoxville campus.

ADVANCED PLACEMENT EXAMINATIONS

Students who satisfactorily pass Advanced Placement Examinations prepared and administered under the auspices of the College Entrance Examination Board are eligible to receive credit in courses offered by the College of Liberal Arts on the basis of such tests. In each case the final decision as to whether or not credit is to be given on this basis rests with the appropriate department, as does the determination of the number of credit hours and the specific courses for which such examinations are to be taken as evidence of acceptable proficiency.

Participating departments are Botany, Chemistry, Comparative Literature, English, German, History, Mathematics, Physics, Romance Languages, and Zoology.

PROFICIENCY EXAMINATIONS

Proficiency examinations for advanced standing are offered in the Colleges of Agriculture, Business Administration, Education, Engineering, Liberal Arts, and Home Economics, and in the College of Nursing (Knoxville). A student may obtain the privilege of taking proficiency examinations on recommendation of the head of the department and approval of the Registrar. See additional discussion on page 28.

Faculty Advising

Once students are admitted, the University accepts certain responsibilities for their guidance and placement in order that they may secure the greatest benefit from their university experience. At registration each student is assigned to a member of the faculty, who acts as the student’s adviser. The duties of the adviser are to assist the student in selecting subjects to ensure a well-rounded education, and to aid the student in interpreting the University’s requirements. The responsibility for the selection of courses rests, in the final analysis, upon the student, and it is not the province of the adviser to refuse approval of a course which the student elects. Similarly, it is the full responsibility of all students to meet the requirements of their courses of study in their proper order, so that they may not in the senior year find themselves ineligible for graduation. Although all students are urged to consult frequently with advisers, students in the Colleges of Agriculture, Engineering, and Nursing are required during the fall quarter to have a conference sometime within a five-week period between early October and mid-November at which time students will receive winter quarter preregistration scan sheets. A triplicate memorandum will be made at each conference recording student’s progress, academic programs, career planning, professional development and other related activities. Specific procedures for mandatory advising for other colleges and schools will be implemented during the fall of 1978.

All beginning students, and former students whose grade point averages are below 2.00, must obtain adviser approval of their course selections at registration.

The Colleges of Business Administration, Education, and Liberal Arts have established advising centers where students may go at any time for advice on academic matters.

The Student Counseling Center, 900 Volunteer Boulevard, is available to any student desiring help with individual or personal problems. Facilities are also available for improving reading skills and study habits. Students may go to the Center themselves or they may be referred by members of the faculty.

Special State and Federal Laws for Educational Purposes

ELDERLY AND DISABLED PERSONS

Persons sixty years of age or older and totally disabled persons who are domiciled in Tennessee, may audit courses without payment of course fees if space is available in the individual class. Persons sixty-five years of age or older and totally disabled persons who are domiciled in Tennessee, may enroll in courses for credit at reduced fees. Interested persons should inquire at The University of Tennessee Evening School Office during regular office hours.

FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT

This act provides for confidentiality of student records; however, it also provides for basic identification of people at UTK without the consent of the individual. Release of information to third parties includes directory information, such as contained in the campus telephone book and sports brochures. Such information includes name, address, telephone number, date and place of birth, major, dates of attendance, degree and awards, the most recent previous educational
agency or institution attended, participation in school activities and sports, and weight and height (for special activities).

Public notice of the categories to be contained in a directory is given, and a period of one week is provided during which a student may request that such information not be released.

EEO/TITLE IX/SECTION 504 STATEMENT

The University of Tennessee, Knoxville does not discriminate on the basis of race, sex, color, national origin, age, handicap, or veteran status in provision of educational opportunities or employment opportunities and benefits.

UTK does not discriminate on the basis of sex or handicap in the education programs and activities which it operates, pursuant to the requirements of Title IX of the Education Amendments of 1972, Pub. L. 92-318; and Section 504 of the Rehabilitation Act of 1973, Pub. L. 93-112; respectively. This policy extends to both employment by and admission to the University.

Inquiries concerning Title IX and Section 504 should be directed to the Office of the Vice Chancellor for Planning and Administration, 525 Andy Holt Tower, 974-4391. Charges of violation of the above policy should also be directed to the Office of the Vice Chancellor for Planning and Administration.

AMERICAN HISTORY

Effective July 1, 1978 and afterwards, all student receiving a bachelor's degree must have completed one unit of American history on the high school level or nine quarter hours of collegiate American history in order to receive a bachelor's degree as required by the General Assembly of the State of Tennessee (Tennessee Code Annotated 549-3253).

SOCIAL SECURITY NUMBER USE

The University of Tennessee, Knoxville requires assignment of an individual student number for internal identification of each student's record. The University began using the social security number as the student identification number prior to January 1, 1975; therefore, the federal law allows continued use of this number. However, if a student does not desire the social security number to be used, a student identification number will be assigned. For prompt and accurate retrieval of records and for conducting business about their own records, students and alumni must give their student identification numbers, whether a social security number or an assigned number, are used administratively within the University only and are not given to third parties without expressed consent of the student concerned.

General Academic Regulations

Credit Hours, Grades, and Grade Point Average

The basic unit of credit at The University of Tennessee, Knoxville, is the quarter hour. This normally represents one hour of lecture or recitation or two hours of laboratory work per week. Each course at the University carries a number of quarter hours of credit specified in the course description. At the completion of each course, a student will be assigned a grade reflecting the student's performance in the course. Passing grades normally carry with them a certain number of quality points per quarter-hour of credit in the course. A student's grade point average is obtained by dividing the total number of quality points the student has accumulated by the total number of quarter hours the student has attempted, not including hours for which grades of N, NC, NG, P, S, SI, and W have been received.

Undergraduate students are graded on the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Performance</th>
<th>Quality Points</th>
<th>Per Quarter Hour</th>
<th>Level of Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Superior</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Average</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Below Average</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Fail</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TEMPORARY GRADES

A student receiving a grade of I or SI should arrange with the teacher to take whatever action is needed to remove the grade at the earliest possible date, and in any event, within two years after the course was attempted. A student need not be enrolled at the University to remove a temporary grade.

I (incomplete) is assigned to a student whose work is satisfactory but who has failed to complete a laboratory, shop, or other parallel exercise. The I carries no quality points and counts as a failure in the computation of grade point average until removed. The grade of I may also be assigned by any faculty member to students who appear to be deficient in their usage of English in the course, but otherwise passing; the grade of I is removed when the Committee on Student English certifies to the instructor that a student has made the necessary improvements.

SI (incomplete) is assigned when the work is satisfactory but when a portion of the course is not completed. The grade is awarded only in courses where S/NC grading has been elected. The grade of SI for incomplete work will be recorded as an SI, which is not computed in the average. GRADES THAT DO NOT INFLUENCE GRADE POINT AVERAGE

The grades of N, NG, P, and W carry no quality points, but hours on which these grades are earned are not counted in computing a student's grade point average. Hence these grades have no effect on grade point average.

NC (no credit) indicates failure to complete a course satisfactorily when taken on an S/NC basis. S (satisfactory) is assigned for C or better work when a course is taken on an S/NC basis.

SI (incomplete) is assigned in S/NC graded courses only. See below.

W (withdrawal) is assigned in courses from which a student has officially withdrawn. Regulations concerning withdrawal from courses or from the University appear in the following section of this catalog, entitled "Changes in Registration."

SATISFACTORY/NO CREDIT GRADING SYSTEM

The purpose of this system is to encourage the student to venture beyond the limits of those courses in which the student usually does well and, motivated by intellectual curiosity, explore subject matter in which performance may be somewhat less outstanding than work in preferred subject fields. To this end a Satisfactory/No Credit (S/NC) system of grading has been developed for undergraduate courses (1000-, 2000-, 3000-, and 4000-level courses). Neither grade is counted in a student's grade point average but, like all other grades, is entered on the permanent record. S is given for C or better work on the traditional grading scale and NC is given for less than C work. The student only receives credit in the course if an S is received. A student may not repeat a course for S/NC if the student received a conventional grade (A, B, C, D, F, or I).

The instructor of a conventionally graded course will not be informed which student, if any, has elected S/NC grading. If the student elects nonconventional grading, the computer converts an A, B, or C to an S and for F, the grade of I for incomplete work will be recorded as an SI, which will not be computed in the average. A student is permitted to change the system of grading in a course through the add deadline. The grade W will be applied in the same manner for either a regular grading system or S/NC grading. The changing of an S/NC grade to a regular letter grade or vice versa is not permitted unless a bona fide error is determined by the Registrar.

REPEATING COURSES

When courses are repeated the last grade only is counted in computing the grade point average. All grades are entered on the permanent record. A student may not repeat a course more than twice in order to obtain a better grade.

Graduate students and undergraduates taking courses for graduate credit are graded as follows:

A — (4 quality points per quarter hour); indicates superior work.
B+ — (3.5 quality points per quarter hour); indicates above satisfactory work.
B — (3 quality points per quarter hour); indicates satisfactory work.
C+ — (2.5 quality points per quarter hour); indicates performance less than expected.
C — (2 quality points per quarter hour); indicates work of borderline quality. This grade represents work below the standard expected of graduate students.
D — (1 quality point per quarter hour); indicates clearly unsatisfactory work and carries no credit.
F — (no quality point value); indicates extremely unsatisfactory work.
—(no quality point value); indicates that the student has done satisfactory work in the course, but—because of circumstances beyond control—has been unable to finish all requirements. It is not to be given to a student to do additional work to bring up a deficient grade. All incompletes must be removed within 2 quarters. If a supplementary grade report has not been received in the Graduate Office one week prior to the end of the second quarter, the I will be converted to an F. The incomplete will not be counted in the cumulative average until a grade is assigned. No student may graduate with an I on the record.

S/NC—(carries credit hours, but no quality point value); S is equivalent to B or better, and NC means no credit earned. NC grades may be repeated for an S. S/NC grading is allowed only where indicated in the Graduate Catalog. S/N is used for courses which culminate in a thesis, dissertation, or preliminary examination. The N grade takes on the value of the S when the thesis or dissertation is accepted by the Graduate School. The number of S/NC courses to be allowed in a student's program of study shall be limited to one-fourth of the course work hours required (excluding thesis or dissertation) in a program. (This would be 9 hours or 12 hours in a 48-hour non-thesis program or 18 hours in a doctoral program of 72 hours excluding dissertation hours.)

Graduate students are required to make an overall minimum grade average of B in courses taken for graduate credit. No graduate student will be allowed to repeat a course for the purpose of raising a grade already received. Transferred work will not be counted in computing the grade average on courses completed in Graduate School.

Grades are graded on a numerical scale from 0.0 to 4.0. Quality points per quarter hour of credit in a given course are equal to the numerical grade received in the course. Grades of 0.5 and below count as failures. Some courses are graded on an S/NC basis.

GRADUATING SENIOR PRIVILEGES

A senior who fails one subject during the quarter of intended graduation has the privilege of standing an examination in that subject at the beginning of or during the next quarter, and, if successful, receiving the degree at the next commencement.

A senior who receives the grade of I in any subject will, on request to the instructor, be given the opportunity to remove the deficiency before the close of the quarter, but not later than the last day before commencement, providing that successfully passing these courses will make the senior eligible for graduation.

FRESHMAN ENGLISH

English 1010, 1020, 1031-32-33, 1018-28-38, 1211, 1221, 1431, 1441 and 1451 are offered on a system of A, B, C, I, NC, W grading.

ENGLISH PROFICIENCY

Students are expected to maintain a satisfactory standard of oral and written English throughout their course work program. Any student may be reported by a member of the faculty for examination in English, and, if found deficient, by the Committee on Student English, be required to take a standardized test further work as the Committee may direct. To facilitate the reporting of students deficient in English, faculty members are asked to check the column headed “English” on the quarterly grade sheets. A student checked by any faculty member will be required to remediate the deficiency through work in the Writing Laboratory. Remedial work in the laboratory shall be started as soon as possible after the student has been notified of the deficiency and it shall continue until the student's performance in English has been declared satisfactory by the laboratory instructor.

REGISTRATION

Dates for orientation and registration are announced to new transfer and freshmen students when the Certificate of Admission is issued. Graduate students are instructed when to register upon receipt of their Admission Status. Former students who have been absent from UTK other than the summer term and students who have withdrawn from the previous quarter will receive registration information with their letter of readmission. Law students should consult the Admissions Office, College of Law. Students enrolled in that college and in the college of Veterinary Medicine will be governed by the University's registration date changes unless specified differently by the college.

REQUIREMENTS FOR REGISTRATION OF ADMITTED STUDENTS

Medical History. Though a physical examination is not required, a Medical History Questionnaire is sent to all admitted students and must be completed by the student, parent, guardian, or other responsible party who is familiar with the student’s medical history. Such information will facilitate University physicians in providing continuing health care. This form must be returned to the Student Health Service before enrollment.

PARTICIPATION IN ORIENTATION

Beginning freshmen and transfer students are required to attend an orientation session prior to the first registration at the University. Schedules for these programs are mailed to admitted students by the Dean of Student Conduct and Orientation. Orientation programs are designed to help new students become acquainted with opportunities and services at the University, and to provide information needed for registration.

FIRST CLASS MEETING

Students who fail to attend the first class meeting or who cannot arrange the department may be dropped from the course to make their spaces available to other students. Students have the responsibility to assure that they have been dropped, otherwise, they are liable for a grade of “F” in the course.

MAXIMUM HOURS PER QUARTER

Undergraduate students may enroll for a maximum of 19 credit hours each quarter unless a lower maximum is specified by the college or school to which the student is enrolled. Enrollment in more than 19 hours must be approved by the dean of the student's college or school. Graduate students may enroll for a maximum number of 15 credit hours each quarter. Enrollment in more than 15 hours must be approved by the Vice Chancellor for Graduate Studies and Research or the Dean for Graduate Studies. Law and Veterinary Medicine students may enroll for the maximum number of credit hours each quarter as specified by the respective college.

Changes in Registration

Mid-term is an announced date midway between the beginning and ending days of classes each quarter or session (35 calendar days after the beginning of classes, except for summer sessions). Prior to mid-term undergraduate students may withdraw from courses as specified below. A course may be added without departmental permission through the seventh calendar day counted from the beginning of classes. Due to the nature of some courses, permission of the department head or course instructor is required. Change of section within a given course must be made in accordance with departmental policy and in all instances no later than seven calendar days counted from the beginning of classes. The student has the responsibility to process section changes. Otherwise proper credit may not be received after classes begin. All change of sections must be approved by the department head or the instructor of the class the student wishes to enter. Changes in a student's official weekly schedule at the University are made through the Office of Special Services. It is important that all students who leave the University prior to the completion of the quarter report their withdrawal to this office.

WITHDRAWING FROM UNIVERSITY BEFORE MID-TERM (35 CALENDAR DAYS).

If an undergraduate student officially withdraws from the University before mid-term (for summer quarter drop deadlines, see summer quarter timetable), the grade of W will be recorded in all courses in which the student is currently enrolled. In cases of withdrawal prior to mid-term, the Office of Special Services will verify the date of withdrawal to the Registrar, who will then inform the instructors that the grade in those courses is a grade of W. Graduate students should consult the Graduate Catalog for regulations concerning withdrawal from the University.

DROPPING COURSES BEFORE MID-TERM (35 CALENDAR DAYS). A course may be dropped with a W (withdrawal) before mid-term (for summer quarter drop deadlines, see summer quarter timetable). A drop form must be executed by the student and submitted to the Registrar. Prior to mid-term neither the instructor’s nor the adviser’s permission is required. Students
are permitted to drop a course through the fifth calendar day counted from the beginning of class, without any notation on the academic record. Graduate students should consult the Graduate Catalog for regulations concerning the dropping of courses.

Dropping Courses or Withdrawing from the University after Mid-Term (35 calendar days). An undergraduate or graduate student withdrawing from a course, or from the University, after 35 calendar days from the start of classes will receive the grade of "F" unless it can be demonstrated that the request for withdrawal is based on circumstances beyond the student's control. Examples of circumstances beyond the student's control are illness or injury of the student (verified by the Student Health Service or private physician), or necessary change in work schedule occurring after the drop deadline (verified by the student's employer). Examples of causes which are within the student's control and which would not be acceptable to grant withdrawal include improper registration on the part of the student, or failure to achieve academically.

Course Numbers and Levels
Each course offered by the University is identified by the name of the department offering the course and a four-digit course number. These numbers indicate course level, as follows.

<table>
<thead>
<tr>
<th>Course Numbers</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000-0999</td>
<td>Non-credit; preparatory</td>
</tr>
<tr>
<td>1000-9999</td>
<td>Lower division—primarily for freshmen and sophomores</td>
</tr>
<tr>
<td>3000-4999</td>
<td>Upper division—primarily for juniors and seniors; usually available for graduate credit; when taken for graduate credit, the letter &quot;G&quot; will precede the course credit hours on the grade report</td>
</tr>
<tr>
<td>5000-5999</td>
<td>Graduate; sometimes available for undergraduate credit; when taken for undergraduate credit, the letter &quot;U&quot; will precede the course credit hours on the grade report</td>
</tr>
<tr>
<td>6000-6999</td>
<td>Advanced graduate; open to graduate students only</td>
</tr>
<tr>
<td>8000-9999</td>
<td>Law; occasionally open to other qualified students</td>
</tr>
</tbody>
</table>

To be eligible for upper-division work a student must have attained junior (third-year) status, as defined in the following section, unless approval is granted by the dean of the student's college. This rule applies to transfers, as well as those who have previously attended the University. A cumulative grade point average of at least 2.00 is required to begin upper-division work.

Classification
Undergraduate, law, and veterinary medicine students are classified according to the chart above, on the basis of quarter hours passed.

To be considered as a full-time undergraduate student in any quarter, a student must acquire in 12 quarter hours, including the full summer quarter. Six hours for each separate term of the summer session are required for full-time classification. Audit hours are not considered in the computation.

Teacher Certification
Teacher certification is a responsibility of the College of Education of the University of Tennessee, Knoxville. Students desiring certification must meet general education, professional education, and area of specialization requirements described in the College of Education section of this catalog. In keeping with requirements of the Tennessee Department of Education, programs leading to teacher certification include a nine (9) hour requirement in health or physical education.

Honors Courses
Courses specifically designated as honors courses will be designated "Hon." Individuals selected on the basis of ACT scores and previous academic performance may be enrolled. There is no limit on the number of credits that may be earned in these courses except in the senior readings courses not requiring regular class attendance; these senior readings courses may total not more than nine hours credit toward graduation. (In the fields of science offering four-hour courses the total may be twelve hours.) There is also a non-departmental honors course open to a limited number of freshmen entering in any college.

Auditors
Students registered for credit courses may enter classes as auditors, subject to the approval of the instructor whose class is visited. Auditors are under no obligation of regular attendance, preparation, recitation, or examination. They receive no credit. They may not take part in class discussion or laboratory or field work.

Students not registered for credit courses may be admitted as auditors only with the consent of the Director of Admissions; they are required to register, pay the fees for auditors, and to have class cards for the courses they elect to attend.

Minimum Class Size
An undergraduate course will not be given for fewer than five students except by permission of the Vice Chancellor for Academic Affairs.

Undergraduate Retention Standards
To be eligible to continue at the University of Tennessee, Knoxville an undergraduate student must maintain a cumulative grade point average at or above the minimum acceptable level shown in the chart below. There are additional restrictions in individual programs, such as nursing and architecture, and the appropriate section of this catalog should be consulted.

<table>
<thead>
<tr>
<th>Total Quarter Hours Attempted</th>
<th>Minimum Acceptable Grade Point Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-35.9</td>
<td>1.00</td>
</tr>
<tr>
<td>36-83.9</td>
<td>1.50</td>
</tr>
<tr>
<td>84 and above</td>
<td>2.00</td>
</tr>
</tbody>
</table>

A student whose grade point average falls below the minimum acceptable level in any quarter will be placed on academic probation for the subsequent quarter of enrollment. During the probationary quarter the student must attain the minimum acceptable average shown above, or a 2.00 average for that quarter, or be dropped from the University.

A transfer student who has been conditionally admitted and fails to meet the regular University standards of retention during the probationary quarter, or any subsequent quarter before attaining good standing, will be dropped from the University and may not make application for readmission for three academic quarters.

A student who has been previously dropped and readmitted will be placed on academic probation. Failure to meet the regular University standards of retention during the probationary quarter, or any subsequent quarters prior to attaining good standing, will result in the student's being dropped from the University and being ineligible to make application for readmission for three academic quarters.

Readmission
A student in good academic standing who has withdrawn from school or has been absent for a quarter other than the summer quarter must make application for readmission.

A student who has been dropped academically must make application for readmission. Readmission is not automatic. Application must be made at least six weeks before registration. The Committee on Readmissions may approve or refuse the application for readmission. Students are strongly encouraged to appear in person before the Committee on Readmissions.

Former students who have been enrolled at accredited colleges or universities must apply for readmission. An official transcript and an acceptable combined grade point average is required for readmission.
General Policies
A. Any student who attains a quarterly average of 2.00 may continue in residence at the University, even though the cumulative average does not meet the minimum acceptable level above.
B. Summer quarter is considered a regular academic quarter in satisfying the requirement of compulsory absence due to academic deficiency.
C. Quarter hour attempts are used only for determining the minimum acceptable level for the grade point average. Satisfactory/no credit hours are included in hour attempts but excluded in calculating minimum cumulative grade point average requirements for retention and graduation.
D. Students who transfer to other accredited colleges or universities must submit official transcripts and have an acceptable combined grade point average before being readmitted to the University.
E. Correspondence courses are open to students regardless of their admission or readmission status.
F. To register for credit courses in any branch, center or division of the University controlled by the Knoxville campus (except correspondence courses), a student must meet the admission or readmission regulations that govern courses for credit at the Knoxville campus.
G. The Center for Admissions shall consider the applicant's total record, including the academic record and other factors which may be expected to influence academic performance. A student will not be readmitted when the record indicates a very low probability of success in college work.
H. No student refused by the Committee on Readmissions may be admitted to another University without the approval of the Committee.
I. There will be no tentative readmissions.
J. Students in architecture and nursing are not permitted to reenter the University without the approval of the Committee.

Comment: The University of Tennessee, Knoxville is committed to helping students overcome academic deficiencies. A letter advising of academic probation will be sent about the same time as the quarterly grade report. This letter will advise conferring with the student's dean before completing registration for the probationary quarter.

General Requirements for a Bachelor's Degree
To receive a bachelor's degree from The University of Tennessee, Knoxville, a student must complete all of the requirements listed below. It should be noted that some of the colleges and schools within the University have special requirements above and beyond those stated here, and students are advised to consult the appropriate section of this catalog for any further degree requirements.

1. Complete satisfactorily all requirements of the curriculum for which the student is enrolled, as described in the portion of this catalog devoted to the college or school offering the curriculum. Curricular requirements change frequently, and students should note the caution on the second page of this catalog. A student is allowed to satisfy requirements for a bachelor's degree under any curriculum in effect during the student's attendance at UT. Knoxville provided the curriculum has been in effect within ten years of the date of graduation. This does not obligate the University to offer a discontinued course. Other sets of requirements will be available only upon approval of a student's faculty adviser and college dean. In consultation with the Registrar's Office. A student who transfers to UTK subsequent to prior enrollment at a community college, junior college, or another senior institution may elect the UTK catalog in effect at the time of enrollment at the other institution provided that the student enrolls at UTK within one year after the last period of study at the institution from which the student is transferring.

2. Maintain a cumulative grade point average of at least 2.00 on all college work attempted at all institutions attended.

3. Maintain a grade point average of at least 2.00 on all work attempted at The University of Tennessee, Knoxville. A 2.00 average is obtained by having two quality points for each quarter hour attempted, not including hours for which grades of NC, S, and W have been received.

4. Maintain a grade point average of at least 2.00 on the last 45 hours (last three quarters as a minimum) of work at The University of Tennessee, Knoxville. A 2.00 average is obtained by having two quality points for each quarter hour attempted, not including hours for which grades of NC, S, and W have been received.

5. Complete the last 90 hours of credit offered for the bachelor's degree at an accredited senior college.

6. Complete the last 45 hours of credit offered for a bachelor's degree in residence at The University of Tennessee, Knoxville. In the College of Agriculture at least twenty-seven quarter hours of upper-division technical agriculture approved by the student's faculty adviser must be completed at The University of Tennessee, Knoxville. Work taken for credit through the University's Continuing Education programs in courses presented by the faculty of the Knoxville campus may be counted as part of this requirement, with the exception of the correspondence credit limitation noted below. Special arrangements to allow work taken at other University of Tennessee campuses to be counted as part of this requirement must be approved by the dean of the student's major college or school.

7. Students shall be advised that, in accordance with the state law that one unit of American history at the high school level or nine quarter hours of collegiate work be satisfactorily completed. This requirement is effective for those graduating July 1, 1978 or afterwards. It may be satisfied by completing History 2510-20 (or 2518-28) and History 2511 or 2521. History 3311 or 3321 may be used in lieu of the history of American history. Students should consult the college of enrollment to determine how the nine hours credit for fulfillment of this requirement is to be included in the individual curriculum.

8. Satisfy all financial obligations (fees or fines) owed to the University.

9. Pay to the Treasurer's Office a $100.00 graduation fee by the beginning of the quarter of graduation.

10. File an application for a degree with the Office of the Registrar, Room 209 Student Services Building, no later than six weeks before the end of the quarter of graduation.

SECOND BACHELOR'S DEGREE
A student who holds a bachelor's degree may receive a second bachelor's degree from The University of Tennessee, Knoxville, by satisfying the following requirements.

1. Meet all requirements for both degrees, as specified above.

2. Complete at least forty-five quarter hours beyond the first bachelor's degree.

3. Attend the University for at least three quarters beyond the minimum time required for the first bachelor's degree.

Seniors Eligible for Graduate Credit
A senior at The University of Tennessee, Knoxville who needs 45 quarter hours or less to complete the requirements for a bachelor's degree, and has at least a 3.00 grade point average, may take sufficient work for graduate credit to fill out a schedule of 15 hours of combined undergraduate and graduate work per quarter, subject to the approval of the Vice Chancellor for Graduate Studies and Research.

Correspondence Work
A student may offer by correspondence as much as one-fourth of the total hours required for the degree sought and have this work count toward the degree. Credit for undergraduate courses in correspondence or the major subjects shall be limited to one-fourth of the total credit hours required. Correspondence credits are not recognized by the College of Law or—except by prior permission—by the Center for the Health Sciences.

All courses taken by correspondence for which credit is given must meet degree program requirements of the Knoxville campus. Degree credit will not be granted for correspondence courses taken at an institution other than the University of Tennessee by a UTK student if an equivalent correspondence course is available from the University of Tennessee Correspondence program.

A senior may take only nine hours of the last year's work (the last forty-five hours of the degree) by correspondence, and this must be taken with The University of Tennessee, Knoxville. If the student is a senior transfer, no work may be taken by correspondence or extension.

Students taking work for certification purposes should consult the State Department of Education of their respective states regarding the amount of extension and/or correspondence credit allowed for a teacher's certificate.
Proficiency Examination

A proficiency examination may be given in any academic course offered for undergraduate credit. The University policy is to reserve to departments the decisions as to which courses, if any, cannot be passed by proficiency examinations. However, the University faculty feels that it is a rare course for which mastery cannot be tested by appropriate examination(s).

When applying to a department for a proficiency examination, a student should present evidence of having developed the abilities, knowledge, and attitudes expected of those who have taken the course in question. The giving of the examination must be approved by the head of the department in which the course is offered. A fee of $10.00 per course will be paid in advance at the Office of the Registrar.

Subject to the grading policy of the college in which the student is enrolled, and except for courses which are graded only on an S/NC basis, a student who passes a proficiency examination and who wishes to have the grade recorded can choose to take the grade on the examination (A, B, or C) or take an S. An S gives credit for the course but does not affect the grade point average. If a grade of D or F is made on a proficiency examination, the department is expected to note the attempt but no record of the examination is made on the student’s transcript. The maximum credits obtainable through having developed the examination and the use of proficiency examinations to remove failing grades (also the grade of I) are determined by the department offering the proficiency examination.

Entering international students, whose native language is not English, are required to take the UTK English Proficiency Examination to determine placement in the appropriate English course. The regular proficiency examination fee of $10.00 is charged. However, no credit for any English courses is awarded through this special examination.

When approved by a given department, nationally recognized examinations, such as the appropriate subject examinations of the College Level Examination Program (CLEP) of the College Entrance Examination Board, may be used as proficiency examinations in one or more courses offered by that department. In such cases the final decision as to whether or not credit is to be given on this basis rests with the department awarding credit, as does the determination of the number of credit hours and the specific courses for which such examinations are to be taken as evidence of acceptable proficiency. The University will charge a fee of $5.00 for the evaluation of such an examination.

Honors Categories for Graduation

The diplomas of graduating seniors show honors categories based on the following scale:
- "honors" 3.00 through 3.39
- "high honors" 3.40 through 3.74
- "highest honors" 3.75 through 4.00

These honors categories are based on a student’s cumulative average at the end of the quarter preceding the graduation quarter. The honors category is also based on both the average earned at UT, Knoxville and the combined average on all college work attempted, with the lower of the two averages determining the honors category.

If, at graduation, a student’s cumulative grade point average would allow a higher honors category than that determined at the end of the quarter preceding the graduation quarter, the student may, upon written request, receive a substitute diploma indicating the higher category.

Accelerated Program

The University operates on a four-quarter plan, and a majority of its courses, especially at the lower division, are offered every quarter. Through appropriate arrangements of courses and attendance during the summer quarters, students may frequently complete their degree programs in less than four years. A student’s faculty adviser should be consulted for assistance in planning an accelerated program.

Advanced Military Science and Air Force Aerospace Studies

Students who elect to enroll in the advanced military courses (junior and senior years) are obligated by written agreement with the government to complete the courses and to accept a commission if tendered.

Degrees

AT KNOXVILLE

Graduate School
- Doctor of Business Administration.
- Doctor of Education.
- Doctor of Philosophy.
- Specialist in Education.
- Master of Arts.
- Master of Arts in College Teaching.
- Master of Business Administration.
- Master of Engineering.
- Master of Fine Arts.
- Master of Mathematics.
- Master of Music.
- Master of Nursing.
- Master of Public Administration.
- Master of Public Health.
- Master of Science.
- Master of Science in Library Science.
- Master of Science in Planning.
- Master of Science in Social Work.

College of Agriculture
- Bachelor of Science in Agriculture.
- Bachelor of Science in Agricultural Engineering.
- Bachelor of Science in Forestry.
- Bachelor of Science in Wildlife and Fisheries Science.

School of Architecture
- Bachelor of Architecture.

College of Business Administration
- Bachelor of Science in Business Administration.

College of Communications
- Bachelor of Science in Communications.

College of Education
- Bachelor of Science in Education.

School of Health, Physical Education and Recreation
- Bachelor of Science in Education.

College of Engineering
- Bachelor of Science in Aerospace Engineering.
- Bachelor of Science in Chemical Engineering.
- Bachelor of Science in Civil Engineering.
- Bachelor of Science in Electrical Engineering.
- Bachelor of Science in Engineering Science.
- Bachelor of Science in Industrial Engineering.
- Bachelor of Science in Mechanical Engineering.
- Bachelor of Science in Metallurgical Engineering.
- Bachelor of Science in Nuclear Engineering.

College of Home Economics
- Bachelor of Science in Home Economics.

College of Law
- Doctor of Jurisprudence.

College of Liberal Arts
- Bachelor of Arts.
- Bachelor of Fine Arts.
- Bachelor of Music.
- Bachelor of Science in Chemistry.

College of Nursing
- Bachelor of Science in Nursing.

College of Veterinary Medicine
- Doctor of Veterinary Medicine.
Center for the Health Sciences

Graduate School—Medical Sciences
Doctor of Philosophy,
Master of Science.
Master of Science in Forensic Toxicology

College of Medicine
Doctor of Medicine.

College of Dentistry
Doctor of Dental Surgery,
Master of Science in Orthodontics.
Master of Science in Pedodontics.

College of Pharmacy
Bachelor of Science in Pharmacy.
Doctor of Pharmacy.

College of Nursing
Bachelor of Science in Nursing.
Master of Science in Nursing.

College of Community and Allied Health Professions
Bachelor of Science in Cytotechnology.
Bachelor of Science in Dental Hygiene.
Bachelor of Science in Medical Records Administration.
Bachelor of Science in Medical Technology.

Bachelor of Science in Physical Therapy.
Bachelor of Science in Radiological Technology.

AT CHATTANOOGA
(See Bulletin of UT at Chattanooga)
Bachelor of Arts.
Bachelor of Music.
Bachelor of Science.
Bachelor of Science in Engineering.
Bachelor of Science in Nursing.
Master of Business Administration.
Master of Education.
Master of Science.

AT MARTIN
(See Bulletin of UT at Martin)
Associate of Arts in Nursing.
Bachelor of Science in Nursing.

Bachelor of Science.
Bachelor of Science in Agriculture.
Bachelor of Science in Business Administration.

Bachelor of Science in Chemistry.
Bachelor of Science in Criminal Justice.
Bachelor of Science in Education.
Bachelor of Science in Engineering Technology.
Bachelor of Science in Home Economics.
Bachelor of Science in Natural Resources Management.
Bachelor of Science in Nursing.
Master of Science in Education.
Master of Science in Home Economics.

AT NASHVILLE
(See Bulletin of UT at Nashville)
Associate of Science in Fire Science.
Associate of Arts in Nursing.
Associate of Science in Office Administration.

Bachelor of Arts in Arts and Sciences.
Bachelor of Science in Arts and Sciences.
Bachelor of Science in Business Administration.
Bachelor of Science in Education.
Bachelor of Science in Engineering.
Bachelor of Science in Nursing.
Master of Business Administration.

FEES AND EXPENSES

Maintenance Fee. All students, including both in-state and out-of-state, are required to pay the established maintenance fee.

Tuition. Tuition is free to residents of Tennessee. Tuition is required of all students who are classified as non-residents for fee assessment purposes.

Student Hospitalization and Medical Insurance. The University makes available, by contract with an insurance company, group hospitalization insurance expressly for students. Changes in the group plan may be authorized by the University after annual review depending on prevailing hospital costs in the Knoxville area.

As would be expected with a large student group contract, a low premium cost for the individual student is obtained. Students are urged to avail themselves of this insurance, or other comparably adequate insurance, since the paying for hospital care is the student's own responsibility.

Information about the insurance is mailed by the company to the student's home and participation is solicited. Enrollment in the insurance program remains open for a designated period after classes begin. Students wishing to avail themselves of this insurance after arriving on the campus may obtain the application from the Office of Student Health Services. Whether application is made from the home or from the campus, the student applies directly with the Knoxville agent of the insurance company.

Enrollment in insurance is not a part of registration requirements.

NOTE: Some family policies do not cover the dependent child after the nineteenth birthday. The family hospitalization insurance policy should be reviewed from this aspect.

Military Deposits. All students registering for Air Science and members of the band are required to make a deposit of $35.00 damage to or loss of property issued to them. The unused portion of the deposits will be returned to the students after completion of training.

Identification Card. ID cards, issued to all students, are prepared during registration of the first quarter a student enrolls in the University and are validated quarterly thereafter. These cards are required for many purposes such as use of library facilities, check cashing facilities in the UT Bookstore, and admission to various athletic, social, and cultural events. These cards are nontransferable and may not be duplicated.

IDENTIFICATION CARDS MUST BE CARRIED AT ALL TIMES FOR PURPOSES OF IDENTIFICATION. Lost or stolen cards should be replaced by contacting the Student ID Card Office at Room 344, University Center.

Arrangement for Banking while at UT. Banking arrangements can be made with Knoxville banks. Some Knoxville banks require a waiting period of ten days before honoring withdrawals, if the deposit is a personal check. New students who wish to open a local checking account are encouraged to deposit a certified check or cashier's check unless they plan to pay initial college expenses by a personal check on a bank account already fully established.

University Fees

University fees and other charges are determined by the Board of Trustees and are subject to change without notice. The general fees in effect at the time of publication are as follows:

MAINTENANCE FEE

Undergraduate Students Per Quarter $150.00
Graduate and Law Students Per Quarter $160.00
TUITION (additional for out-of-state students) Per Quarter $312.00

NOTE: In lieu of the above charge for tuition and/or maintenance fee, part-time students may elect to pay fees computed by the quarter hour credit (or audit) at the rates shown below, total charge not to exceed the regular quarterly fee for in-state students or the maintenance fee plus tuition for out-of-state students.

Undergraduate Students: In-State $3.00 per quarter hour or fraction thereof; minimum charge $48.00
Out-of-State $39.00 per quarter hour or fraction thereof; minimum charge $117.00

Graduate and Law Students: In-State $22.00 per quarter hour or fraction thereof; minimum charge $66.00
Out-of-State $53.00 per quarter hour or fraction thereof; minimum charge $159.00

UNIVERSITY PROGRAMS AND SERVICES FEE Per Quarter $15.00

All undergraduate and graduate students taking in excess of six quarter hours per quarter will be assessed a University Programs and Services Fee of $15.00 per quarter for the fall, winter, and spring quarters and $12.00 for the summer quarter. Part-time students taking six quarter hours or less will be assessed at the rate of $1.00 per quarter hour or fraction thereof (minimum charge $3.00) but are not entitled to admission to any general activities programs. This fee is not refundable.

Knoxville campus students taking a course load of six hours may elect to pay the full Programs and Services Fee.

Graduate and teaching assistants as well as fellowship students who may have waivers of fees (tuition and/or maintenance) must pay the appropriate University Programs and Services Fee.

Students enrolled exclusively in Evening School or at Oak Ridge and Kingsport Centers are exempt from the University Programs and Services Fee.

Activities cards are nontransferable and may not be duplicated.

MUSIC FEE

One half-hour lesson per week, per quarter $20.00
One hour lesson per week, per quarter $40.00
Payable by eligible full-time students receiving individual instruction in music.

GRADUATION FEE
Bachelor’s Degree $10.00
Master’s Degree $16.00
Doctoral Degree (except J.D.) $41.00
Payable at the beginning of the quarter in which the candidate is to be graduated. This fee is nonrefundable and is valid for four quarters.

DELAYED REGISTRATION SERVICE FEE
Graduated Late Service Fee
Upon receipt of a schedule (full, partial, or incomplete) a student is immediately responsible for payment of fees. Students who preregister for a quarter must pay their fees (or make satisfactory arrangements with the Treasurer’s Office) on the regular registration dates. Effective the first regular business day following the last regular registration day a graduated late service fee of $2.00 per day will be charged during the next ensuing five regular business days.

Students who do not preregister but register through the “secondary” registration procedures will be granted two additional days after the final regular registration date to pay their fees before the graduated late service fee begins. Such students will be charged the graduated late service fee beginning with the third regular business day following the last regular registration day. (Minimum charges: $5.00 third day, $8.00 fourth day, $10.00 fifth day.)

Additional Late Service Fees
All students who have not completed registration and paid their appropriate charges (or made satisfactory arrangements with the Treasurer’s Office) within five regular business days after the last regular registration day will be charged an additional $10.00 late service fee (total $20.00).
The $10.00 service fee is applicable to extension accounts and room and board charges which are not paid (or for which satisfactory deferral arrangements have not been made) within five regular business days after the date payment was due.

Students who have not completed registration and paid their appropriate charges (or made satisfactory arrangements with the Treasurer’s Office) within ten regular business days after the last regular registration day will be charged a second additional $10.00 late service fee (total $30.00) and may, at the discretion of the University, be automatically withdrawn from school and assessed the appropriate fees as of the date dropped.

REINSTATEMENT SERVICE FEE $10.00
A student withdrawn (or subject to withdrawal) for the above reason (or any other reason) who may be permitted to continue enrollment for the quarter will be charged a $10.00 reinstatement service fee.

RETURN CHECK SERVICE FEE POLICY
In the event a check given to the University in payment of initial fees and charges fails to clear the bank, the late registration service fee in effect at the time the check is redeemed (or suitable arrangements are made) will be assessed, plus a $10.00 Return Check Service Fee (maximum $30.00).

If the student responds promptly to the first notice regarding the returned check but cannot redeem within one week, the $3.00 Delayed Payment Service Fee will be added to the Late Registration and Return Check Fee (maximum $33.00). Any student who does not respond promptly and is thereby subject to withdrawal from the University will be assessed the $10.00 Reinstatement Service Fee and the $3.00 Delayed Payment Service Fee (maximum $43.00).

For other student checks in the amount of $30.00 or less (including checks for registration and related charges) returned by the bank, the service charge will be $5.00 if the bad check is made good within five days from the date of notice and $10.00 if made good after five days from the date of notice; for a bad check in excess of $30.00 (except for initial registration fees) the service charge will be $10.00 if the bad check is made good within five days from the date of notice and $15.00 if made good after five days from the date of notice. If it becomes necessary to deduct a student from school for failure to clear a check, the $10.00 Reinstatement Service Fee will be added to the other return check service charges.

Only under extenuating circumstances will a student be reinstated after official withdrawal for failure to pay fees or redeem a bad check.

All students are required to have a validated receipt to complete the registration procedure. This includes graduate and teaching assistants and others whose fees may be billed, prepaid, or waived. Delayed registration service fees are also applicable to such students.

No student is authorized to attend classes who has not obtained a class schedule from the Office of the Dean of Admissions or submitted a validated fee receipt from the Treasurer’s Office.

The University is authorized by statute to withhold diplomas, grades, transcripts and registration privileges on any student until student debt (and any obligations other than Student Loan Fund notes) owed to the University are satisfied.

DEFERRED PAYMENT SERVICE FEE $3.00
This service fee is applicable when the payment of any part of a student’s account is deferred by satisfactory arrangement with the Treasurer’s Office, including accounts which must be billed to outside agencies, organizations and institutions. This fee is also applicable when any additional charge (out-of-state tuition, music fee, room and board adjustments, etc.) is not paid within five regular business days after the date it was incurred. Students are expected to take the initiative to pay all University obligations promptly.

APPLICATION FEE $10.00
Each undergraduate, graduate, and College of Law application for admission must be accompanied by a fee of $10.00 before it will be processed. This fee is nonrefundable.

PROFICIENCY FEES $10.00
Fees for proficiency and substantiating examinations are $10.00 per course. See page 28 for information on proficiency, CLEP, or other organized examinations.

CO-OP REGISTRATION FEE $5.00
If credit is received, the fee will be determined by applying the appropriate quarterly hour rate.

AUDITOR’S FEE
Fees for courses being audited are the same as those taken for credit. Auditors do not take the examinations, receive credit, or participate in class discussions.

SPECIAL STUDENT AND POST-BACCALAUREATE FEES
Special students pay fees at the undergraduate rate. Post-Baccalaureate students pay fees at the graduate rate although graduate credit is not given for course work.

REFUND OF FEES AND ADJUSTMENTS
Withdrawal from school for the quarter after receiving a schedule must be by official notification to the Withdrawal Office, Student Counseling and Services Center, 900 Volunteer Boulevard. This is necessary whether or not fees have been paid, classes have been attended or the schedule is incomplete. Failure to attend class does not automatically withdraw or drop a student from school or class.

The effective date of withdrawal is the date the Withdrawal Office is notified by completion of the official withdrawal request form. The appropriate percentage of fees will be charged unless this action is completed by the close of the last day designated for regular registration and before the first official day of classes for the quarter. Failure to promptly notify the Withdrawal Office when withdrawing could result in a larger percentage fee assessment. Withdrawal does not cancel fees and charges already incurred. The drop/add procedure must not be used to withdraw from school for the quarter.

For a regular academic quarter, withdrawal within 7 calendar days beginning with the first day following regular registration permits an 80 percent fee refund. Withdrawal between 8 and 14 calendar days following regular registration permits a 60 percent fee refund. Withdrawal between 15 and 21 calendar days following regular registration permits a 40 percent fee refund. Withdrawal between 22 and 28 calendar days following regular registration permits a 20 percent fee refund. Refunds, in accordance with the withdrawal refund policy, will be made after the drop deadline.

Part-time students may pay fees computed at the appropriate quarter hour rate as indicated above. There is no charge for courses dropped during the first five calendar days following regular registration. There is a 40 percent charge at the quarter hour rate for courses dropped between six and twenty-one calendar days following regular
registration. There is a 100 percent charge for courses dropped after the twenty-first day following registration. Students who drop courses are eligible for a refund only if the sum of the charges computed at the quarter hour rate for the hours continued plus the percentage assessed for the hours dropped results in an amount less than that paid. A course on a student’s schedule is not officially dropped until a drop/add slip has been processed and recorded by the Admissions and Records Office. Any refund due for dropped courses will be made after the final audit at the end of the quarter.

The above fees and adjustments are determined by the Office of Residence Halls in accordance with the terms of the housing agreement or contract.

Note: All charges and refunds will be made to the nearest even dollar. All charges are subject to subsequent audit and verification. Errors will be corrected by appropriate additional charges or refund. Other information on fees, expenses, refunds, and adjustments is given in the timetable (schedule of classes) for each quarter.

Summer Quarter Fees and Expenses

Fees and expenses for the summer quarter are the same as for the other quarters during the academic year with the exception of the University Programs and Services Fee as noted above.

Although the summer quarter is divided into terms of varying lengths, tuition and fees are assessed at the regular quarter hour rate up to the maximum charge for a complete regular quarter.

The refund policy covering withdrawals and dropped courses for the summer quarter is based on the length of the term for the course(s) dropped. No refund is applicable to term courses dropped later than fourteen calendar days after the regular registration day for the course(s) involved.

Estimate of Expenses

The following estimates of the necessary expenses for an academic year are average. Actual expenses vary greatly according to the habits of economy or extravagance of the individual student. The room and meal estimates are averages based on accommodations and 20-meal board plan in University facilities. Estimates for equivalent accommodations and meals elsewhere will usually be somewhat higher.

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>&amp; Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance Fee</td>
<td>$450</td>
<td>$400</td>
<td></td>
</tr>
<tr>
<td>Programs &amp; Services Fee</td>
<td>45</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Room and Meals</td>
<td>1,350</td>
<td>1,350</td>
<td></td>
</tr>
<tr>
<td>Books, Supplies, etc.</td>
<td>215</td>
<td>285</td>
<td></td>
</tr>
<tr>
<td>Total for Tennessee Residents</td>
<td>$2,060</td>
<td>$2,160</td>
<td></td>
</tr>
<tr>
<td>Add for Non-Resident Tuition</td>
<td>936</td>
<td>936</td>
<td>$2,996</td>
</tr>
<tr>
<td></td>
<td>$3,096</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These figures give a fair idea of average expenses, exclusive of clothing, travel, and pocket money. Expenditures for extracurricular activities are not included in the above.

Housing

The University provides modern residence facilities in order to give students comfortable housing at reasonable cost and with an atmosphere conducive to academic achievement and personal development.

Undergraduate Students. Single freshman students are required to live in University residence halls when space is available unless they commute from the home of their parent or legal guardian. Other single students are encouraged to reside in University facilities.

Housing contracts are a commitment for the academic year, September to June, and for the first term, September to December, or enters the University during winter or spring. A Housing Application will be mailed as a part of the Application for Admission. Residence halls assignments for the academic year are made in the summer. The student must be admitted to the University prior to assignment. If a student withdraws from the University, the housing contract is cancelled in accordance with policies stated in the contract. Students assigned to residence halls on the room and board plan will be given contracts written to include both room and board. A contract for housing signed by a student is binding for the term of contract and is rigidly enforced by the University.

Additional information pertaining to single student housing may be obtained from the Office of Residence Halls, The University of Tennessee, 37916.

Off-Campus Housing. Students living in off-campus housing are expected to observe the same rules of conduct and standards that are applicable to all students. The student is responsible for obtaining off-campus housing. The University does not inspect or approve these facilities. Terms and conditions for the rental of off-campus housing are between the student and the landlord. Information and assistance in locating off-campus housing is available in the Off-Campus Housing Office located in 336 University Center.

Graduate Students. Single graduate students may be assigned to the University’s residence halls or the single student apartments. Special graduate floors are available upon request. For information concerning University residence facilities, please refer to the appropriate paragraphs above describing Undergraduate Students and Off-Campus Housing.

Married Students. The University has provided modern apartment facilities in several locations for married students with families. Information and application for these facilities may be secured from the Office of Rental Properties, The University of Tennessee, 37916.

Food Service Facilities

Excellent University-operated food service facilities have been provided. They are air-conditioned, conveniently located in relation to residence halls, and serve nourishing food at reasonable prices.

The University recognizes the educational role that its food service facilities play in student life and group living. The Food Services Department employs a skilled dietetic and management staff to ensure that the student gets the highest quality meal at the lowest possible cost.

Room and board meal arrangements are available. This plan offers the best combination of balanced, nutritious meals, carefully planned and served at a reasonable charge to the student. For students not under the Board Plan, meals can also be obtained from cafeterias operated on a cash basis.

In addition, the Food Services Department offers a plan whereby students can charge meals and may have the bill rendered to their parents monthly.

For the late evening snack or morning coffee break, popular spots on the campus are the delicatessens and grill operations. Students are invited to take advantage of the special “theme” meals offered in the University dining facilities throughout the year.

Student Financial Aid

The University of Tennessee offers a comprehensive program of financial aid for full-time students who otherwise would not be able to attend the University. Through these federal, state, and University financial assistance programs, an eligible student may receive one or more types of assistance to help pay college expenses.

Financial need is defined as the difference between a family’s resources and the total expenses of attending the University. If there is a deficit, the student is considered to be in need of financial assistance. To assist in determining the need for financial aid, The University of Tennessee utilizes the needs analysis system of the College Scholarship Service (CSS). Through the use of the CSS form and the Financial Aid Form (FAF), the Financial Aid Office determines the amount of aid the student could generally be expected to contribute toward meeting educational expenses. For more detailed information on the determination of need, please refer to the brochure entitled, "Financial Assistance For Students."

The University of Tennessee has three basic types of financial aid—scholarships and grants, loans, and part-time employment. These may be awarded individually or in combination according to the needs of the student.

Scholarships and Grants

Scholarships. The University of Tennessee (Knoxville) scholarship program for new and currently enrolled students is made possible through funds provided by the University, outside
foundations, estates, private businesses, civic groups, individuals, and alumni. The majority of these scholarships are coordinated by the Financial Aid Office. Some undergraduate scholarships for currently enrolled students are administered in the various schools and departments of the University.

Most scholarships are awarded to students who demonstrate strong academic achievement and proven need for assistance. There is, however, an academic merit scholarship program, based only on academic achievement. To compete for merit scholarships only, a student must submit an Application for Student Financial Aid. A financial statement is not necessary. Academic achievement is judged for entering freshmen students by the applicant’s secondary school academic record and scores on the American College Test Battery (ACT). Academic achievement for currently enrolled students and transfer students is judged by the applicant’s collegiate cumulative grade point average.

All scholarships are offered on a first-come, first-served basis, and applications are considered on a rolling basis until all available funds have been awarded. Generally, scholarships are offered for one year, and the student must continue to meet the eligibility requirements. If the student fails to meet the eligibility requirements, the scholarship will be awarded to another student.

Basic Educational Opportunity Grants ( Pell Grant). This is a federal grant program for undergraduate students. It is designed to assist students in paying for the cost of attending college. The grant is awarded based on financial need and is not based on academic performance. Students must meet eligibility requirements, which include being a U.S. citizen or eligible non-citizen, having a valid Social Security number, and being enrolled in a degree program at an eligible institution.

Supplemental Educational Opportunity Grants (SEOG). This is a federal grant program for undergraduate students who demonstrate exceptional financial need. The grant is awarded based on financial need and is not based on academic performance. Students must meet eligibility requirements, which include being a U.S. citizen or eligible non-citizen, having a valid Social Security number, and being enrolled in a degree program at an eligible institution.

Title IV Federal Loans. These are federal loans made to students based on financial need. There are three types of Title IV Federal Loans: Federal Direct Subsidized Loans, Federal Direct Unsubsidized Loans, and Federal Direct PLUS Loans. These loans are awarded based on financial need and are not based on academic performance. Students must meet eligibility requirements, which include being a U.S. citizen or eligible non-citizen, having a valid Social Security number, and being enrolled in a degree program at an eligible institution.

The University of Tennessee Student Loans. Student loans from University sources are available to currently enrolled students with a 2.0 or above cumulative grade point average and who require financial assistance. The loan limit is $50,000 per academic year, with an annual maximum of $7500 can be extended. One surety or cosigner is required for each promissory note and a new promissory note must be completed for each loan installment. The interest is 3 percent per annum payable annually on the anniversary date of the note. The loan is made for a specific time period and is due at the end of the stated number of years from the date of origination. The maximum may be obtained if academic studies are continued at the graduate school level. The borrower may, without penalty, pay all or part of the loan at any time before the maturity date.

Nursing Student Loans. The Nursing Student Loan is available to students who are enrolled or admitted as students in a course of study leading to a baccalaureate or graduate degree in nursing and who show need of assistance in order to pursue their course of study. The program provides a long-term loan at a 3 percent interest rate with repayment beginning nine months following the last half-time attendance at an accredited school of nursing. Repayment may also be deferred for a period up to three years while the borrower is serving in the Armed Forces or Peace Corps, or up to five years for a full-time course of study leading to advanced professional training. If upon graduation the borrower becomes employed full-time as a registered nurse in a public or non-profit private agency or institution, up to 85 percent of the principal may be cancelled at the rate of 15 percent of the loan that was unpaid on the first day of employment plus interest for the first three years of employment and 20 percent for the fourth and fifth years.

The above regulations and provisions of the Nursing Loan Program are subject to change by legislative action.

Health Professions Student Loan. The Health Professions Student Loan is available to students who are enrolled or admitted in a course of study leading to a degree of Doctor of Veterinary Medicine and who show need of assistance in order to pursue their course of study. The program provides a long-term, low-interest loan with repayment beginning twelve months following termination of full-time study at an accredited health professions school. Repayment may also be deferred for a period up to three years while the borrower is serving in the Armed Forces or Peace Corps or for the years required for a full-time course of study leading to advanced professional training. Interest is 7 percent per year on the unpaid balance; the maximum repayment period is ten years. However, a minimum monthly payment may be required. Up to 85 percent of a Health Professions Student Loan will be repaid by HEW if the Armed Forces of Veterinary Medicine graduate enters into a contract to serve as a veterinarian in a shortage area designated by HEW. The maximum loan available to an individual borrower in an academic year is $3,500.
The above regulations and provisions of the Health Professions Loan Program are subject to change by federal legislative action.

Student Employment

Two employment programs are available through the Financial Aid Office to help students find part-time employment.

The College Work-Study Program is a federal work program which provides jobs for students who have financial need and who must earn a part of their educational expenses. Eligible students are placed in jobs on or off campus where they work approximately fifteen (15) hours per week.

The Student Employment Service operates as a central referral agency. It coordinates listings of part-time employment from both University and private employers with the requests of students seeking part-time employment. Referrals are made in accordance with the student's skills and qualifications. Part-time jobs average from 15 to 20 hours per week. If part-time employment is a financial necessity to the student with a low grade average, the student is advised to accept a job requiring fewer hours of work per week.

Spouses of full-time students or students not enrolled full-time in the University should contact the Personnel Office, 1900 Terrace Avenue, The University of Tennessee, Knoxville, 37916, concerning employment.

Other Assistance

Guaranteed Student Loans to help meet educational expenses may be available through the federal government or a state guaranteeing agency. Students should contact their local bank or credit union to determine their participation in the program. To receive the loan, a student must be admitted to or in regular full-time attendance in good standing at the University. Interest on such loans is paid by the federal government while the student is in school if the student is eligible for interest benefits. During the repayment period which begins no less than nine months after graduation or withdrawal from the University, the student pays up to 7 percent simple interest. The maximum amount of a loan to an undergraduate in a twelve-month period cannot exceed $2500.

Total loans outstanding may not exceed $7,500 for the undergraduate or $10,000 for the graduate student.

Complete information is available in most banks and credit unions. In the state of Tennessee, write the Tennessee Student Assistance Corporation, 707 Main Street, Nashville, Tennessee 37206.

The Tennessee Student Assistance Grant (TASSG) is designed to further the opportunity for higher education to residents of the state who display a financial need for assistance. Awards usually cover maintenance fees of approximately $500 for three quarters of attendance. Applications must be submitted to the Tennessee Student Assistance Corporation. A financial statement is also required.

More information may be obtained on this program by writing to the Tennessee Student Assistance Corporation, 707 Main Street, Nashville, Tennessee 37206.

Application Procedures

Because a student's family resources can decrease and increase significantly during an academic year, the University requires each student to apply annually for renewal of financial aid.

(1) Complete and submit the Application for Student Financial Aid on or before the priority deadline dates: March 1—Entering Freshmen, April 1—Currently Enrolled and Transfer Students.

(2) Complete and submit a Financial Aid Form to the College Scholarship Service approximately six weeks prior to the priority deadlines. If applying only for an academic merit scholarship, a financial statement is not required.

(3) Tennessee residents should complete and submit an application for the Tennessee Student Assistance Award if requesting aid based on financial need. Financial aid programs, policies, and procedures are subject to annual change. Therefore, those interested in applying for financial aid should refer to the current informational brochure, "Financial Assistance for Students," distributed by the Financial Aid Office.

Applications for financial aid can be obtained by writing to The Financial Aid Office, 301 Student Services Building, The University of Tennessee, Knoxville, Tennessee 37916. Graduating Tennessee high school students are encouraged to obtain application materials and information from their high school guidance counselor.

The University of Tennessee wishes to express gratitude to the contributors and donors of the following scholarships:

George G. Abraham Scholarship Fund
AFL-CIO Estes Kefauver Memorial Scholarship Fund
Agrico Scholarship
Agricultural Faculties Alumni Scholarships
James T. Alilor Scholarships
Air Force ROTC
Akima Club Interior Design Scholarship
Alcoa Foundation Scholarships
Dr. T. Bing Scholarships
Clyde and Grace W. Alley Scholarships
Delta Kappa Delta Scholarships
Delta Lambda Delta Scholarships
Joe McN Aliminiphi Memorial Scholarship
Altrusa Club of Knoxville Scholarship
American Home Economics Association Scholarship
American Society for Metals, Oak Ridge Section Scholarship
American Society of Tool and Manufacturing Engineers—Knoxville—Oak Ridge Section Chapter Scholarship
American Welding Society Scholarship
AMFS Scholarship Fund
Ala A. Andrews Scholarship
Anderson County Agricultural Scholarship
Animal Husbandry Award
Armour and Company Scholarship
Army ROTC
Max B. and Lalla B. Armstrong
J. Clayton Bankhead Training Scholarship
General Henry H. Arnold Educational Fund
Art Department Art Auction Scholarships
Ascaro Foundation Scholarship
Captain Samuel E. Asher Memorial Scholarship
ASOC Electronics Division

Clyde B. Austin Memorial Scholarship
Charles H. Bacon
Bacon-Beard Scholarship in Philosophy Fund
Hop Bailey, Sr. Scholarship
John Baiter College of Business Scholarship
Howard H. Baker Memorial Fund
Bank of Cowan Agricultural Scholarship
Bank of Maryville Scholarship
The Barnhill Scholarship
Paul Barnett Memorial Scholarship Fund
Grace and Brolie Baynes Scholarship in Accounting
C. Grier Beam Scholarship in Transportation
Beard Scholarship in Philosophy Fund
Bedford County Farmers Cooperative Agricultural Scholarship
Robert F. and Ardell Bell Scholarships
Belenian Scholarship in Veterinary Medicine
Benco Plastics, Inc., Scholarships
The Carl M. Bennett Scholarship
Stelmon Bennett Agricultural Scholarship Fund
Berkeley College Scholarship
Beta Gamma Sigma Awards
Beta Sigma Phi Scholarship
Karl and Madira Bickel Scholarships
Mr. and Mrs. E. Bilbro Scholarship
Voula Bitzas Scholarship
Blacks Lives Matter Scholarship
Block and Biddle Agricultural Scholarship
Amanda Minnis Bonham Scholarship
Frederick T. Bonham Foundation Scholarships
Frederick T. Bonham Award
Borden Home Economics Scholarship Award
Dr. Wade H. Boswell Scholarship
Donald H. Bradley Scholarship
Harry E. Bradley Scholarships
Brainerd Kiwanis Club Agricultural Scholarship
Harry W. Brooks Scholarship Fund
Margaret Browder Scholarship
Fred and Ruth Brown Scholarship
Grover C. Brown Memorial Scholarship
Nell Mann Brown Scholarship
William Lester Brown Memorial Scholarship
William P. Bryan Scholarship Fund
W.W. Burchfiel Scholarship
Jim Burke Estes Kefauver Memorial Scholarship Fund
Burlington Industries Foundation Scholarships
C & M Livestock Market, Inc. Agriculture Scholarship
Campbell County Agricultural Scholarship Fund
Campus Bookstore U.T. Band Book Scholarships
Cannon County Agricultural Scholarship Fund
Carter County Agricultural Scholarship Fund
Central State Bank—Lexington Scholarship
Frank Chace Agricultural Scholarship
Chattanooga Hotel-Motel Scholarship
The Chemstrand Corporation Scholarship
George S. Child, Sr. Memorial Law Scholarship
The Church Street Methodist Church Scholarships
Bertha Walburn Clark Orchestral Instruments Award
W.C. Clay Agricultural Scholarship
Frank G. Clement Foundation Mental Health Scholarship
Linton T. Cochran Scholarship
Cocke County Farm Bureau Agricultural Scholarship
Cocke Farmers Coop Agriculture Scholarship
Coffee County Alumni Scholarship Fund
Guy Colealech Conservation Fund
The College of Education Alumni Scholarships
The College of Home Economics General Scholarships
Ed Collins Memorial Scholarship
Colonial Baking Company Scholarships
Columbia Gas of Ohio Education Scholarship
Continental Oil Company Scholarship
Continuing Education in Women Scholarship
J.A. Cooley Memorial Scholarship
Corley Manufacturing Scholarship
Dr. and Mrs. Dennis Coughlin Scholarship
Ray Cewles Memorial Scholarship Fund
Carl T. Cox Memorial Scholarship Fund
Taylor H. Cox Memorial Scholarship
Nellie Crooks Scholarship Award
Cumberland Farmers Cooperative Agricultural Scholarship
Bernard L. Dahlberg Memorial Scholarship
Jack Daniel Distillery Food and Lodging Scholarship
Dairymen, Inc. Scholarships
Park Industries Incorporated Scholarship
Mr. and Mrs. Marcus Parker Agricultural
Scholarships
Valdara Eaves Memorial Award Fund
Paul Parrott Cloth Shops, Inc., Scholarships
Patterson and Dewar Engineers, Inc., Scholarship
William Brit Pennebaker Scholarship
Carl I. Peterson Scholarship Fund
Ph审核 קרופק לוריאט Music Scholarship
Ph审核 קרופק לוריאט Music Scholarship
Phillips Petroleum Company Fello
Pickett County Agriculture Scholarship
Pilot Freight Carriers Inc., Scholarship
Pilot Oil Corporation Scholarship
Pioneer Foundation, Inc., Scholarship
Polk County Agriculture Extension Scholarship
Joe Frank Porter Scholarship
Porter-Walker Hardware Company Agricultural
Scholarship
Joe Powell Memorial Scholarship
Preter Equipment Company Scholarship
President's Student Aid Fund
Presser Foundation Music Scholarships
Price Waterhouse Foundation
Donald N. Pritzker Memorial Scholarship
Procter and Gamble Company Fellow
Jennerne Jones Quillin Memorial Scholarship
Fund
Ralston Purina Company Fellowship
Rechenbach's Furniture Scholarship
Rechenbach Crafts and Interior Design Award
Rehabilitation Corporation of Tennessee
Foundation
Retail Clerks International Association Estes
Kefauver Memorial Scholarship Fund
J. Clark Rodeheaver Graduate Fellowship
Grantsland Rice Memorial Award
Stephen D. Rimmer Memorial Scholarship
Wallace A. Ringer, Jr. Scholarship
Roane County Council of Home Demonstration
Clubs Scholarship
Robertson County Farm Bureau Economy
Scholarships
Thomas L. and Emma H. Robinson Scholarship
Fred M. Roddy Memorial Scholarships
Rohm and Haas Company Scholarship
Cailie Wood Rose Scholarships
R.C.T.C. Memorial Scholarship Fund
Paul Leonard Roth Memorial Scholarship Fund
Jesse and Dorothy Safley Agricultural
Scholarship
John Sample Agency of Connecticut Mutual
Scholarship
Schenley Industries Food and Lodging
Scholarship
Schlumberger Foundation Scholarships
Virginia and Alfred Shoaf Scholarship
Bermadette E. Schmitt Scholarship Fund
Aubrey Scott Memorial Scholarship
Scipio-Howard Foundation Scholarships
Sears-Roebuck Foundation Scholarships in
Home Economics
Sevier County Farmers Cooperative Scholarship
Sevier County Scholarship in Organ
John A. Sexauer Foundation Scholarship
Alex Shafer Memorial Scholarship Fund
Aaron J. Sharp Fund
Lynn Sheely, Sr. Memorial Award
Sherwood Chevrolet Company Scholarships
Sherry Shrode Agricultural Memorial
Scholarship
Sigma Alpha Epsilon Scholarship
Sigma Alpha Iota Scholarship
Charles D. Simms Scholarship
Charles S. Simms Scholarship Fund
J. Hungerford Smith Company Scholarship in
Food Technology
Smith Farmers Inc. Scholarships
Elizabeth Z. Smith Scholarship
Smoky Mountain Chapter of NABAC Scholarship
Snelling and Snelling Teacher Training
Scholarships
Cyril A. Soana Prize
Socoay Mobil Scholarship in Geology
Helen Knowles Soper Scholarship
Standard Texture-Food and Lodging Scholarship
Richard Stansfield Scholarship
Stauffer Chemical Company Scholarships
Dr. Ralph Stephens Scholarship in History
Dr. Ruth Stephens Scholarship in International
Relations
William B. Stokely, Jr., Scholarship
William B. Stokely, Ill Scholarship
Elsa Walburn Strong Scholarship
Stouffer Foods Corporation Scholarships in
Home Economics
James W. Stuart Scholarship
Joe Sullivan, III Scholarship
Sullivan County Agricultural Scholarship
Glen G. Summers Agriculture Fund
L.J. Sverdrup Engineering Scholarship
Swan Brothers, Inc. Scholarship
Tau Beta Pi Scholarships
Tau Beta Sigma Award
Judge George Caldwell Taylor Memorial
Scholarship
Tennessee Association of Broadcasters
Scholarship
Tennessee Association of Extension Home
Economics Scholarship
Tennessee Association, Future Homemakers of
America-Margaret Broader Scholarships
Tennessee Association of Real Estate Boards
Scholarship
Tennessee Bar Association, Knoxville Auxiliary,
Scholarship
Tennessee Claims Insurance Scholarship
Tennessee County Agents' Association
Scholarship
Tennessee Farm Bureau Federation Agricultural
Scholarship
Tennessee Farmers Cooperative Agricultural
Scholarship
Tennessee Farmers Mutual Insurance Company
Agricultural Scholarship
Tennessee Federation of Garden Clubs Forestry
and Horticulture Scholarships
Tennessee Home Demonstration Agents
Association Scholarship
Tennessee Howard Johnson's Food and Lodging
Scholarship
Tennessee Jaycees Special Education Scholarship
Tennessee Metal Culvert Inc. Scholarship
Tennessee Restaurant Association Food and
Lodging Scholarship
Tennessee Road Builders Association
Scholarship
Tennessee Society of Certified Public
Accountants Scholarships
Tennessee S.C.I. Association Scholarship
Tennessee Valley Bank Scholarship
Daniel Hanley Testerman Memorial Scholarship
Thorn, How, Stratton & Strong Scholarship
Thrift Loan Company Scholarships
Steve Tobler Forestry Memorial
William M. Tolley Scholarship Fund
Toms Foundation Scholarships
Townsend-Estes Kefauver Memorial
Scholarship
The Wilburn B. Townsend Memorial Scholarship
Tractor Service Company Forestry Scholarship
Transportation Department Scholarships
Tri-State Roofing of Tennessee Scholarship
Trousdale County Farm Bureau-Young Farmers
and Home Economics
Union Bag-Camp Paper Corporation Scholarship
United Auto Workers Estes Kefauver Memorial
Scholarship
United Steelworkers of America Estes Kefauver
Memorial Scholarship Fund
University of Tennessee Alumni Association
University of Tennessee Alumni Association
Freshmen Scholarships
University of Tennessee Alumni Association
Upperclassmen Scholarships
University of Tennessee Alumni Association
Valedictorian Scholarships
University of Tennessee Alumni Association
National Merit Scholarships
University of Tennessee Band Scholarships
University of Tennessee International
Scholarship Fund
University of Tennessee Knoxville School of
Architecture Endowment Fund
Victory Van Lines Agricultural Scholarship
Vinytex Corporation Scholarship
Frederick Bickford Vreeland Scholarship
Senator Herbert Walters Foundation Scholarship
Charles A. and Myrtle Warner Memorial Law
Scholarship Fund
Haley C. Warner Law Centennial Endowment
Fund
Washington County Farm Bureau Scholarship
Ina A. Watson Retailing Scholarship
J.R. Waufl & Company, Consulting Engineers,
Scholarship
William Way Memorial Scholarship
Weakley County Farmers Cooperative
Scholarship
W.E. Webster Agriculture Scholarship
Western Sizzlin Steak House Food and Lodging
Scholarship Fund
Daniel B. Wexler Agricultural and Business
Administration Scholarship
White Stores, Inc., Scholarship Fund
C.E. Wiley Scholarship in Dairying
Marjorie Wilkin Scholarship
Williamson County Farm Bureau Agricultural
Scholarship
Odel Willis Scholarship
Wilson County Agricultural Extension
Scholarship
H.W. Wilson Scholarship
Winchester Rotary Club Agricultural Scholarship
J.H. Winstead, Jr. Memorial Scholarship Fund
Chancellor Glen W. Woodlee Scholarship Fund
Margaret Woodruff Memorial Scholarship Fund
Dick Wright Scholarship
Gerti Wundlich Scholarship in German
Edwin F. Zwicker Scholarship
The University of Tennessee wishes to express gratitude to the contributors and donors of the following loan funds:

American Association of University Women Loan Fund
American Institute of Architecture Loan Fund
Samuel W. Atkins Loan Fund
W. Trox Barkley Loan Fund
Bixby-Altrusa Loan Fund
John L. Boyd Student Loan Fund
John H. Cantrell Scholarship Fund
W. C. Carson Loan Fund
Fred Collins Memorial Loan Fund
Nancy M. Durkee Loan Fund
E. P. Frost Memorial Foundation (The Scarabean Senior Society Loan Fund)
Eugene Gatlin Loan Fund
Helen B. Gibson Loan Fund
Gordon A. Hawkins Memorial Loan Fund
Fleta Crittia Hodge Memorial Loan Fund
J. E. Hogan Loan Fund
Ruth Hope Memorial Loan Fund
R. N. Kesterson Loan Fund
Knoxville Academy of Medicine Loan Fund
J. E. Lutz Memorial Loan Fund
Clarence H. Moody Loan Fund
Ise Moore Memorial Loan Fund
Phi Kappa Phi Loan Fund
Phi Mu Alumnae Association Loan Fund
Mary Plummer Memorial Loan Fund
Maudie Powell Students' Aid Fund
James H. Radler Memorial Loan Fund
Charles C. Riffhoff Loan Fund
William Rule Loan Fund
Senior Memorial Loan Fund, 1922
Senior Memorial Loan Fund, 1925
Sarah Hawkins Sevier Memorial Fund
James A. Shull Loan Fund
J. Allen Smith Students' Aid Fund
Southern Railway Loan Fund (William Wilson
Finley Foundation)
B. R. Strong Trust Fund
Students Loan Fund (Special)
Students Loan Fund of the Tennessee Bankers' Association (Fred Collins Memorial Fund)
Mary Boyce Temple Loan Fund
Williamson County Farm Bureau Scholarship
Nathaniel S. Woodard Memorial Loan Fund

Honors and Awards

The honors and awards available to students at The University of Tennessee, Knoxville are listed with donors below. The University reserves the right not to award any of the honors or awards listed herein.

Dean's List

Public announcement of students passing a quarter's work "With Highest Honors" (grades from 3.75 to 4.0), "With High Honors" (3.40 to 3.74), "With Honors" (3.0 to 3.39). To be eligible, a student must complete at least 12 hours, not counting work taken on satisfactory/no credit basis.

College of Agriculture

The American Society of Agricultural Engineers each year selects an outstanding agricultural engineering student to receive the ASAEE Student Honor Award. Based on scholarship, activities, and community contributions, the award consists of a key and certificate.

The American Society of Agronomy has made available a Certificate of Merit for an outstanding senior in the Department of Plant and Soil Science who has a superior academic record and displays evidence of high potential in this field.

The American Society of Animal Science awards scholarship medals and embossed certificates to sophomore, junior, and senior students in the Department of Animal Science who are of good moral character and rank scholastically in the top 10 percent of their class.

The Block and Bridle Club recognizes students in Animal Science who are successful in their academic program, have made unusual contributions to the Club's program, and show evidence of leadership in their chosen field.

The Danforth Foundation Inc. provides a fellowship to support two weeks of leadership training at Camp Miniwanka on the shores of Lake Michigan for an outstanding agricultural student following the freshman year.

The Forestry Faculty Scholarship Award, given annually at the end of the junior year of the recipient who is selected by the forestry faculty on the basis of outstanding scholarship and contribution to the forestry program.

Kentucky-Tennessee Section, Society of American Foresters Scholarship, awarded every third year to the freshman forestry student with the highest scholastic average. The award is in cash and a framed certificate.

M. Jacob Animal Husbandry Award, given by East Tennessee Packing Company.

J. B. Madden Memorial Foundation Fund, established by J. B. Madden family. Income from $1,000 fund, for prizes in livestock judging competition.

Student-Faculty Council Awards. Each year the College of Agriculture Student-Faculty Council presents plaques to four seniors, three juniors, and three sophomores students in the College judged to be outstanding. Selection is based on scholarship, character, and demonstrated leadership ability. Plaques and certificates are awarded to the four students in each class with the highest scholastic averages.

Tennessee Poultry Improvement Board Awards. $100 available for awards to students competing in poultry and poultry products judging.

School of Architecture

Malcolm Rice Achievement Award. $100 awarded annually to the third-year student showing most improvement with design studio.

College of Business Administration

Berta Gamma Sigma Awards. Plaques and awards given to the freshmen and sophomore students with highest grade point averages by this national business honorary society.

Delta Sigma Pi Scholarship Key, given by international fraternity to male senior with highest four-year scholastic average.

John Fred Holly, Jr. A memorial scholarship endowed by the parents.

Knoxville Sales Executive Club Award. Plaque, plus dinner in student's honor, to outstanding senior marketing major.

John M. and Suzanne W. Larsen Phi Kappa Phi Scholarship Award. Awarded to the College of Business Administration junior initiates with the highest grade point average.

John M. and Suzanne W. Larsen Beta Gamma Sigma Outstanding Male and Female Awards. Awarded to the male and female College of Business Administration junior initiates with the highest grade point average.

Lutz Award, given by J. E. Lutz & Co., Inc., Knoxville. Cash award to student with minimum of 120 quarter hours having highest scholastic record after completion of first eight quarters of required courses in chosen curriculum.

Lutz Insurance Award, given by J. E. Lutz & Co., Inc. Cash award to finance major submitting most scholarly, complete, and satisfactory written project in insurance field.

Fulton Beverly Moore, III Memorial Real Estate Scholarship. A memorial scholarship fund endowed by the parents.

Pi Omega Pi Scholarship Key. Key to senior business education major with highest 11-quarter scholastic average.

John Sample Agency for Connecticut Mutual Life Insurance Company. Cash award to a student majoring in insurance.

Smoky Mountain Chapter of the Bank Administration Institute. Cash award to a junior or senior who is a resident of Tennessee and majoring in banking.

Wall Street Journal Award. Student Award Medal, year's subscription to The Wall Street Journal to outstanding student in finance classes using this newspaper during the year.

William Way, Jr., Memorial Award. Gold medal or key to senior transportation major with highest academic average.

Zeta Lambda Chapter of Alpha Kappa Psi, professional business fraternity, awards annually the Alpha Kappa Psi Scholarship Award to the male student pursuing a degree in business who has attained the highest scholastic average for three years of collegiate work in this University.

College of Communications

Advertising Club of St. Louis College Award Citation, given to outstanding man and woman graduating in Department of Advertising.

Alcoa Foundation Scholarship. $600 to an outstanding undergraduate planning a career in public relations.

Alcoa Foundation Minority Scholarship. $600 to an outstanding undergraduate minority student in the College.

Kari and Madira Bickel Scholarships. Freshman Scholarships up to $1,000. Upperclass Scholarships up to $1,000. Doctoral Scholarships up to $4,000. Open to all students showing academic performance (3.00 or B or better), professional promise, and need.

Edward J. Meeman International Communications Fellowships. Up to $1,500 each, to two outstanding graduate students from other countries.

Ennie Pyle Memorial Award, given by Scripps-Howard Newspapers. Certificate and basic journalism library awarded to the outstanding senior in recognition of scholarship and journalistic achievement.

Greater Knoxville Ad Club Award, given to outstanding graduate in Department of Advertising.

Hoyt B. Wooten Award, given by family. Plaque and books given to graduate who will be broadcasting college awarded to the outstanding senior in recognition of scholarship and broadcasting achievement.

Journalism Faculty Scholarship. Up to $500 to an outstanding major in the School of Journalism.

Myron G. Chambers Scholarships, given by Scripps-Howard Newspapers. $1,000 total to one or more outstanding undergraduates in the Department of Advertising.

Pen Women of America Scholarship. $100 given by the Knoxville Branch to an outstanding junior journalism student who has shown promise as a writer.

Frank B. Powers Scholarship, given by Scripps-Howard Newspapers. Certificate and books awarded to the outstanding senior student in the public relations sequence in the School of Journalism.

Society of Professional Journalists, Sigma Delta Chi Outstanding Graduate Citation. Certificate given by professional journalism society to outstanding graduate.
Tennessee Association of Broadcasters. $300 to outstanding freshman and outstanding junior or senior studying a career in broadcasting.

Willis C. Tucker Scholarship Award, given by Society of Professional Journalists, Sigma Delta Chi. Silver bowl or key to graduating senior with highest academic average.

College of Education
Kappa Delta Pi, honor society for professionals and students in education. Minimum 3.5 grade point average. Recognizes outstanding contributions to field of education. Membership by invitation.

Knoxville Branch of American Association of University Women Award. Membership to senior woman selected on basis of scholarship and leadership qualities.

Pi Lambda Theta Fraternity Scholarship Key. Key to junior girl showing most outstanding qualities for professional leadership in education, attaining high scholastic average through junior year.

College of Engineering
American Chemical Society. East Tennessee Section of American Chemical Society offers an award each year to an outstanding senior in chemical engineering.

American Institute of Aeronautics and Astronautics. Award of one-year membership made each year to a branch member whose performance scholastically and in branch activities has been outstanding.

American Institute of Chemical Engineers Professional Achievement Award to chemical engineering senior who has contributed most to student chapter. Name engraved on permanent plaque, and certificate.

American Institute of Chemical Engineers Scholarship Award to chemical engineering junior who attained highest scholastic average in first two years. Certificate and handbook.

American Institute of Chemists Medal. Recognition of an outstanding student in chemical or metallurgical engineering. Medal and certificate.

American Society of Mechanical Engineers. ASME student certificate presented each year to member of the student section for outstanding work with the professional society.

Armour T. Granger Memorial Scholarship. A cash award given jointly by the Department of Civil Engineering and the American Society of Civil Engineers, Tennessee Valley Section, to a senior. Based upon scholarship, need, and activity in the ASCE student chapter.

The Arthur Brownlow Wood Memorial Scholarship Fund. A cash award made annually to one or more outstanding students in engineering.

Association of Textile Industrial Engineers Award. A $500 1-year award based on need, given by the Department of Industrial Engineering to a senior.

Billy J. and Sylvia F. Moore Scholarship Fund. A cash award given to one or more upperclass student(s) in the field of textile engineering, preferably seniors who have participated in the engineering co-op program. Based on both academic achievement and need.

East Tennessee Chapter of American Institute of Industrial Engineers Award. Award of handbook and plaque to the outstanding senior industrial engineering major.

East Tennessee Section of the Institute of Electrical and Electronics Engineers. Cash award made annually to junior in electrical engineering with an outstanding scholastic record.

Electrical Engineering Leadership Award. One or more cash awards may be made annually to juniors or seniors in electrical engineering who have exhibited outstanding leadership ability and have maintained a B average or above.

H.L. Weissberg Memorial Award. An annual award given by del. to an outstanding senior majoring in engineering science. Letter of recognition, plaque.

J. Mack Tucker Outstanding Senior Award. Recognition by the Student Section of the American Society of Mechanical Engineers of the outstanding senior in the Department of Mechanical and Aerospace Engineering. Award is based on leadership, scholarship, and service. Name on plaque.

Joel F. Bailey Award. Recognition by Tennessee Tau Eta Chapter of Pi Tau Sigma of the student in mechanical and aerospace engineering having the highest grade point average in each calendar year. Name on plaque.

John Milton Snoddy Scholarship Endowment Fund. Cash award in recognition of scholastic achievement and evidence of high potential as a future civil engineer, to one or more upperclass civil engineering students as selected by the civil engineering faculty.

Patterson and DeWar Scholarship. Cash award to a senior in electrical engineering majoring in electrical power distribution.

Tau Beta Pi Outstanding Senior Award, given by the Tennessee Alpha Chapter. Recognition of a senior in engineering who displays outstanding service, leadership and scholarship. Name on plaque.

University of Tennessee Book and Supply Store Store Award. Award for orderly and helpful attitude to student. Selected by departmental committees in rotation. Given to an upperclassman on the basis of need and demonstrated academic performance.

College of Home Economics
Akima Club Interior Design Scholarship. Awarded to student enrolled in interior design. In-state tuition.

American Dietetic Association. Awarded to dietetics major. Variable.

Central State Bank of Lexington. Awarded to student from Henderson County. $300.

Jack Daniel Distillery Scholarship. Awarded to student enrolled in the food and lodging administration program. $500.

Donelson Home Economists. $500.

Irene Hill Greene and Condon L. Greene Memorial Scholarship. Awarded to student from Anderson County. $300.

Gibson County Farm Bureau. $400.

Jessie W. Harris Scholarship. Awarded to sophomore, junior and senior with highest scholastic record. Three, $300 each.

Hawkins County Farm Bureau. Awarded to a freshman from Hawkins County. $300.

Herndon Dietetic Scholarship. Awarded to students enrolled in the coordinated undergraduate program in dietetics. Ten, $100 each.

Howard Johnson's Scholarship. Awarded to student enrolled in the food and lodging administration program. $700.

Tennessee Howard Johnson's Scholarship. Awarded to student enrolled in the food and lodging administration program. $700.

Knoxville Hotel-Motel Association Scholarship. Awarded to student enrolled in the food and lodging administration program. $500.

Lewisohn Scholarships, endowed by Frederick Lewisohn. Ten, variable.

Memphis Hotel-Motel Association Scholarship. Awarded to student enrolled in the food and lodging administration program. $500.

Nashville Area Home Economists in Homemaking Scholarship. Awarded to a Nashville resident. $500.

Nashville Hotel-Motel Association Scholarship. Awarded to student enrolled in the food and lodging administration program. $500.

Nellie Crooks Award. Award of reference books and journals to an outstanding junior.

National Institute of the Foodservice Industry. Awarded to student enrolled in the food and lodging administration program. $500.

Omicron Nu Sophomore Scholarship Award. $100. Awarded by the home economics honor fraternity.

Joe Powell Memorial Scholarship—District II All Stars. Awarded to 4-H All Star member from District II. $300.

Roane County Council of Home Demonstration Clubs. Awarded to freshman from Roane County. $100.

Schenley Industries Scholarship. Awarded to student enrolled in the food and lodging administration program. $300.

Scruggs Restaurant Equipment, Inc., Scholarship. Awarded to student enrolled in the food and lodging administration program. Two, $250 each.

Standard Textile Scholarship. Awarded to student enrolled in food and lodging administration program. $250.

Stoutfer Foods Corp. Scholarship. $300.

Tennessee Chapter of Future Homemakers of America. One, $300.

Tennessee Dietetic Association. Awarded to upperclassman enrolled in dietetics program.

Tennessee Rehabilitation Corporation Scholarship. Ten, $425 each.

Tennessee Restaurant Association Scholarship. Awarded to student enrolled in food and lodging administration program. $500.

Association of Extension Home Economists. $250.


University of Tennessee General Scholarships. Variable.

Washington County Farm Bureau. Awarded to student from Washington County. $300.

Western Sizzlin Steak House Scholarship. Awarded to student enrolled in the food and lodging administration program. $500.

White Stores Scholarship. Awarded to an entering freshman. $450.

F. Dwight McDonald Scholarship. Awarded to an entering freshman. $450.

College of Law
Callaghan and Company Prize. A copy of Brown on Property to student who has attained the highest average during the junior year in the College of Law.

Herbert L. Davis Memorial Trust Fund. An award of $100 to law student who has the highest scholastic average for the first two years of work in the College of Law.

Knoxville Auxiliary to the Tennessee Bar Association. An award of $100 to law student who has the highest scholastic average in the first year of work in the College of Law.
Italian Studies Award, established by Italian division of Department of Romance Languages. Cash award to outstanding student in upper-division courses in Italian.
Knickerbocker Poetry Prize, for excellence in writing poetry. Founded by the late Stephen L. Mooney in honor of a former head of the English department, $50.
Senior Latin Foundation Prize, established by friends of the classics. Cash award, to member of senior Latin class showing greatest proficiency in the course.
Charles L. McClung Prizes. First prize of $100, second prize of $50, to junior or senior for excellence in composition and declamation. Subjects are set by English department in first quarter of academic year. Manuscripts must be submitted by Feb. 15. Six finalists compete in public declamation contest on first Wednesday evening in March.

MRS. J. Harvey Mathes Tennessee D.A.R. American History Scholarship. Interest on $500, to woman student. Winners selected by the Department of History.

A.D. Melaven-Rhenium Scholarships, for students in the Bachelor of Science in Chemistry curriculum. Endowment established by the sale of rhenium metal and rhenium compounds obtained by procedures devised by Professor Arthur W. Noyce. Awards of $100 given quarterly to outstanding students.
Judson H. Robertson Award in Analytical Chemistry. Endowment established by family and friends of the late Professor Robertson. $100 to student with highest scholastic average in sophomore analytical chemistry courses.

Bernadotte Schmitt History Scholarships. Two scholarships of $500 each for academic excellence, and one of $500 based on financial need. History majors only.

Ruth Stephens Award in International Relations and International Law, established by the late Mr. and Mrs. Oscar Handy, Knoxville. Dividends from investment of $1,500, to student showing greatest knowledge of international relations or international law.
Ruth Stephens History Scholarship. $400 to history major for academic excellence.

Rush Strong Medal, established by the late Benjamin Rush Strong, Knoxville. Medal to student submitting best essay on "The Value of Truth."
Lee L. Verstandig Fellowship in History. Cash award to an outstanding student in history.
Pauline Capell Walker Prize in French. $10, to senior French major with greatest mastery of language, literature, and civilization of France.

Alpha Chi Sigma, for chemical engineering and chemistry students. Student must have a grade point average of 2.5 in chemistry and/or chemical engineering courses, have completed the required work and must have been enrolled in this school for at least one quarter and be elected to membership by others in the local chapter.

Alpha Epsilon Delta, for students preparing for study of medicine. Students with minimum 3.0 average, all courses may be graded at end of their first three quarters in the University, or at end of four quarters with a minimum 2.8 overall average. They must be graduated at end of five quarters if an overall 2.8 average has been maintained.

Alpha Phi Omega. Any undergraduate who is a former Scout is eligible for membership. A pledge must have completed one quarter of academic work with a average grade of 2.0 before eligible for initiation.

Alpha Pi Mu, for industrial engineering students. Prospective members are chosen from the upper one-third of the senior class and upper one-fifth of the junior class. A minimum 2.5 average is required.

Alpha Zeta, agricultural fraternity for juniors and seniors. Prospective members must be among the upper two-fifths of their respective class and show leadership ability.

Beta Alpha Psi, for accounting students. Any undergraduate or graduate, accounting major registered in advanced accounting, with a minimum B average in accounting subjects and a minimum B average in all subjects, is eligible for active membership.

Beta Gamma Sigma, national business honorary society. Minimum requirements for undergraduate student membership include a major in a College of Business Administration curriculum, and top 5 percent of all such students having completed at least 120 through 150 credit hours, or top 10 percent of all those having completed more than 150 credit hours. Additional criteria pertain to number of business administration credit hours taken and number of transfer hours/previous academic performance for transfer students. MBA students must be in the top 20 percent of graduating class, and DBA students must complete all degree requirements with a minimum GPA of 3.50.

Delta Nu Alpha, for transportation students. Prospective members must have completed the basic transportation courses and have a minimum 2.3 average.

Delta Pi Epsilon, for business education graduate students. Prospective members must have a minimum 3.4 average for nine hours of graduate work in business education. Candidates are required to show evidence of scholarship through initiation by presenting a talk, research abstract, or written paper to the group.

Delta Sigma Pi, professional business fraternity for students enrolled in the College of Business Administration. A minimum of 45 quarter hours University credit with a scholastic average of at least 2.5 for initiation.

Delta Sigma Rho-Tau Kappa Alpha honor society for junior and senior students who have participated at a high level of excellence in intercollegiate forensics or original speaking activities and who rank in the upper 35 percent of their college class.

Delta Theta Phi, for law students.

Eta Kappa Nu, for electrical engineering students. Members may be selected from juniors ranking in the upper one-fourth, or seniors ranking in the upper one-fifth of their respective electrical engineering class.

Eta Sigma Phi, honor society for students in classical languages. Membership is open to students who have attained at least a 3.0 average in Latin or Greek courses.

Campus Honorary and Professional Fraternities and Societies

A number of honorary and professional fraternities have chapters on the University's Knoxville campus. Membership in these organizations is generally based on the initiate's good character, a professional interest in his chosen field, leadership characteristics, and a high scholastic record.

Those honor fraternities, both national and local, with chapters at The University of Tennessee are:
Gamma Beta Phi, scholastic honor, educational-service organization open to students in all fields of study. Prospective members, usually inducted in the fall and spring, must have completed at least 30 hours toward the advanced degree and rank in the upper 20 percent of their respective college and have a minimum of 3.2 overall average.

Gamma Sigma Delta, agricultural honorary society for graduating seniors, graduate students, faculty, and agricultural alumni. Seniors selected must be in the upper one-fourth of the graduating class. Graduate students must have a minimum of 3.0 average or better. Graduate students must have attained a 3.5 average or better on at least 24 hours toward the advanced degree. They must have shown promise or superior ability in carrying on advanced study and or research directly concerned with agriculture and of making worthy contributions in their respective fields.

Gamma Theta Upsilon, honor society for students majoring in geography.

Iota Lambda Sigma, for industrial education students. No one may be inducted until he has acquired a minimum of 9 hours industrial education courses with at least B average.

Mortar Board, for senior students. Members are elected from students with a minimum 3.0 average for nine quarters of University study.

Omicron Delta Epsilon, honor society in economics for students and faculty. Student members must have a minimum 3.0 overall average.

Omicron Delta Kappa, for junior and senior students.

Omicron Nu, for home economics students. Members are elected from the upper one-fourth of the senior class and upper one-fifth of the junior class, not to exceed 20 percent of any given class.

Order of the Grot, for law students.

Phi Alpha Delta, for law students.

Phi Beta Lambda professional fraternity for students enrolled in the College of Business Administration. Prospective members must be enrolled in at least three hours in the College with a minimum of a 2.2 overall average.

Phi Beta Kappa, the oldest national academic honorary society, for liberal arts juniors and seniors who rank in the upper one-fourth of the senior class and upper one-fifth of the junior class, not to exceed 20 percent of any given class.

Phi Delta Phi, for law students.

Phi Eta Sigma, for freshmen who have a minimum cumulative average of 3.5 the first quarter or first three quarters while carrying a full academic load. All candidates must rank in upper 20 percent of their respective classes.

Phi Kappa Phi, broadest of the national honor societies, recognizing all fields of learning. Prospective members must be seniors ranking among the upper 10 percent of their class, with a minimum of 3.2 average. Meeting these requirements does not necessarily assure election.

Phi Mu Alpha, (Sinfonia), professional music fraternity for students interested in music. Requirements: 15 academic credits. The main purpose of the organization is to further American music in the campus and community.

Pi Delta Phi, for French students. Prospective members must have a minimum B-minus average in all French courses taken.

Pi Kappa Lambda, for students in music and music education.

Pi Lambda Theta, a national honor and professional association in education. Open to juniors and seniors in a minimum 3.2 GPA and graduate with a minimum of 3.5 GPA. Membership by invitation.

Pi Sigma Alpha, for political science students and faculty. Student members are elected solely on the basis of scholarship.

Pi Tau Sigma, for mechanical engineering students. Prospective junior members must rank in the upper one-fourth and seniors in the upper one-third of their respective mechanical engineering class.

Scabbard and Blade, military science honor society for upperclassmen.

Scrabble Senior Society, local society for students and faculty. Membership is by invitation.

Sigma Delta Chi, professional journalistic society. Active membership shall be limited to journalism and broadcasting majors having at least a 2.3 overall grade average and having completed at least 45 hours.

Sigma Delta Pi, for Spanish students. Prospective members must have a minimum 2.75 average in all University work and a minimum 3.2 average in Spanish and must have completed a junior year in Spanish literature or be registered in the last term of such a course.

Sigma Gamma Epsilon, honor society for students in earth sciences. Membership is by invitation, based on scholarship and interest.

Sigma Pi Sigma, physics honor society for upperclass graduate students, faculty members, and senior research associates. Membership is open to graduate students in the College of Arts and Sciences.

Sigma Xi, scientific research society for advanced graduate students and faculty. Prospective members must have shown noteworthy achievement as original investigators in the pure or applied science fields. Exceptionally brilliant and promising undergraduate and graduate students may be elected to associate membership.

Tau Beta Pi, national honor society for engineering students. The top one-eighth of the junior engineering class and the top one-fifth of the senior engineering class, scholastically ranked, may be elected. Elections are held in the fall and winter quarters. The organization conducts programs and projects of benefit to students and the University.

Torchbearers epitomize the finest qualities of The University of Tennessee student. Each year the seniors who have contributed the most to the University during their college careers are selected as Torchbearers. Selection is based on scholarship, activities, character, and service.

XI Sigma Pi, forestry honor society for upperclass and graduate students, faculty members, and persons who have attained a national reputation in forestry. Students must have completed 11 hours of credit including 15 hours in professional forestry courses. When practical, initiates are selected during the junior year to provide the greatest degree of benefits of active membership.

Office of the Vice Chancellor for Student Affairs

The Vice Chancellor for Student Affairs coordinates the various offices and departments of the University which offer assistance to students in their education and life beyond the classroom.

Office of Career Planning and Placement Service

This service is involved in two major types of activity. First, students are offered the opportunity of receiving many forms of career advising and are provided with a wide range of career literature and audio-visual materials. Second, students and alumni are given several aids for their job search process. These include on-campus interviews, job listings, employer information and address lists, a credit union service, and training in interviewing, résumé writing, and other job search skills.

Office of the Dean of Admissions and Records

All matters relating to undergraduate admission to the University and to credit for work at other schools and colleges are administered by the Dean of Admissions and Records. All credits accepted for admission, and inquiries about admissions should be addressed to the Director of Admissions, The University of Tennessee, Knoxville, Tennessee 37916.

Student Financial Aid is also administered under the direction of this office. Information on available financial aid may be obtained by writing the Director of Financial Aid, 301 Student Services Building, The University of Tennessee, Knoxville, Tennessee 37916.

In addition to undergraduate admissions, this office has general administrative responsibility for academic retention and readmission activities, maintenance of student academic records, certification of completion of requirements for undergraduate degrees, registration procedures, and eligibility for athletic participation. This office also administers the following: student and the Social Security Administration and Veterans Administration.

Handicapped students may receive special assistance in registering and arrangement of schedules through this office.

Office of the Dean of Student Activities

The Office of the Dean of Student Activities, Suite 413 Student Services Building, Circle Park Drive, coordinates all student activities and programs. Its area of

*These regulations do not apply to the College of Law or to the divisions in UT Center for the Health Sciences. For the Law College requirements, see Law College section; for others, see appropriate catalog.
operation encompasses the University Center, the Student Aquatic Center and Recreational Facilities, Student Publications, and all other extracurricular activities of University students.

Office of the Dean of Student Conduct and Orientation

Student Orientation Office. This office is dedicated to helping the new student adjust to the university setting, concerning itself with general, personal, and scholastic difficulties of the student during the first year of enrollment on the Knoxville campus. The office is responsible for the summer orientation program, specifically designed for the fall-quarter new student, as well as orientation programs for freshmen and transfer students presented prior to the beginning of each quarter.

Student Conduct Office. This office is concerned with the individual rights and responsibilities of students. The personnel of this office serve as advisers to the student judicial system and, when necessary, initiate appropriate discipline proceedings.

Office of International Student Affairs

The office assists students from other countries with the many matters which are of particular concern to them during their stay in the United States. It also serves as the official University representative in all matters involving immigration authorities, international educational organizations, and foreign governments.

The office maintains the overseas students' official records and provides a liaison with the teaching faculty. It coordinates such projects as a community volunteer program and activities for foreign student spouses. To help the overseas student adjust to American life, its professional staff serves as ex officio advisers on personal and academic problems.

Special orientation programs are held at the beginning of each term and foreign students admitted to the University are notified in advance and are urged to arrive in time to attend them.

Non-U.S. students who are applying for Graduate School admission should write to: The Vice Chancellor for Graduate Studies and Research, The University of Tennessee, Knoxville, Tennessee 37996, U.S.A.

UNIVERSITY INTERNATIONAL HOUSE

The "International House" is located approximately two blocks from the heart of the campus. It is provided by the University and operated by the Office of International Student Affairs as a facility where domestic and foreign students can come together to relax and discuss matters of mutual interest.

An executive committee composed of students and faculty representing all national student groups, campus student government groups, and University administrators oversees the operation of the House and supervises a variety of weekly programs.

University Center

Playing a unique role in the University community, the Carolyn P. Brown Memorial University Center is a central gathering place for students, faculty, and staff as well as campus visitors.

A variety of activities and facilities is available in the Center. The lower level facilities include five bowling lanes, billiard tables, dark room facilities, and an art and crafts area. These facilities are among the best in the nation for student recreational pursuits.

The expansive food service on the ground level provides the finest food available. The entrance to the large, modern, two-level book store is on Stadium Drive. Such facilities as the central ticket office, student lounge, and the post office are conveniently located on the ground level.

The first floor is the student program area. An auditorium with 575 seats, a 150-seat seminar room, a music listening room, and four public lounges supplement the large ballroom and meeting rooms for any type of campus event. Large banquettes, dances, and receptions are planned and serviced in the expansive area.

Administrative offices for the building, student programs and organizations, and additional housing facilities are located on the third floor.

The meeting rooms and services of the Center are available to all approved student groups. Requests for usage are completed with the Reservations Office.

THE UNIVERSITY BOOK AND SUPPLY STORES

The main store, at the Stadium Drive entrance of the University Center, is the official store for the University. A tobacco and sundries shop at the Stadium Drive entrance is open 10 hours daily.

Used and new textbooks are bought and sold on the lower level of the two-level store. In addition to textbooks, a 110,000 paperback book selection, technical and reference books, and numerous study aids are available on this floor. The first floor offers a complete stock of engineering, art and school supplies, records, tapes, art prints, posters, and other items for student needs.

Small branch stores are located in Hess Hall, Presidential Court, and Andy Holt Apartments. The stores are open 6 1/2 days a week for the student's convenience.

Students benefit indirectly from their patronage of the University Book and Supply Stores since all profits are used to help support the operations and activities of the University Center and Aquatic Center. The stores are the only locations on campus where students may cash personal checks.

Office of Recreation

"Fun for Everyone" is the motto of the Office of Recreation; the primary objective is to serve students by offering many activities for their leisure time. Students are encouraged to take maximum advantage of both the program and the facilities.

STUDENT AQUATIC CENTER

The Student Aquatic Center Recreation Complex affords year-round recreation for all students. Outdoor facilities include an Olympic-size swimming pool with a diving well having two one-meter and two three-meter diving boards, and an olympic diving tower with five, seven, and ten-meter platforms; three large swimming pools with grass carpeting and outdoor furniture for sun bathing; tennis courts; basketball courts; paddleball/handball courts; football and softball fields; parallel and horizontal bars; volleyball and shuffleboard courts; soccer field; 440-yard Tartan track; and a nine-hole practice putting green. Sports equipment for these facilities is issued at no charge to nominal students.

Indoor facilities include an Olympic-size pool with a water polo court and a diving well with one five-meter tower, four one-meter, and three three-meter diving boards. A weight room equipped with a weight machine and stall bars is available. An exercise area in the women's locker room is equipped with exercise machines. Sun lamps and sauna baths are available. Ping pong and billiard tables (slight charge for billiards) are located in the upper lobby along with a TV viewing area.

All facilities of the Student Aquatic Center are available to students upon presentation of their ID card. Faculty and staff may purchase individual or family memberships for a small fee.

UT organizations may rent the Student Aquatic Center for swim parties and dances. Numerous free dances and splash parties are held during each quarter for the students' enjoyment.

STUDENT INTRAMURAL PROGRAM

The Intramural Program for Men and Women is designed for maximum student participation and provides for extensive student involvement in the actual administration and supervision of the entire activity.

The primary basis of competition is league play in which teams participate for the fun of the game. Following league competition there are division tournaments among the league champions to determine Division Champions for Residence Halls, Fraternities, Sororities, and Independents. These Division Champions then compete for the All University Championship (men and women).

The league activities include basketball, billiards, bowling, croquet, football, golf, handball, water polo, paddleball, racquetball, softball, swimming
and diving, tennis, tug of war, turkey trot, track relays, track and field, volleyball, and wrestling.

The purpose of the Women’s Intramural Program is to provide organized sports activities for all women students including individual and dual sports, team sports, and selected sports events. The basis of competition is league play followed by division tournaments among the league champions to determine Division Champions for Residence Halls, Independents, and Sororities. These Division Champions then compete for the All University Co-Rec Championship.

Activities are badminton, basketball, bowling, football, golf, putting, innertube water polo, softball, swimming and diving, table tennis, track and field, track relays, and volleyball.

The Intramural Office also offers co-recreational activities. All students, faculty and staff, and their nonstudent wives, husbands, or friends are eligible to participate, providing the students meet the eligibility requirements of the men’s and women’s intramural program.

The Co-Rec activities are organized as an informal program, using modified rules so that men and women can participate on an equal basis.

The activities are badminton, basketball, billiards, bowling, golf, football, handball, paddleball, racquetball, shuffleboard, softball, table tennis, tennis, volleyball, and water polo.

INTRAMURALS FOR FACULTY AND STAFF

The Intramural Program for Faculty and Staff is designed to provide a wide range of activities for all members of the University community. Activities are organized for both teams and individual participants. Events include badminton, basketball, billiards, bowling, golf, football, handball, paddleball, racquetball, shuffleboard, softball, squash, table tennis, tennis, turkey trot, and volleyball.

SPORTS CLUBS

Sports Clubs are organized when students express an interest in a certain activity or because of anticipated needs. The Sports Club office will assist any student wishing to organize any type of sports club.

The Sports Club Office is located in the Student Aquatic Center, Room 202. The clubs are archery, badminton, bicycling, bowling, boxing, canoe & hiking, crew, dolphin, equestrian, fencing, flying, floor hockey, gocart, gymnastics, handball, ice hockey, ice skating, judo, karate, lacrosse, racquetball, rugby, sailing, scuba, snow ski, soccer, sports car, table soccer, table tennis, trap & skeet, volleyball, water ski, and weightlifting.

FREE PLAY

All recreation areas, Alumni Memorial Gym, and the Physical Education Building, are open to students for free play when the areas are not otherwise scheduled. One or both of these facilities are open seven days a week during the school year to offer students an opportunity for physical exercise in their leisure time. Students may check out necessary equipment at each facility upon presentation of their student identification cards. All recreation facilities are for the enjoyment of students, faculty, and staff of The University of Tennessee, Knoxville.

Aquatics

The aquatic facilities are designed for year-round use with meet facilities for those who wish to participate in free swimming and diving in one of the most outstanding physical complexes in the United States. The Aquatic Center has indoor and outdoor Olympic-size pools where one can enjoy the fellowship and relaxation that comes with aquatic sports. The pool is open Monday through Friday from 12-8 p.m., Saturday from 12-6 p.m., and Sunday from 1-6 p.m. Students and members can also enjoy the sun lamps and relaxed atmosphere found at poolside.

National, regional, and state aquatic events have been held in these facilities over the past ten years. UT’s aquatic program is designed to meet the needs of all students who want to participate in aquatic skills and activities at no extra expense. The programs are informally organized at convenient hours after the school day is completed. These programs vary and provide for a more wholesome and dynamic future.

1. Skin and scuba diving is offered each quarter with NAUI certification, the most prestigious certification in the country. Equipment is furnished at no charge—safety vests, weight belts, tanks, regulators, snorkels, masks, and fins.

2. Lifesaving is offered to those students desiring American Red Cross certification. The course is taught each quarter, and books and materials are furnished.

3. The Water Safety Instructor course is offered fall, winter, and spring quarters with Red Cross certification. There is no charge for students, and instruction materials are provided.

4. Beginning swimming is offered to students, faculty, and staff during the summer quarter. This course is for those who want to improve their swimming skills or want to learn to swim for the first time.

5. Beginning diving is offered to students, faculty, and staff during summer quarter. This course teaches coordination and skills on the springboard.

6. Water survival is offered to students each quarter. This program provides the student with the basic skills and safety measures for prolonged periods in the water and is incorporated in the lifesaving program.

7. Varsity swim teams practice daily throughout the fall, winter, and spring quarters. Many outstanding meets are scheduled here, and the Vols consistently place high in the NCAA Championships.

8. A handicapped swim program is offered one quarter each year for those students who need special care in aquatic activities.

9. Lifeguard School is offered at the Aquatic Center each quarter for specialized training of all lifeguards to be hired.

10. Beginning swimming, intermediate, beginning and advanced diving, swimming, junior lifesaving, and competitive classes are offered to faculty and staff children fall and spring quarters. A competitive swimming course is taught winter quarter.

11. A Swim For Your Life program is offered students, faculty and staff throughout the whole year. Records are kept, and certificates are awarded during certain phases of the program.

12. A Faculty Women’s swim program is offered fall, winter and spring quarters for faculty and staff women.

13. Community competitive swimming programs are offered each quarter during the student’s evening meal hour.

Other offerings include moonlight swim parties, water basketball, water polo, special Carousel showings of aquatic competitive swimming, trampoline and mini-board during supervised activities.

The Aquatic Center is available after hours for private and organizational parties, community aquatic programs, etc. for a fee. This facility has been viewed by visitors, professional and nonprofessional, from all parts of the world, who have said it is among the outstanding centers of the United States.

Student Activities Office

An extensive program of extracurricular activities is available at The University of Tennessee, Knoxville. The University sponsors over 200 student organizations currently functioning. Students have the opportunity to initiate and develop special interests, plan and administer all-campus programs, participate in governance organizations, and augment the academic offerings of the classroom through participation in departmental clubs and scholastic and professional honorary organizations. The University agency charged with the development and administration of the extracurricular program is the Student Activities Office located in the Student Services Building.

WOMEN’S CENTER

The Women’s Center is the coordinating unit for women’s programs on the Knoxville Campus. It functions as a resource for all University departments and organizations in the areas of women’s programs and activities. The primary objectives are the development of programs for women, the collection of media resources about women and a comprehensive information exchange service regarding women’s activities throughout the campus. The Women’s Center is located in 301 University Center.

Intercollegiate Athletics for Women

This department is responsible for the organization and operation of women’s athletic teams at The University of Tennessee, Knoxville. Presently, there are 5 varsity teams for women—basketball, swimming/diving, tennis, volleyball, and track and field.

The program is governed by the Association of Intercollegiate Athletics for Women with teams competing in state, regional and national tournaments. Teams abide by all AAIAW rules in regards to scholarships, recruiting, safety and eligibility.
Any full-time female undergraduate student is eligible to try out. Each team conducts open try-outs with selection being made in early fall. Additional information can be obtained by writing to the Director of Women's Athletics, 115 Stokely Athletics Center.

Student Health Service

Health services provided by the University are available to any student currently enrolled at the University. These services are available continuously throughout every quarter.

The Health Service has a regular staff of physicians, nurses, laboratory and x-ray technicians with the necessary licensure. Out-patient services in the fields of general practice, internal medicine, and psychiatry are available on a full-time basis while specialty consultants in dermatology, surgery, and gynecology are available on campus through referral by a staff physician. Care beyond that provided by the regular staff can be arranged for the student if desired. Those students requiring allergy injections may arrange to receive them at the Clinic. Charges are made for some services such as X-rays, lab tests, injections, and minor surgery. Regular daytime hours are posted at the Student Health Center building. Students are known to the residence halls' staffs and campus security officers and are printed in Hill Topics, the student handbook.

Emergency care is available at the Student Health Clinic and the University of Tennessee Memorial Research Center and Hospital except during the longer breaks between quarters. Emergency transportation (including the use of an ambulance when necessary) to either facility may be obtained through campus Security.

Students needing total care may have this arranged by Health Service physicians, if they choose, in the University of Tennessee Memorial Research Center and Hospital. Because total care is sometimes needed, it is important for the student to have hospitalization insurance. Student group hospitalization insurance is available and may be purchased during a designated period at the beginning of each quarter. Health Service personnel will cooperate with students and family physicians to continue good health practices during the university career.

Student Counseling Services Center

The Student Counseling Services Center provides services designed to help students with education, vocational, personal, and social problems. Professional counselors work with the student in a setting that allows confidential discussion of the student's concerns. The student may concentrate on a specific problem or may work on the general adjustment to academic life. Various groups are employed to meet the developmental needs of the student. These group settings provide the opportunity to share and learn from others and/or improve specific skills. Psychological tests may be used for self-evaluation and information. Also, an occupational-educational information library is maintained.

The Center also works with the faculty and student personnel to develop educational programs and projects to meet the needs of various groups at the University. The Minority Affairs and Withdrawals Office, located in the Center, assists minority students through personal advising and educational workshops, and handles the withdrawals of all students from the University. The course late drop program is coordinated by the Center.

All students, student spouses, and to a limited extent, precollege students are eligible for counseling and services of the Center. Appointments for counseling may be made by phone or in person at the Student Counseling Services Center at 900 Volunteer Boulevard.

Student Rights and Responsibilities

By registering in the University, the student neither loses the rights nor escapes the duties of a citizen. Enjoying greater opportunities than the average citizen, the University student has greater responsibilities. Each student's personal life should be conducted in a manner that reflects honor and integrity and is worthy of the privileges of others. It is further expected that students will demonstrate respect for the law and for the necessity of orderly conduct in the affairs of the community.

Students are responsible for being fully acquainted with the University catalog, handbook, and other regulations relating to students and for complying with them in the interest of an orderly and productive community. The student handbook, Hill Topics, is published and distributed annually so that students are aware of the University Standards of Conduct and all disciplinary regulations and procedures. Since conduct and actions will be measured on an adult standard, students should understand that they assume full responsibility for the consequences of their actions and behavior. The academic community will be judged in large measure by the actions of its members. Therefore, it is incumbent upon students to include the implications for their community in their criteria for determining appropriate behavior.

Failure or refusal to comply with the rules and policies established by the University may subject the offender to disciplinary action up to and including suspension from the University.

Religious Influences

The University, established by a government that recognizes no distinction among religious beliefs, seeks to promote no creed nor to exclude any. However, it will always be diligent in promoting the religious spirit and life of its students.

CHURCH CENTERS

Church centers are maintained on or adjacent to the campus for University students. These are the Baptist Student Center, John XXIII Catholic Center, Presbyterian Student Center, Tyson House (Episcopal), Lutheran Student Center, Wesley Foundation (Methodist), Hillel Foundation, Christian Student Center, and Christian Student Fellowship.

Student Organizations

On the University campus there is a large number of student chapters of professional organizations, special interest clubs, and other extracurricular organizations. These organizations and clubs provide broad opportunities for student participation. A full listing of all student organizations on the campus will be found in Hill Topics. All of these clubs and organizations are under the general supervision of the Student Activities Office.

Social Fraternities and Sororities

The University has chapters of 27 national social fraternities and 19 national social sororities on its Knoxville campus. Membership in these fraternities and sororities is by invitation only.

The Fraternities are:

ACACIA
Alpha Epsilon Pi
Alpha Gamma Rho
Alpha Kappa Lambda
Alpha Phi Alpha
Alpha Tau Omega
Beta Theta Pi
Chi Phi
Delta Tau Delta
Delta Upsilon
Farmhouse
Kappa Alpha
Kappa Alpha Psi Colony
Kappa Sigma
Lambda Chi Alpha
Omega Psi Phi Colony
Phi Delta Theta
Phi Gamma Delta
Phi Kappa Psi
Phi Kappa Tau
Phi Sigma Kappa
Pi Kappa Alpha
Pi Kappa Phi
Sigma Alpha Epsilon
Sigma Chi
Sigma Nu
Sigma Phi Epsilon

The Sororities are:

Alpha Chi Omega
Alpha Delta Pi
Alpha Gamma Delta
Alpha Kappa Alpha
Alpha Omicron Pi
Alpha Xi Delta
Chi Omega
Delta Delta Delta
Delta Gamma
Delta Sigma Theta
Delta Zeta
Kappa Alpha Theta
Kappa Delta
Kappa Kappa Gamma
Phi Mu
Pi Beta Phi
Sigma Kappa
Zeta Beta
Zeta Tau Alpha
Other University Services, Organizations, and Cultural Opportunities

Ombudsman Office

Personnel of the Ombudsman Office in the University Center assist students in the resolution of problems encountered with any aspect of the University. The office is open during the regular working hours of the building, and students are welcome to drop in at their convenience. Problems are treated confidentially and are dealt with expeditiously. The office does not replace existing structures but helps to insure their more adequate functioning and provides advice in creating ways of meeting the needs of students.

Division of International Education

The Division of International Education, established within the Office of the Vice Chancellor for Academic Affairs, serves as a central point from which the broad range of international and intercultural interests throughout the University are strengthened and related to each other. Located in 205 Alumni Hall, the Division of International Education fosters the development, expansion, and continuation of the University’s basic commitment to the international dimensions of the educational process.

In addition to the dissemination of information through the University community relative to opportunities for students and faculty to participate in study, research, and other related experiences abroad, the Division supports on-campus international programs, and serves as a major point of contact between the University and other public and private agencies in the U.S. and abroad involved in international program development.

Most UTK study abroad programs are coordinated through the Division, and new programs are planned with its assistance. Individual counseling for students and faculty by a study, work and travel abroad consultant, a reference library containing information on all aspects of overseas opportunities, a fellowship/scholarship service, free publications, and information on special programs and projects are available in the Division.

Hearing and Speech Services

The Hearing and Speech Center, located at the corner of Yale Avenue and Stadium Drive, offers complete diagnostic and therapeutic services to all University students with hearing and/or speech problems. This service is available to everyone regardless of ability to pay.

The Center serves as a clinical observation and training facility for students majoring in speech and hearing disorders. It also serves as a community

Cultural Opportunities

Both the University and the surrounding Knoxville area offer varied cultural opportunities. Exhibits, concerts, recitals, and lectures, as well as plays are available throughout the year.

THEATRE

The UniversityTheatres organization, under the aegis of the Department of Speech and Theatre, presents several programs of plays and films, in three theatre-plants—the Clarence Brown Theatre, a $2 million plant containing excellent facilities for proscenium staging, open staging, standard film presentations, and laboratory productions (in a separate Studio Theatre of the Clarence Brown Theatre); the Carousel Theatre, a unique structure specially designed for arena staging, and for conversion to open-air performances in the summer; the Hunter Hills Theatre, a beautiful and spacious outdoor theatre plant located in the Great Smoky Mountains near Gatlinburg, in which are presented musical productions and other plays suitable for outdoor presentation.

All University students are welcome to read for parts in plays staged in all of these University theatres, and to participate in other aspects of play and film presentations.

FRANK H. MCCLUNG MUSEUM

The museum in Circle Park stands as a permanent memorial for "the display, preservation, and study of paintings, works of art, objects of natural history and historical objects." The museum contains five major areas of interest, including a permanent exhibit of natural history illustrating the sciences and the Green Memorial Room which contains valued items pertaining to the history of Knoxville and East Tennessee.

A major purpose of the museum is to provide superior teaching and research facilities for students, faculty, and staff.

ART

Eleanor Deane Audigier Memorial Art Collection features paintings, 19th-century furniture, rare textiles, ceramics, sculpture, and small art objects. On permanent display in the Main Library, the collection was presented to the University by Louis Bailey Audigier in memory of his wife.

Christmas Art Sale is an annual affair held in early December in the McClung Museum. Faculty, students, and regional artists display modestly-priced works in time for Christmas buying.

Dogwood National Invitation Art Exhibit is planned each year to coincide with the Dogwood Arts Festival. Held annually in McClung Museum, the exhibition offers a cross section of the world of art. In 1966, the University Center, in cooperation with the UT art department, inaugurated a program in which the University Center purchases works from this annual art exhibit. These works then become a part of the Ralph E. Dunford Permanent Collection, housed and exhibited in the University Center.
Art Auction, held in Carousel Theatre each spring, is a means of raising scholarship funds for art students. Original works of leading local and national artists as well as those of outstanding students in the art department are auctioned to the public. There is a nominal admission charge and unique door prizes are given throughout the auction.

**MUSIC**

UT Choral Groups consist of concert choir, university choruses, graduate and undergraduate chamber singers, and UT Singers. These choirs are open to all students by audition. UT Singers are known as the University's "Good Will Ambassadors." Among the many projects of this group are the overseas tour each spring, and tours abroad on alternate years.

UT Opera Workshop presents three performances yearly. The varied program of opera and musical theater ranges from one-act to complete three-act operas with symphonic accompaniment, and from television opera to selected scenes from the classic repertoire.

UT Symphony Orchestra plays several concerts on campus yearly as well as serving as orchestra for opera and choral productions.

UT Bands. UT's marching band, celebrated as "The Pride of the Southland," presents outstanding entertainment on football Saturdays at both home and out-of-town games. During winter and spring quarters, the band is divided into two concert groups which tour the South: a variety pep band that performs at basketball games, and the laboratory group which provides valuable training for its members. Further information on scholarships and memberships should be sent to the Director, Pride of the Southland Band.

Fine-Art Presentations, scheduled under the auspices of the Department of Music, consist of a series of Faculty Recitals which feature vocal and instrumental music, Student Recitals presented by upperclass and graduate students, and two concert groups which tour the South: a variety pep band that performs at basketball games, and the laboratory group which provides valuable training for its members. Further information on scholarships and memberships should be sent to the Director, Pride of the Southland Band.

**Scottish Rite Masonic Chair of Choral Art** brings to the Knoxville area a distinguished conductor and/or composer in the field of choral art who serves as guest lecturer at a University workshop. The Grace Moore Collection. After the death of opera star Grace Moore, a native of East Tennessee, her family donated to the University a large collection of memorabilia which is viewed by appointment at the Frank H. McClung Museum.

**CONCERTS**

There are two committees on campus charged with the responsibility of providing the University community with the finest names in popular and cultural programs.

Campus Entertainment Board. This student and staff committee has the exclusive responsibility to sponsor popular entertainment on campus through a major concert series, a mini-concert series and the much smaller Guest Artist series.

**Cultural Attractions Committee.** A student, faculty, and staff committee, this group is responsible for the presentation of programs in the arts to include dance, music and theatrical production.

**LECTURES**

Each quarter the Issues Committee presents programs around a current theme. The program is centered around speakers who are considered experts and represent diverse points of view on the designated topic.

**BROADCASTING**

WUOT, the University's 100,000-watt stereo radio station, broadcasts nineteen hours each day to all of eastern Tennessee and portions of adjacent states. WUOT is primarily a fine music station, featuring the full repertoire of the world's great music. Musical programs are supplemented by broadcast versions of great plays, by many documentary programs on contemporary problems, and by university-level discussion and exposition. WUOT is a member of the National Public Radio Network.

**Annual Faculty Phi Kappa Phi Lectures**


**Athletics**

The University encourages athletics as a part of its educational program. Men's intercollegiate sports are directed by the Department of Athletics, and the women's intercollegiate sports are administered through the Division of Student Affairs and are under the direction of the Department of Women's Intercollegiate Athletics. There are teams in basketball, field hockey, gymnastics, swimming, tennis, track and field, and volleyball. Intercollegiate varsity games are played according to the rules of the Tennessee Women's Sports Federation and the Association of Intercollegiate Athletics for Women. Eligibility for participation is determined by TCWSF, AIAW and the University faculty.

The men's intercollegiate sports are baseball, basketball, cross-country, football, golf, swimming, tennis, track and wrestling. Intercollegiate varsity and junior varsity games are played under the rules of the Southeastern Conference. Eligibility to participate is determined by the University faculty and the Conference.

A varied intramural and sports club program is provided for all students. These programs are directed by the Office of Recreation and are housed at the Student Aquatic Center.

**NEYLAND STADIUM**

Neyland Stadium, the University's football stadium, was named in memory of the late General Robert R. Neyland, long-time football coach and athletics director. Shields-Watkins Field, the football field, is named in honor of William S. Shields, former member of the University Board of Trustees, and his wife.

The stadium, built and developed by the Department of Athletics over a period of years, can presently accommodate 80,000 spectators.

**STOKELY ATHLETICS CENTER**

The hub of the University's sports program is Stokely Athletics Center, which houses a 13,000-seat basketball arena and a fine indoor track. Also located here are coaches' offices, dressing rooms for all sports, and a Hall of Fame room.

**OTHER FACILITIES**

The University is proud, too, of its Tom Black Track, host to regional and national meets and built to Olympic specifications. The Student Aquatic Center, with its indoor and outdoor Olympic-size pools, separate diving pools, water polo court, sauna baths, and extensive exercise facilities, is a top spot of interest on the campus. Hudson Field, newly remodeled baseball field and stadium seating 1,500 fans in addition to providing dugouts and press box facilities, is one of the best complexes in the conference. Also, new tennis courts afford an excellent vantage point for spectators.

**Student Publications**

A number of student publications are printed during each school year to serve as sources of information for new students, to report events of interest to the campus community, and to record the year's activities.

The Daily Beacon, a student newspaper, The Volunteer, yearbook of campus activities, and The Phoenix, quarterly literary magazine, are sponsored by The University of Tennessee Publications Board.

Other student publications are: Sorority Scope, published annually by the Panhellenic Council, to provide information about the sororities at the University.

IFC Rush Brochure, published annually by the Interfraternity Council, to acquaint male students with the fraternities.

The Tennessee Engineer, published tri-annually by students and faculty of the College of Engineering, to inform students and alumni of progress in the engineering field.
The University Farmer, published quarterly by the College of Agriculture Student-Faculty Council, for those students and alumni interested in developments in agriculture.

The Tennessee Law Review, published quarterly by students of the College of Law.

Traditions

Traditions play an important part in the life of a University student by recalling the history and heritage of the past, and by setting the stage for future achievements. For instance, the Volunteer Symbol, spirit of the state and the University, is ever present during the student's campus life. This traditional symbol admonishes would-be leaders to hold their "torch" high, shadowing themselves to give light to others.

It is this symbolic "Torch" which first gives the new student a glimpse of one of the many traditions at the University. But traditions at the University may be lighthearted as well as serious. Among the less serious traditions are three annual all-student productions which have become part of the University way of life. These are the noise and bustle of Homecoming, the ill and melody of All-Sing, and the spangle and wit of Carnicus.

Homecoming is a time when former students return to the University to visit and to renew old friendships. This is also the time when alumni have an excellent opportunity to interact and see what students are saying and doing.

All-Sing, begun in the early 1930s to encourage interest in harmony groups, features outstanding singing groups representing campus organizations.

Carnicus, which began as a parade and presentation of a Carnival Queen, has evolved through the years to the present form of competitive skills put on by campus organizations. This entertainment event features skills chosen for their humor, continuity, and perfection of presentation.

The Memorial Research Center and Hospital

The University of Tennessee Memorial Research Center and Hospital is a modern medical facility located just off the Alcoa Highway in Knoxville. The 520-bed general hospital provides patient care and training programs for interns, residents, medical students, nurses, dietitians, medical technologists, x-ray technicians, and ancillary health personnel. Out-patient services are furnished to both area residents and University of Tennessee students. A modern medical library is available for student and physician use. The Research Center conducts an active and vigorous research program that centers on hematological and oncologic problems. Excellent facilities for animal and laboratory experimentation are available. Postgraduate studies are pursued in cooperation with other life science departments of the University. Special clinical investigations and the testing of experimental drugs involve both research and hospital staff and facilities.

University Publications

The various colleges, departments, and continuing education units composing the University issue many publications dealing with their educational, research, and public service programs. In addition, several publications are issued on a University-wide basis. The University of Tennessee Record includes the General Catalog, Graduate School Catalog, Report on Research and Publications, the President’s Report, the Library Development Report, and other publications of a record nature. The Torchbearer, issued four times a year, contains news, pictures, and other information about UT’s teaching, research, and continuing education activities and is distributed to alumni, faculty and staff, and friends of the University. Other publications on programs of the institution may also be issued on a University-wide basis in response to requests of the various colleges, departments, and continuing education units. All of the publications are for free distribution. University publications are under the general supervision of the University of Tennessee, Knoxville, Publications Committee appointed by the chancellor of the University. The operating office for this committee is the Publications Service Bureau, located in the Communications and University Extension Building. Technical services of the Publications Service Bureau are offered to all colleges, departments, and other units of the University needing assistance with publication design, artwork, copyreading, editing, proofreading, and preparing specifications for printers. These services assist University departments in issuing the highest quality of publications possible within their printing budgets.

Learning Research Center

Recognizing that the learning process is exceptionally complex, the University established the Learning Research Center in 1964. Its primary purpose is to encourage faculty members to utilize the results of research in creating arrangements and conditions for learning.

The Learning Research Center publishes the Teaching-Learning Issues quarterly which circulates throughout the University system and on other campuses across the nation.

The University of Tennessee Press

The University of Tennessee Press is the institution’s agency for the publication of scholarly books and monographs, nonfiction works of general and regional interest, and specialized textbooks for Tennessee and the Southeast. Manuscripts are solicited from University personnel and other authors. The Press imprint is controlled by an Editorial Board, to which recommendations are made by the director acting with the counsel of scholarly appraisers, and the books are distributed on a sales basis. The Press office is located in the Communications and University Extension Building.

Student Government Association

Composed of the Student Coordinating Council, the Academic Council, and the Graduate Student Council, the Student Government Association is the governing body of the students at UT. Some objectives of the S.G.A. are to provide a vehicle for responsible and effective student participation in the organization and operation of student life and to promote the recognition of student rights and responsibilities.

The president of the S.G.A. serves as chairperson of the Student Coordinating Council while the vice president administers the student services staff (including the Free University, Footnotes program, and Voter Registration). Student Coordinating Council members are elected in the spring quarter to represent geographical areas of the campus as well as various student organizations. The Academic Council and Graduate Student Council representatives are elected from the academic colleges and graduate student programs, respectively. Offices of the S.G.A. are located in room 341 of the University Center.
The Graduate School

L. Evans Roth, Vice Chancellor for Graduate Studies and Research
Margaret N. Perry, Dean for Graduate Studies
Carl O. Thomas, Dean for Research

The University of Tennessee, Knoxville offers a graduate program which is one of the largest and most comprehensive to be found in the nation. Courses of study leading to Master's degrees are available in almost all colleges and schools. The University's present doctoral programs were initiated about thirty years ago and have expanded rapidly, with Doctor's degrees presently offered in forty-seven areas. Additional fields are being added as warranted by expanding faculty and facilities.

The principal aim of the Graduate School is that of education beyond the Bachelor's level through advanced courses, seminars, and research. The total resources of the University are made available to graduate students through its various colleges, schools, and special services. Each student is expected to take full advantage of the opportunities offered in the field of study, and to maintain a high quality of achievement in the various phases of the program. To assist the student, certain procedures and regulations are described in subsequent paragraphs. These are formulated by the Graduate Council and administered by the Vice Chancellor for Graduate Studies and Research. The program of an individual student may be quite flexible but should still remain within the framework of the degree programs approved by the Council. Each student should be acquainted with the rules and procedures, as well as with any special requirements of individual colleges or departments.

General Information

Knoxville campus. The main and most varied offerings of the Graduate School are available at the Knoxville campus where advanced study at both the Master's and Doctor's level is provided in almost every college. Opportunities may be found at other locations as indicated below. Complete information concerning the Graduate Catalog, which research may be obtained by writing the Vice Chancellor for Graduate Studies and Research, The University of Tennessee, Knoxville, Tennessee 37916.

The University of Tennessee Space Institute. Opportunities for graduate study and research leading to the degrees of Master of Science and Doctor of Philosophy in certain areas of engineering and science are offered by the Space Institute located adjacent to the Arnold Engineering Development Center, Tullahoma, Tennessee. At the present time, graduate degree programs are available in aerospace engineering, aviation systems, computer science, electrical engineering, engineering science, mathematics, mechanical engineering, and physics. In addition to the fundamental academic work characteristic of each discipline, research opportunities and supporting interdisciplinary course work are available to permit specialization in many aspects of atmospheric and space flight such as subsonic to hypersonic aerodynamics; aerospace vehicle design; control and guidance; modern materials and structures; propulsion systems; aircraft noise and sonic boom; flight simulation; avionics; plasma dynamics; flow diagnostics including spectroscopic and electrooptic means; systems management and cybernetics. Current limited research work in related areas of environmental pollution control, earth resources, energy conversion, materials and systems and simulation are also available. The research personnel and facilities of the Institute and those available at the Arnold Center through appropriate contractual arrangements provide an outstanding opportunity for meaningful research in these and other areas. Students who enroll at UTSL must be admitted to the Graduate School, University of Tennessee, Knoxville.

Further information concerning the Institute may be obtained from the Dean, The University of Tennessee Space Institute, Tullahoma, Tennessee 37388. Application forms and an announcement of the Institute's programs are available upon request.

Kingsport University Center. The University of Tennessee offers at Kingsport resident graduate programs in science, engineering, and business at both the Master's and Doctor's levels. The program is operated within the policies set by the Graduate Council of The University of Tennessee and is administered by the Vice Chancellor for Graduate Studies and Research. It is coordinated with the graduate and undergraduate offerings of East Tennessee State University.

Students who enroll in this program must be admitted to the Graduate School of The University of Tennessee, Knoxville.

Information and appropriate application forms may be obtained from the Director, Kingsport University Center, The University of Tennessee, University Boulevard, Kingsport, Tennessee 37660.

Oak Ridge Resident Graduate Program. The University of Tennessee offers graduate study programs at Oak Ridge, with work leading to the Master's degree in industrial management, industrial education, and statistics; and the Master's and Doctor's degrees in the areas of engineering, mathematics, and physical and biological sciences. Courses are given in the late afternoons, evenings and Saturdays, with research facilities provided by and used in cooperation with the Oak Ridge Associated Universities, and the Union Carbide Corporation Nuclear Division.

This program is supported under a subcontract with Oak Ridge Associated Universities with principal support coming from Union Carbide Nuclear Division. The University of Tennessee is one of the 43 colleges and universities which sponsors
ORAU, a nonprofit education and research management corporation.

Information and applications to the Graduate School may be obtained by writing the Director, University of Tennessee Graduate School, Post Office Box 117, Oak Ridge, Tennessee 37830.

Radiation Biology. A graduate major in the field of radiation biology leading to the M.S. and Ph.D. degrees is offered through the Institute of Radiation Biology. On the Institute staff are scientists from the Departments of Biochemistry, Botany, Chemistry, Microbiology, Physics, Zoology, the Memorial Research Center, and the UT-AEC Agricultural Research Laboratory of the University of Tennessee, the Biology and Ecology Physics Divisions of the Oak Ridge National Laboratory, and the Medical Division of Oak Ridge Associated Universities. Areas of specialization include biochemistry, biophysics, cytology, ecology, electron microscopy, embryology, entomology, genetics, hematology, immunology, microbiology, molecular biology, oncology, parasitology, pathology, physiology, and tissue culture.

School of Social Work. The University of Tennessee offers a fully accredited two-year program leading to the degree of Master of Science in Social Work, with programs in Nashville, Knoxville, and Memphis. The program is designed to prepare personnel for positions in family and child welfare agencies, psychiatric social work, school social work, medical social work, social group work, social welfare administration, community organization, corrections, rehabilitation, and service to the aging. Professional skills may be concentrated in the areas of social work treatment, and social welfare administration and planning.

Information regarding admission and programs may be obtained from the Dean of the School of Social Work, The University of Tennessee, P.O. Box 8820, Knoxville, Tennessee 37916.

Chattanooga Engineering Graduate Program. The University of Tennessee, Knoxville, offers a program of graduate work leading to the Master's degree in the area of engineering. Courses are given at The University of Tennessee at Chattanooga in the late afternoons and evenings. Students who enroll in this program must be admitted to the Graduate School of The University of Tennessee, Knoxville.

Information concerning this program may be obtained from the Director, Chattanooga Engineering Graduate Program, The University of Tennessee at Chattanooga, Chattanooga, Tennessee 37401.

The University of Tennessee at Nashville. Opportunities for graduate study leading to the degree of Master of Science in areas of civil engineering, engineering administration, and industrial engineering are offered by The University of Tennessee, Knoxville, and are administered by the Vice Chancellor for Graduate Studies and Research.

Students who enroll in those programs must be admitted to The University of Tennessee, Knoxville, Graduate School. Information and appropriate forms may be obtained from the Registrar, The University of Tennessee at Nashville, 10th and Charlotte, Nashville, Tennessee 37203.

---

<table>
<thead>
<tr>
<th>Majors and Degrees Available</th>
<th>ADMISSION TEST REQUIRED</th>
<th>LETTER OF RECOMMENDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G.R.E.</td>
<td>G.M.A.T.</td>
</tr>
<tr>
<td>College of Agriculture</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Agricultural Biology</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Agricultural Economics</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Agricultural Engineering</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Agricultural Extension</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Agricultural Mechanization</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Animal Science</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Food Technology and Science</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Forestry</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Ornamental Horticulture</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Plant and Soil Science</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
<tr>
<td>Wildlife and Fisheries Science</td>
<td>M.S.</td>
<td>M.S.</td>
</tr>
</tbody>
</table>

College of Business Administration

Economics
Management Science
Statistics

College of Communications

Communications

College of Education

Adult Education
Agricultural Education
Art Education
Business Education
College Student Personnel
Curriculum
Curriculum and Instruction
Distributive Education

College of Business Administration

'Business Administration'
Economics
Management Science
Statistics

College of Communications

Communications

College of Education

Adult Education
Agricultural Education
Art Education
Business Education
College Student Personnel
Curriculum
Curriculum and Instruction
Distributive Education

The University of Tennessee—Oak Ridge Graduate School of Biomedical Sciences. The University provides programs leading to the M.S. and Ph.D. degrees in various areas of biomedical sciences. Graduate students have the opportunity to study and to do research in conjunction with the Biology Division of the Oak Ridge National Laboratory.

Information concerning this program is available from the Director, The University of Tennessee—Oak Ridge Graduate School of Biomedical Sciences, Biology Division, Oak Ridge National Laboratory, Box Y, Oak Ridge, Tennessee 37830.

ASSISTANTSHIPS AND FELLOWSHIPS

Non-Service Fellowships supported by the University are awarded on the basis of ability and without regard to the field of study of the candidate. Successful applicants need better than an overall 3.0 grade point average and high Graduate Record Examination scores. The normal deadline for receipt of completed applications is mid-February. Fellowships or traineeships in special areas are sometimes supported from non-university sources. Information concerning these fellowships, as well as application blanks, may be obtained from the Graduate Office. Graduate assistantships and additional fellowships are offered through many departments of the University. The stipends usually provide for payment of tuition and fees by the University. Information concerning these opportunities and appropriate application forms may be secured by writing to the head of the department in which the student expects to study.
<table>
<thead>
<tr>
<th>Majors and Degrees Available</th>
<th>DEGREE</th>
<th>ADMISSION TEST REQUIRED</th>
<th>LETTER OF RECOMMENDATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Administration and Supervision</td>
<td>M.S., ED.S., ED.D.</td>
<td>X</td>
<td>6-Rating forms</td>
</tr>
<tr>
<td>Educational Psychology and Guidance</td>
<td>M.S., ED.D.</td>
<td>X</td>
<td>6-Rating forms</td>
</tr>
<tr>
<td>Elementary Education</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>English Education</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Foreign Language Education and Guidance</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Health Education</td>
<td>ED.D., PH.D.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Home Economics Education</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Industrial Education</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructional Materials</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics Education</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Music Education</td>
<td>M.S., ED.D.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Physical Education</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Public Health</td>
<td>M.P.H.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreation</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Safety Education and Service</td>
<td>M.S., ED.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>School Health Education</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science Education</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Social Science Education</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Special Education</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Vocational Rehabilitation Counseling</td>
<td>M.S.</td>
<td>X</td>
<td>3-Former Professors</td>
</tr>
<tr>
<td>Vocational-Techical Education</td>
<td>M.S., ED.S., ED.D.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>College of Engineering</td>
<td>M.E., M.S., PH.D.</td>
<td>X, X</td>
<td></td>
</tr>
<tr>
<td>*Aerospace Engineering</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Civil Engineering</td>
<td>M.E., M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Electrical Engineering</td>
<td>M.E., M.S., PH.D.</td>
<td>X, X</td>
<td></td>
</tr>
<tr>
<td>*Engineering Administration</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Engineering Science</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Environmental Engineering</td>
<td>M.E., M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Industrial Engineering</td>
<td>M.E., M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Mechanical Engineering</td>
<td>M.E., M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Metallurgical Engineering</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear Engineering</td>
<td>M.E., M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Polymer Engineering</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College of Home Economics</td>
<td>M.S.</td>
<td>X</td>
<td>All M.S. and PH.D. applicants obtain special application form from Associate Dean, College of Home Economics.</td>
</tr>
<tr>
<td>Child and Family Studies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer Studies and Housing: Public Policy</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Crafts, Interior Design, and Housing</td>
<td>M.S.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>*Food Science</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food Systems Administration</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Home Economics</td>
<td>PH.D.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>*Nutrition</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textiles and Clothing</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Intercollegiate Aviation Systems</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ecology</td>
<td>M.S., PH.D.</td>
<td>X, X</td>
<td></td>
</tr>
<tr>
<td>Management Science</td>
<td>M.S.</td>
<td>X or X</td>
<td></td>
</tr>
<tr>
<td>Organizational Psychology</td>
<td>M.S., PH.D.</td>
<td>X or X</td>
<td></td>
</tr>
<tr>
<td>Water Resources Development</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College of Liberal Arts</td>
<td>M.A., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthropology</td>
<td>M.A., M.F.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Art</td>
<td>M.A.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Audiology</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biochemistry</td>
<td>M.A.C.T.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botany</td>
<td>M.A.C.T., M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Chemistry</td>
<td>M.S.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Computer Science</td>
<td>M.A.C.T., M.A., PH.D.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>M.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>French</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geography</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology</td>
<td>M.A.C.T., M.A.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>German</td>
<td>M.A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>German Language and Literature</td>
<td>PH.D.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>History</td>
<td>M.A.C.T., M.A., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*Mathematics</td>
<td>M.MATH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbiology</td>
<td>M.S., PH.D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Music</td>
<td>M.MUS., M.A.</td>
<td>X</td>
<td>3-Former Professors</td>
</tr>
<tr>
<td>3-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-Former Professors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Majors and Degrees Available</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DEGREE</strong></td>
<td><strong>G.R.E.</strong></td>
<td><strong>ADMISSION TEST</strong></td>
<td><strong>LETTER OF</strong></td>
</tr>
<tr>
<td>Philosophy</td>
<td>M.A., PH.D.</td>
<td>X</td>
<td><strong>RECOMMENDATION</strong></td>
</tr>
<tr>
<td>1Physics</td>
<td>M.A.C.T., M.S., PH.D.</td>
<td>X</td>
<td>3-Former Professors</td>
</tr>
<tr>
<td>Political Science</td>
<td>X</td>
<td>4-Obtain forms from department</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td>M.A., PH.D.</td>
<td>X</td>
<td>3-Former Professors</td>
</tr>
<tr>
<td>Public Administration</td>
<td>PH.D.</td>
<td>X</td>
<td>3-Rating forms</td>
</tr>
<tr>
<td>Radiation Biology</td>
<td>M.P.A.</td>
<td>X</td>
<td>3-Former Professors</td>
</tr>
<tr>
<td>Romance Languages</td>
<td>M.S., PH.D.</td>
<td>X</td>
<td>3-Former Professors</td>
</tr>
<tr>
<td>Sociology</td>
<td>M.A.C.T.</td>
<td>X</td>
<td>3-Obtain forms from department</td>
</tr>
<tr>
<td>Spanish</td>
<td>M.A.C.T., M.A., PH.D.</td>
<td>X</td>
<td>1-Letter of recommendation and Personal Data Form</td>
</tr>
<tr>
<td>Speech and Hearing Science</td>
<td>M.A., PH.D.</td>
<td>X</td>
<td>Obtain forms from school</td>
</tr>
<tr>
<td>Speech and Theatre</td>
<td>PH.D.</td>
<td>X</td>
<td>3-Obtain forms from department</td>
</tr>
<tr>
<td>Speech Pathology</td>
<td>M.A.</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><em>Zoology</em></td>
<td>M.S., PH.D.</td>
<td>X</td>
<td>Obtain special forms from department</td>
</tr>
</tbody>
</table>

**College of Nursing**
- Nursing: M.S.N.

**School of Biomedical Sciences**
- Biomedical Sciences: M.S., PH.D.

**School of Library and Information Sciences**
- Library Science: M.S.L.S.

**School of Planning**
- Planning: M.S.P.

**School of Social Work**
- (Memphis, Nashville and Knoxville): Social Work: M.S.S.W.

*Offered only at UT Space Institute.
*Offered also at off-campus locations.
*Department doctoral option offered under the major of home economics.
*Interdisciplinary option offered in each department.
*Ph.D. applicants only.
*American applicants only.
*ED.D. applicants only.
*ED.S. applicants only.
*International applicants only.
*Interdisciplinary Ph.D. applicants only.

---

**Environment Center**

**Director:** J.H. Gibbons, Ph.D. Duke.

**Associate Director:** R.A. Bohn, Ph.D. Washington (Missouri).

The Environment Center was created to encourage and support UT faculty and students to become involved in interdisciplinary studies to provide alternative solutions to problems related to energy and the environment. The Center provides assistance to faculty interested in developing research and public service projects, manages research and development projects that involve several disciplines, and assists Tennessee government and industry in specific problems related to energy and environment. It also participates in the Statewide Consumer Education Program, especially in developing material.

Projects include environmental and human costs of coal production, solar energy utilization in buildings, energy conservation in buildings and industry, and regional solid waste management and resource recovery.

The Center is operated by UT, Knoxville through the Office of the Vice Chancellor for Graduate Studies and Research.

---

**Transportation Center**

**Director:** K.W. Heathington, Ph.D. Northwestern.

**Associate Directors:** F.W. Davis Jr., Ph.D. Michigan State; R.A. Mundy, Ph.D. Pennsylvania State.

**Assistant Directors:** D.H. Jones, M.S. Tennessee; R.L. Perry, M.S. Tennessee; P.R. Tutt, M.S. Texas.

**Assistant to Director:** C.P. Mauney, Ph.D. D. Tennessee.

The mission of the Transportation Center is to encourage and facilitate interdisciplinary research in all phases of transportation, to provide public service of a transportation-related nature, to manage the research program for the Tennessee State Department of Transportation, and to manage highway safety research for the Governor's Highway Safety Program.

The Center does research in all modes of transportation, including mass transit, highways, water, rail and air. The impact of the movement of people and goods on the environment and the technical aspects of transportation problems are concerns of the Center.

The Center is operated by UT, Knoxville through the Office for Graduate Studies and Research.

---

**Graduate School of Biomedical Sciences**

**(193)**

**W.E. Barnett, Director**

**R.J. Preston, Associate Director**

**Full-Time Faculty**

**Professors:** D.Billen, Ph.D. Tennessee; D.E. Ollins, Ph.D. Rockefeller.

**Associate Professors:** F.H. Gaertner, Ph.D. Purdue; F.D. Hamilton, Ph.D. Pittsburgh.

**Assistant Professor:** N.W. Revis, Ph.D. University of Glasgow (Scotland).

**Research Assistant Professor:** C.T. Hadden, Ph.D. Washington.

The University of Tennessee—Oak Ridge Graduate School of Biomedical Sciences, established in 1966 under the joint auspices of The University of Tennessee and the Biology Division of Oak Ridge National Laboratory, is a novel venture in scientific graduate education. The National Laboratory, one of the three installations operated at Oak Ridge by Union Carbide Corporation for the Energy
Research Development Administration, is a well-known center of basic research in biology, chemistry, physics, mathematics, metallurgy, health physics, and ecology. The school utilizes the staff and facilities of this large federal research institute, thus bringing directly into the mainstream of full-time graduate study in the life sciences the talent and experience of that staff, as well as the most advanced research methods.

The program of study, which incorporates a high faculty-to-student ratio, is based on extensive graduate courses supplemented by tutorial instruction, participation in a wide variety of seminars, and a heavy emphasis on research training and independent study. The program encourages and requires students, through individual initiative and self-discipline, to pursue graduate studies to the limits of their abilities.

The school is not departmentalized and because of the basic requirements, each student's curriculum is planned to meet individual needs, with the aim of giving: (1) strength in the basic sciences; (2) perception of the biomedical sciences as a whole; and (3) experience and training in a chosen specialty.

The four research areas available for Master's and Ph.D. thesis work are biochemistry, biophysics, carcinogenesis, cell biology, genetics, and physiology. Included are such subjects as microbiology, immunology, protein and enzyme chemistry, nucleic acid chemistry, cytology, radiation biology, virology, developmental biology, experimental pathology, microbial and mammalian genetics, mutagenesis, and problems of aging.

The Graduate School of Biomedical Sciences publishes supplementary information in addition to the regular Graduate Catalog. All inquiries concerning admission should be addressed to: Director, The University of Tennessee —Oak Ridge Graduate School of Biomedical Sciences, Biology Division, ORNL, P.O. Box Y, Oak Ridge, Tennessee 37830.

COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5000 Thesis</td>
<td></td>
</tr>
<tr>
<td>5070-80 Physical Chemistry for the Life Sciences (3, 3)</td>
<td></td>
</tr>
<tr>
<td>5110-20 Biochemistry (3, 3)</td>
<td></td>
</tr>
<tr>
<td>5140 Biophysics I (3)</td>
<td></td>
</tr>
<tr>
<td>5160 Genetics (5)</td>
<td></td>
</tr>
<tr>
<td>5170 Molecular Genetics (3)</td>
<td></td>
</tr>
<tr>
<td>5180 Cell Biology I (3)</td>
<td></td>
</tr>
<tr>
<td>5190 Cell Biology II (3)</td>
<td></td>
</tr>
<tr>
<td>5200 Mammalian Physiology (4)</td>
<td></td>
</tr>
<tr>
<td>5230 Biochemical Concepts in Medical Science (3)</td>
<td></td>
</tr>
<tr>
<td>5310-20-30-40 Biomedical Sciences Laboratory (3, 3, 3, 3)</td>
<td></td>
</tr>
<tr>
<td>5350 Biomedical Sciences Seminar (1)</td>
<td></td>
</tr>
<tr>
<td>5360 Biomedical Sciences Seminar (1)</td>
<td></td>
</tr>
</tbody>
</table>

Graduate School of Library and Information Science (620)

Gary R. Purcell, Director

Professors:  
E.E. Mauldin, M.S.L.S., Illinois;  
G.R. Purcell (Director), Ph.D. Case Western Reserve.

Associate Professor:  
G.E. Estes, M.S.L.S., Kent State.

Assistant Professors:  
J.J. Knightly, Ph.D., Texas;  
W.C. Robinson, Ph.D., Illinois;  
G.M. Singankas, Ph.D., Pittsburgh;  
P. Wilson, Ph.D., Michigan.

The Graduate School of Library and Information Science provides a library education program at both the graduate and undergraduate levels, leading to the preparation of librarians for work in all types of libraries. The program is to help meet the library manpower needs of the state of Tennessee. The programs of study of this School include a graduate curriculum leading to the degree of Master of Science in Library Science and an undergraduate program which allows for a minor in either the College of Education or the College of Liberal Arts.

The Undergraduate Program

The undergraduate library education program leads to a minor in the College of Education or the College of Liberal Arts. Students in other colleges may elect a minor in library science with the approval of their faculty advisers. The undergraduate minor is planned for the following groups of people: (1) students preparing for positions as school librarians in elementary and secondary schools; (2) teachers who wish to become better acquainted with books and other instructional materials; (3) school administrators who wish to explore the place of the library in the instructional program; (4) prospective candidates for the graduate program in library education; (5) persons seeking a position at the level of Library Associate as described in the manpower policy of the American Library Association.

The minimum requirements for a full-time position as school librarian in the state of Tennessee (both elementary and secondary) can be met through fulfilling the requirements for teacher certification and completion of the following library courses: 3510, 3520, 3530, 4140, 4150, 4270, 4330, and 4750.

The Graduate Program

The objective of the program is to prepare individuals to assume a role in the libraries and information centers of today and the future. Students are exposed to various ideas about the role of libraries and information centers in society and the processes by which knowledge is communicated through the medium of the graphic record. Students acquire a familiarity with the bibliography and the literature of various subject fields. They are expected to develop the ability to evaluate and use various types of print and nonprint materials and are also introduced to current concepts of the management of library operations and services.

The basic professional core curriculum, designed to provide sound foundations in principles applicable to all types of libraries, is augmented by elective choices within library and information science as well as other disciplines represented in the University community. For further information write for a Graduate Catalog.

UNDERGRADUATE

3510 Books and Related Materials for Children (3) Readings based on materials suitable for children in leisure time or classroom activities; or-
5200 Subject Reference and Bibliography (3)
5210 Sources and Services for the Social Sciences (3)
5220 Sources and Services for the Natural Sciences (3)
5230 Sources and Services for the Humanities (3)
5240 Organization of Library Collections II (3)
5250 Government Publications I (3)
5260 Government Publications II (3)
5270 Legal Bibliography (3)
5300 Library Management (3)
5310 Library Systems and Services (3)
5320 Library and Information Networks (3)
5330 Academic Libraries (3)
5350 School Libraries (3)
5360 Technical Libraries and Information Centers (3)
5370 The Library in the Community (3)
5380 Seminar: Academic, Public, School or Special Libraries (3)
5400 Library Facilities (3)
5500 Principles of Materials Selection (3)
5510 Multimedia Resources in Libraries (3)
5520 History of Books and Printing (3)
5530 Contemporary Publishing (3)
5540 Special Collections—Archives and Rare Books (3)
5600 Reading Guidance for Children and Young People (3)
5610 Mass Communications and the Library (3)
5620 Traditional Literature and Oral Narration (3)
5630 Critical History of Children's Literature I (3)
5640 Critical History of Children's Literature II (3)

5881 Production and Use of Audiovisual Materials (3)
5700 Automation of Library Processes (3)
5710 Introduction to Information Science (3)
5720 Information Systems Analysis and Design (3)
5730 Information Retrieval Systems Laboratory (3)
5999 Practicum (6, 9, or 12)

Graduate School of Planning (782)
J.A. Spencer, Director

Professors:
J.A. Gray, A. M. Syracuse; K.B. Kenney, Ph.D.
North Carolina; J.M. Prochaska, M.U.P.
Michigan; W.L. Shouse, M.C.P. Harvard.

Associate Professors:
J.A. Spencer (Director), M.C.P. Ohio State;

Assistant Professors:
G.E. Bowen, M.A. George Washington;
J.G. Stroff, M.U.P Hunter College.

The Graduate School of Planning offers a two-year graduate course leading to a degree of Master of Science in Planning.

The purpose of study is the education of professional planners, competent to handle positions of increasing technical and administrative responsibilities. Graduates are candidates for professional service in regional, city, county, and metropolitan area planning agencies; in local, state, and federal agencies concerned with physical, economic, and administrative planning; in private business and organizations dealing with urban problems; and in private consulting practices.

The school, located in Knoxville, is in an excellent position to draw on the knowledge of the nation's, and perhaps the world's, outstanding regional planning and development agency, the Tennessee Valley Authority. The students can also view and study the close-at-hand economic problem area of Appalachia.

The Field of Planning
Planning is one of the challenging techniques by which society seeks to harness new methods and technologies in urban growth, economic development and redevelopement, housing, and transportation.

Planning seeks to improve not only the physical but also the economic and social environment of the individual. Through the use of public policies, and through maximum cooperation between private economics and public purposes, it seeks to increase the opportunities of the individual—to better the chances for a decent job and a decent home in a community of which to be proud. Planning does not accept our present urban and rural environments as the best of all possible worlds. The planner can expect a challenging, sometimes frustrating, but always rewarding career.

Planning is a rapidly evolving field, but at present it is chiefly concerned with two general areas. Regional and state planning is concerned primarily with...
economic and resource regions, the forces that generate economic growth, and the ways in which state and regional resources can be organized to generate area development. Urban planning is concerned primarily with understanding the urban environment, the social and economic forces that affect it, and the administrative and technological means by which it may be guided.

Graduate Education in Planning

The curriculum is organized on a basis of six quarters, or 72 credit hours, including a nine-credit thesis. The curriculum provides the student with core courses in planning theory, methods, and techniques, and also takes advantage of rich offerings at The University of Tennessee in related fields such as government, economics, geography, civil engineering, and sociology.

The course of study ordinarily requires two years, with a work internship during the summer between the two years. However, students entering the school with previous planning experience have an option of taking six consecutive quarters of study, utilizing the summer period. Planning courses as well as related courses will be offered during the summer period.

The purpose of this option is to serve the needs of those planners now in the field, who wish to acquire their professional degree but who can spare only the minimum amount of time from their jobs because of financial or family considerations. By going to school for six consecutive quarters they do not face the problem of having to move their family during the three-month period between school years.

Entering students follow a suggested program of courses which provides training in the basic elements of planning. These include studies in theory, history, analytical methods, design, and legislation, as well as related courses in government, geography, sociology, and economics. Students in the latter quarters of the first year, and in the second year, have the option of pursuing studies in an urban concentration or a regional concentration. They are permitted to pursue particular interests through the choice of electives approved by the Graduate School of Planning. Practice in research and analysis on a particular planning problem or topic is obtained through the preparation of a thesis or major study option. A comprehensive written examination on previously taken graduate course work will be given to students who have finished their first year of study and before they have finished their second year of study. An oral examination will be given on the thesis subject prior to graduation.

Faculty

Core planning courses are taught by the full-time faculty of the Graduate School of Planning. Related courses are taught by other specialists drawn from the University faculty. In most instances these are senior faculty members. In addition, the services of experienced professional planners in TVA and other public and private organizations are called upon to broaden the scope of the students' understanding. A variety of outside speakers and seminar leaders provides insight into particular problems of significance to planners.

UNDERGRADUATE

4100 Introduction to Planning (3) History of planning, familiarization with operations of contemporary planning, concept of systems, current trends and issues. Emphasis on relationship between planning and society in which it occurs.

4200 Planning Communications (1) Graphic, oral and written communication of information and recommendations.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5100 Theory of Planning (4)

5130 Planning Research Methods I (3)

5135 Planning Research Methods II (3)

5160 Planning and Utilities (3)

5230 Urban and Site Design (2)

5270 Planning and Transportation (3)

5280 Planning Methods (5)

5300 Regional Planning (3)

5310 State Planning (3)

5340 Implementation (3)

5350 Urban Spatial Structure (2)

5360 New Towns (2)

5380 Housing (2)

5410-20-30 Special Topics in Planning (1-3, 1-3, 1-3)

5440 Legislation and Land Use Controls (4)

5450 Urban Renewal (2)

5500 Synthesis (9)

5670 Social Planning (3)

Graduate School of Social Work (905)

Ben P. Granger, Dean
Betty J. Cleckley, Assistant Dean
David P. Fauri
Branch Director, Nashville
Roger M. Noee
Branch Director, Knoxville
Mary K. Mullins
Branch Director, Memphis

Professors:
B.P. Granger (Dean), Ph.D., Brandeis;
M.H. Block, M.S., Ohio State; R.C. Bonovich,
D.S.W. Washington University (St. Louis); G.W. Fryer, Ed.D., Columbia; B. O'Farrell
(Emiratus), M.S., Western Reserve; L.J. Robins,
M.S.W., Carnegie Institute of Technology; S.W. Spencer (Emiratus), M.S. New York School of
Social Work; M.A., Stites (Emiratus), A.M.
Pennsylvania.

Associate Professors:
L.M. Bean, D.S.W., Denver; B.J. Cleckley,
Ph.D., Brandeis; C.T. Crutcher, B.S.W., Tulane;
D.P. Fauri, D.P.A., Arizona; P.W. Safford, M.S.W.
Michigan; P.F. Whittmore, M.S.W. Washington;
P.G. Zanob, M.S.W. Wisconsin.

Assistant Professors:
W.J. Bell, M.S.W. Michigan; A.R. Ford, M.S.W.
Pennsylvania; R.K. Hampton, M.S.W. Pennsylvania;
A.E. Mose, M.S.W. California; N.J. Taylor,
M.S.W. Smith College; S.A. Webster, M.A.
Wisconsin; H.A. Wilson, M.S.S.A. Western.

The University of Tennessee School of Social Work is a fully accredited, two-year graduate professional school, with a program leading to the degree of Master of Science in Social Work. Founded in 1942, the School is a charter member of the Council on Social Work Education and was initially accredited by its predecessor, the American Association of Schools of Social Work.

The School's objectives are to prepare students for competent and responsible social work practice; to assist social welfare agencies and staffs; to increase the quality and quantity of service through the provision of special courses, institutes, and workshops; to provide appropriate educational experiences for students preparing for school; to advance standards of professional practice, particularly in this region, through collaboration with social welfare agencies and educational institutions.

The full two-year curriculum is offered in all three branch locations.

The two-year graduate program qualifies students for positions in public and voluntary social service agencies including family and child welfare, and psychiatric and psychosocial work, social group work, social welfare administration, community organization, corrections, rehabilitation, and services to the aging.

The Graduate School of Social Work publishes its catalog. All inquiries concerning admission to the School of Social Work should be addressed to Vice Chancellor for Graduate Studies, University of Tennessee, Knoxville, Tennessee 37916.

Courses

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5070 Social Work Research I (3)

5080 Social Work Research II (2)

5081 Evaluative Research in Social Work (2-3)

5082 Practicum in Social Work Research (3-9)

5083 Directed Readings in Research (2-4)

5090 Special Problems in Social Work (2-9)

5110 Social Welfare Policy and Services I (3)

5120 Social Welfare Policy and Services II (3)
5130 Social Policy Analysis (2-3)
5161 Social Welfare Seminar (2-3)
5210-20 Human Behavior and Social Environment I and II (3, 3)
5290 Special Accelerated Program in Social Work (15)
5310 Human Behavior and Social Environment (2-3)
5311 Imaginative Perspectives on the Human Condition (2-3)
5312 Psychopathology and Social Deviance (2-3)
5313 Deviant Behavior of Children and Youth (2-3)
5314 Comparative Theories of Personality (2-3)
5315 Human Sexual Problems (2-3)
5316 Mental Health and Employment (2-3)
5410 Social Work Practice I (3)
5420 Social Work Practice II (3)
5440 Family Therapy in Social Work Practice (2-3)
5441 Transactional Analysis (2-3)
5442 Short-Term Treatment (2-3)
5443 Seminar on Behavior Therapy (2-3)
5444 Social Work Practice with the Poor (2-3)
5460 Social Work Treatment with Individuals and Families (3)
5470 Contemporary Treatment Modalities: Individual and Family (2-3)
5560 Social Work Treatment with Groups (3)
5561 Interpersonal Skill Development (2-3)
5570 Comparative Methods of Group Treatment (2-3)
5601 Social Work in Rural Communities (2-3)
5661 Community Organization (2-3)
5670 Social Planning (3)
5671 Planning and Management of Change in Social Welfare (2-3)
5701 Administration in Social Work (2-3)
5702 Organizational Design of Social Welfare Agencies (2-3)
5741 Supervision in Social Work (2-3)
5742 Consultation in Social Work (2-3)
5743 Management of Human Resources in Social Welfare (2-3)
5744 Education and Training in Social Welfare (2-3)
5745 Professional Leadership in Social Work (2-3)
5761 Social Welfare Administration and Planning (3)
5762 Seminar in Social Welfare Administration and Planning (3)
5771 Information Systems and Decision Making (2-3)
5772 Financial Management for Social Welfare Administration (2-3)
5800 Management of Residential Settings (2-3)
5812 Organizational Perspectives in Juvenile Justice (2-3)
5820 Social Aspects of Illness (2-3)
5825 Drugs: Use and Abuse (2-3)
5826 Social Work Treatment for Marital Adjustment (2-3)
5830 Law and Social Work (2-3)
5860 Social Gerontology (2-3)
5865 The Roles of Women (2-3)
5910-20 Field Practice (3, 4)
5930-40-50 Field Practice (4, 8, 8)
5961 Integrative Seminar (2)
5970 Outcomes in Social Work Practice (3-2)
5980 Practicum in Governmental Social Welfare Policy Making (2-3)

Engineering Administration

COMMITTEE:
H.L. Loveless, Chairman
J.F. Bailey
F.A. Chamblin
J.R. McMillan
R.E. Shrivess
W.G. Sullivan
R.L. Young

A program of study leading to the degree of Master of Science with a major in engineering administration is offered. This program is aimed at providing education for graduate engineers in the organization and direction of work in engineering functions, at a level which requires understanding of such areas as marketing, finance, and industrial relations. It should be emphasized that this is an engineering program, aimed at preparing individuals for line management positions in construction, design, development, manufacturing, etc., where both technical and nontechnical factors exert significant influence on the success of a given activity. The program does not provide the opportunity for in-depth study of any of the traditional areas of business administration, and students with such interests are advised to consider graduate programs available in the College of Business Administration.

To be admitted to the Graduate School as a potential candidate for a Master's degree with a major in engineering administration, the applicant must submit reasonable evidence of ability to pursue graduate studies at an acceptable level of performance. In general, the applicant must have graduated from a recognized undergraduate institution in engineering or science with a satisfactory grade point average. In addition, applicants must satisfy one of the following experience requirements: (1) at least two years of engineering experience after graduation if a full-time student or (2) current employment in engineering work if a part-time student.

THE MASTER'S PROGRAM

Minimum requirements for the Master's degree are the satisfactory completion of the following courses:
1. An Engineering Core, twenty-seven hours of graduate credit consisting of Engineering Administration 5900, at least three courses chosen from Industrial Engineering 4150, 5110, 5520, and 5710, and a complement of engineering courses normally selected from the student's undergraduate major department or from courses of other departments pertinent to this program.
2. A Business Administration Core, fifteen hours of graduate credit consisting of Accounting 5810, Finance 5050, Marketing 5050, Industrial Management 5130 and Transportation 5210.
3. General Electives, nine hours of graduate credit chosen from computer science, economics, engineering, management science, mathematics, psychology, statistics, and other program-related disciplines.

The program requirement totals fifty-one hours of graduate course credit. No thesis is required. A final examination must be passed on the work offered for the degree. Course prerequisites for the program are Accounting 5050 (or 2110), Computer Science 3150, Industrial Engineering 4520, and Statistics 3450 or their equivalents. None of these prerequisites may be counted as part of the 51 hours of credit offered for the degree. These course prerequisites will be waived upon presentation of evidence of competency in the course subjects. Other prerequisite courses may be required, depending upon the student's background and the electives chosen.

COURSES
5002 Non-Thesis Graduation Completion (3-15)
5900 Project in Engineering Administration (3)

Space Institute

Charles H. Weaver, Dean
Robert L. Young, Associate Dean
Arthur A. Mason, Assistant Dean

Aviation Systems (169)

Professors:
G.W. Braun (Emeritus), Ph.D. Goettingen
J.W. Crawford, Ph.D. Cincinnati, J.B. Dicks, Jr.,
Ph.D. Vanderbuilt, W.F. Donaldson, Ph.D. Texas;
W. Frost, Ph.D. Washington; B.H. Goethert (Emeritus), Ph.D. Technische Ecole of Berlin;
K.E. Harwell, Ph.D. California Institute of Technology, E.C. Huebchenmann, Ph.D. Texas;
W.F. Jacobs, Ph.D. Goettingen, A.A. Mason,
Ph.D. Tennessee; M.K. Newman (Emeritus),
Ph.D. Columbia; K.C. Reddy, Ph.D. Indian Institute of Technology (India); F. Shahrorkhi,
Ph.D. Oklahoma; K. Tempelmeier, Ph.D.
Tennessee; C.H. Weaver (Dean, Space Institute; Vice President for Continuing Education), Ph.D.
Wisconsin, P.E.; M.A. Wright, Ph.D. Wales;
J.M. Wu, Ph.D. California Institute of Technology; Y.C.L. Wu, Ph.D. California Institute of Technology; R.L. Young, Ph.D. Northwestern.

Associate Professors:
L.N. Chauhuri, Ph.D. Indian Institute of Science; F.G. Collins, Ph.D. California (Berkeley); J.R. Connell, Ph.D. Colorado State;
W.A. Dunllill, Ph.D. Florida; J.J. Hansen,
Ph.D. Missouri; K.R. Kimble, Ph.D. Ohio State;
J.R. Maus, Ph.D. North Carolina State.

Assistant Professors:
B. Antar, Ph.D. Texas; J. Bitte, Ph.D.
Tennessee; H.W. Crater, Ph.D. Yale; T. Feagin,
Ph.D. Texas; L.D. Joseph, Ph.D. Case Institute of Technology; R.H. Kohl, Ph.D. Ohio State;
N.L. Loeffler, M.S. Purdue; T.H. Moulden; Ph.D.
Tennessee; T.C. Powell, Ph.D. Kentucky;
V.K. Smith, III, Ph.D. Georgia Institute of Technology; J. Thomason, Ph.D. Tennessee.

*Alumni Distinguished Service Professor
The University of Tennessee Space Institute offers this program leading to the Master of Science with a major in aviation systems. The aviation systems program is designed for those who possess bachelor's degrees in engineering or science and who wish to study under a "systems philosophy" toward careers in research and development or administration in various phases pertinent to aviation. The program features 18 quarter hours major field credit in various aspects of aviation systems, 6 or more quarter hours credit in each of the areas of research-development and administration and electives which permit further specialization in either area.

Courses
5000 Thesis
5070 Airports and the Community (3)
5080 Collection and Distribution (3)
5090 Governmental Policies for Aviation (3)
5100 Project in Aviation Systems (3)
5210-20 Experimental Flight Mechanics (3, 3)
5970 Special Topics in Aviation Systems (3)

Cybernetics and Bionics (272)
Professor:
R.S. Sleeper, A.M. Harvard.
Associate Professor:
L.B. James, M.S. Southern California.

Courses
5110 General Systems and Cybernetics Fundamentals (3)
5120 Cybernetic Biophysics (3)
5130 Applied Cybernetics and Bionics (3)
5140 Cybernetics of Human Behavior (3)
5990 Cybernetics Seminar (3)

Water Resources Development (991)
Floyd C. Larson, Director, Water Resources Research Center

Specific requirements for admission to this program are a Bachelor's degree in law, engineering, or one of the physical or social sciences from an accredited college or university, and evidence of ability to do work of graduate quality, as ascertained by undergraduate records. Also considered will be work record, if any, and letters of recommendation. The general policies and requirements of the Graduate School apply to this program.

The degree of Master of Science requires 45 quarter hours of graduate studies, including 9 hours of thesis work. The exact curriculum of each student is decided in consultation with a faculty committee, depending on the student's background and field of interest. If the student's undergraduate work includes, in the opinion of the faculty committee, sufficient training and education in one or more of the required courses, the student may substitute other elective courses. Electives will consist of advanced work in the student's specialty or in a related field.

UNDERGRADUATE
3410 Principles of Ground Water Geology (3) (Same as Geology 3410.)
3420 Geohydrology (3) (Same as Geology 3420.)
3565 Introduction to Public Administration Organization and Management (4) (Same as Political Science 3565.)
4110 Managerial Economics (3) (Same as Economics 4110.)
4810 Water Law (3) (Same as Environmental Engr. 4810 and Law 8975.)

GRADUATE
5000 Thesis
5130 Planning and Research Methods I (3)
5160 Planning and Utilities (3)
5200 Water Resources Systems (3)
5330 Descriptive Hydrology (3)
5340 Hydrology of Agricultural and Forest Lands (3)
5410-20-30 Interdisciplinary Seminars (3, 3, 3)
Webster Pendergrass, Vice President
B.H. Pentecost, Assistant Vice President

The Institute of Agriculture traces its history to 1869 when the University was designated as Tennessee’s Federal Land-Grant Institution. Under terms of the Federal Land-Grant Act, the University was enabled to offer instruction in agriculture and the mechanic arts for the first time. Since 1869, agricultural programs at the University have been expanded to include research for the development of new knowledge and extension for dissemination of such knowledge to rural people. Thus the Institute of Agriculture has come to include the work of four main divisions: College of Agriculture, College of Veterinary Medicine, Agricultural Experiment Station, and Agricultural Extension Service.

Agricultural Experiment Station

Dorsey M. Gossett, Dean
Thomas J. Whatley, Associate Dean
John I. Sewell, Assistant Dean

The Agricultural Experiment Station was established in 1887 by an Act of Congress known as the Hatch Act. The purpose of the Experiment Station is the promotion of practical agriculture through fundamental and applied research on all problems affecting farmers of the state. For example, there are research projects dealing with the development of new and improved varieties of farm and garden crops, the development of improved methods for the control of crop insects and crop diseases, and the evaluation of systems for the feeding, pasturing and management of livestock. Also, much attention is given to soils and fertilizers, mechanical devices of importance on the farm, human nutrition, and various rural economic and social problems.

Priority is given to problems of special importance to the farmers of Tennessee. The results of investigations are carried to the people in the form of bulletins, circulars, and reports, through the Agricultural Extension Service, and to the state educational system through the Colleges of Agriculture and Education. Rural life has been greatly enriched by the results of these investigations, as have the curricula of the school system.

Headquarters and the Main Station of the Agricultural Experiment Station are located at Knoxville. In addition, the Experiment Station operates research facilities at other locations in the state as follows:

UT-ERDA COMPARATIVE ANIMAL RESEARCH LABORATORY

This laboratory is located about 20 miles west of Knoxville near Oak Ridge. A program of radiobiological research in the field of agriculture is carried out by the Agricultural Experiment Station under contract with the Energy Research and Development Administration. The program includes research with farm and laboratory animals, and in applied radiobiology and plant breeding.

Facilities at the laboratory include approximately 2,000 acres of land for maintaining livestock and growing plants to be used in experimental work, a research laboratory especially suited to large animal work, and a unique gammairradiation field.

THE UNIVERSITY OF TENNESSEE AT MARTIN

On January 1, 1965, the Agricultural Experiment Station was assigned responsibility for administration of the 600-acre farm adjacent to the Martin campus. The farm is used for both research and teaching. The research staff is jointly employed by the School of Agriculture at Martin. The staff works closely with the different departments in Knoxville in planning and executing the research program. Experiments are under way with field crops, horticultural crops, dairy cattle, and beef cattle. The primary concern is with problems of special importance to the northwestern part of the state.

BRANCH STATIONS

Dairy Experiment Station near Lewisburg contains 615 acres and is operated in cooperation with USDA-ARS. Major emphasis is breeding and nutrition of Jersey cattle.

Highland Rim Experiment Station near Springfield contains 566 acres. Major emphasis is breeding and culture of dark-fired tobacco, other agronomic crops, horticultural crops, and livestock.

Middle Tennessee Experiment Station near Spring Hill contains 1,153 acres of representative high-phosphate Central Basin soils. Studies are under way with field crops, beef cattle, sheep, and dairy cattle of the Holstein breed.

Plateau Experiment Station near Crossville consists of three farms totaling 2,150 acres. Studies with beef cattle, sheep, field and horticultural crops provide information about results to be expected under the cooler, more humid climate and special soil conditions of the Cumberland Plateau.

Tobacco Experiment Station near Greeneville consists of 536 acres. Extensive research on burley tobacco is in cooperation with USDA-ARS. In addition, beef cattle and field crops are studied.

West Tennessee Experiment Station near Jackson contains 660 acres. Major emphasis is culture and breeding of cotton, other agronomic crops, horticultural crops, and breeding and feeding of dairy cattle.

FIELD STATIONS

Ames Plantation near Grand Junction includes 18,500 acres (about 10,000 acres in forest). The land is in trust by the Ames Foundation for use by the Institute of Agriculture. Large scale experiments involve forestry, farm management, crop production, and breeding and management of beef cattle and swine.
Forestry Field Stations and Arboretum at Oak Ridge, Tullahoma, and Wartburg. The 250-acre Forestry Station at Oak Ridge places emphasis on woody plants. Research in forestry studying genetics, species adaptation, fertilization, and other management practices are underway on the 2,000 acres of land. The Cumberland forest consists of two tracts of land in Morgan and Scott counties with a total area of 8,678 acres. Research and wildland at this location deals with many of the forest problems in the Cumberlands including strip mine reclamation. The Highland Rim forestry station located near Tullahoma consists of 680 acres. Research at this location deals primarily with the improvement through breeding and also management problems associated with the forest of the Highland Rim.

Milan Field Station in West Tennessee consists of 497 acres. Research emphasis is on production problems and mechanization of cotton and soybeans.

Agricultural Extension Service

M.L. Downen, Dean
Troy W. Hinton, Associate Dean
Mildred F. Clarke, Assistant Dean
B.G. Hicks, Assistant to the Dean

The Agricultural Extension Service serves the entire state of Tennessee. This educational service of the Institute of Agriculture is active in every county on projects extending information on agriculture and home economics and related subjects to farm families and other citizens.

This educational organization was established July 1, 1914, by an act of Congress commonly known as the Smith-Lever Act. Staff members of the Agricultural Extension Service use a wide range of methods—farm and home visits, educational meetings, field demonstrations, publications, and mass media—in providing educational programs for people who do not have the opportunity to enroll in resident courses of instruction at colleges.

Extension staff members develop and carry out programs to meet the specific needs of the residents of their counties. They work with both adults and youth. Educational activities for boys and girls are carried out through 4-H Clubs which are organized in schools and in communities.

County, state and federal governments cooperate in carrying out the Agricultural Extension Service program. The United States Department of Agriculture, the State of Tennessee, and each county government provides financial support. Any county which appropriates funds for the program may have an office located there to serve its residents. Most offices are located in county seat towns. Headquarters for the Agricultural Extension Service is at Knoxville and district administrative offices are located in Cookeville, Knoxville, Chattanooga, Nashville, and Jackson.

As a distinct administrative unit of the Institute of Agriculture, the Agricultural Extension Service works closely with the other units of the Institute—the Agricultural Experiment Station, the College of Agriculture, and the Division of Animal Medicine—in providing a total program of research, instruction, and extension for developing the agriculture of the state.

College of Agriculture

O. Glen Hall, Dean

Curricula in Agriculture

Broad opportunities for young people to prepare for a future in agriculture, forestry, and wildlife and fisheries science are offered in the College of Agriculture. The college provides curricula leading to the degrees of Bachelor of Science in Agriculture, Bachelor of Science in Agricultural Engineering, Bachelor of Science in Forestry, and Bachelor of Science in Wildlife and Fisheries Science. The professional degree program in agricultural science receives strong support from the College of Engineering and is fully accredited by the Engineers’ Council for Professional Development. The forestry curriculum is fully accredited by the Society of American Foresters.

A pre-professional curriculum in veterinary medicine is offered in the college. This program is designed to prepare students for admission to the College of Veterinary Medicine located on the Knoxville campus.

Students pursuing programs leading to the degree of Bachelor of Science in Agriculture major in one of several specialized areas of agriculture offered in the college. These major areas are: agricultural business, agricultural economics and rural sociology, agricultural education, agricultural mechanization, food technology and science, ornamental horticulture and landscape design, and plant and soil science. Specific courses required for each of these areas are given under the departmental headings in this section of the catalog. A student must complete the curriculum outlined by the department in which the student is majoring in order to receive a degree. In all areas of specialization, particular emphasis is placed upon the sciences as a background for agricultural instruction; other courses are included to provide a liberal education. In all subject matter departments, there is the opportunity to select elective courses appropriate to the educational objectives of individual students. The choice of electives in each curriculum should be made with the guidance of the faculty adviser.

All academic and general requirements of the University as stated in the front section of this catalog must be met by agricultural students, and they must complete the requirements in one of the organized curricula. Students transferring into the College of Agriculture from other than the UTK campus must have a grade point average of 2.0. Each curriculum leading to the degree of Bachelor of Science in Agriculture includes the requirements of the additional curriculum for agriculture. For this degree, the minimum requirement is 198 quarter-hour credits. Students may include 6 hours of lower division military science and 9 hours of advanced military science credit in the 198 total. A minimum of 45 hours in agricultural courses is required. For the degrees of Bachelor of Science in Forestry and the Bachelor of Science in Wildlife and Fisheries Science, the minimum requirement is 198 quarter-hour credits. For the degree of Bachelor of Science in Agricultural Engineering, the minimum requirement is 198 quarter-hour credits.

The use of transfer credit in technical agriculture appropriate to each organized curriculum will be considered and approved by the adviser of that curriculum and the dean of the College of Agriculture. When desirable, validating or proficiency examinations may be requested to determine competence in an area and to avoid unnecessary repetition. Such examinations should be taken during the first quarter in residence, and must be conducted under the supervision of the head of the department in which the course is offered. A minimum of 27 quarter hours of upper-division technical agriculture appropriate to a specified major requirement, and approved by the major adviser, must be completed in residence to fulfill the requirements of baccalaureate degrees offered in the college.

Satisfactory/No Credit Courses

Students may include a maximum of 30 hours in non-directed electives taken on a satisfactory/no credit basis in the total hours required for graduation.

Graduate Study in Agriculture

MASTER OF SCIENCE PROGRAMS

Programs of graduate study leading to the Master of Science degree are offered in all departments in the College of Agriculture. See the Graduate Catalog for details.

A Winter Short Term for Agricultural Extension personnel and other professional agricultural workers is held each year during the last half of the winter quarter. Those attending must be accepted by the Graduate School. Students may take three courses and earn nine quarter hour credits during the quarter toward the Master of Science degree. A number of courses are offered annually in Agricultural Extension Education and in other departments in the College of Agriculture. Additional information and a five-year schedule of course offerings may be obtained by writing to Professor R.S. Dotson, Head, Department of Agricultural Extension Education, College of Agriculture, Knoxville.
Animal Sciences
Agricultural Economics
Agricultural Engineering
Plant Science

General requirements and policies of the Graduate School of The University of Tennessee relating to admission to the Graduate School, residence, language, research, examination, and admission to candidacy shall apply to these programs and are described in the Graduate Catalog.

Facilities
The College of Agriculture uses the facilities on the agricultural campus, on University farms located near Knoxville, and on the main University campus. On the agricultural campus are found the main agricultural building, the Agricultural Engineering Building; McCord Hall; the Dairy Products Building; McLeod Food Technology Building; C.E. Brehm Animal Sciences Building, which includes a large pavilion; Huntington Hall which houses the plant science departments; and greenhouses for teaching and experimental work. The buildings which have been erected recently provide facilities comparable to the best in the country for the departments which they serve.

Four farms adjacent to or within eight miles of the agricultural campus are used both for instructional and experimental purposes. Morgan Farm (80 acres), Cherokee Farm (550 acres), Plant Science Farm (212 acres), and a livestock farm (510 acres) provide excellent field laboratory facilities for instructional programs offered in the College. Cherokee woodlot (120 acres), the Oak Ridge Forest (2,260 acres), and Ames Plantation (8,000 acres of forested land) provide excellent facilities for field work in forestry.

Transportation by bus is provided for classes of agricultural students from the agricultural campus to the University farms and to other points of interest where instruction in agriculture is required. Transportation by bus is provided between the agricultural campus and main University campus so that students may make the change between classes without serious inconvenience.

The facilities of the University on the main campus are available to agricultural students. Courses in the basic sciences, business, communications, engineering, etc., are open to agricultural students and are taught on the main University campus.

Selection of Curriculum
Agricultural students who have determined their area of special interest may choose the curriculum most adaptable to their needs when they register as freshmen, and an adviser from the department will be assigned for their counseling. It is not necessary, however, that freshman students select their curriculum until the end of the first year. Those who are in doubt will be assigned a special adviser to assist them in exploring the opportunities in the several fields of agriculture and to guide them in the planning of appropriate courses of study for the freshman year. When they choose a curriculum, an adviser will be assigned from that department.

Students with special interest in science, business, or production technology should consult the adviser about selection of appropriate electives. A foundation for advanced study beyond the baccalaureate degree may be established in any curriculum if appropriate electives are included; also, courses may be elected in any of the curricula leading to the degree of Bachelor of Science in Agriculture in preparation for employment with the Agricultural Extension Service. For this purpose, both the major-curriculum adviser and the agricultural-extension adviser should be consulted.

A very careful choice of electives enables a student with an above-average academic record to complete a double major by satisfying all the requirements in each curriculum. For this purpose, the advisers of each curriculum should be consulted, the dean of the College of Agriculture should be informed, and each adviser should maintain a complete record of the student's progress.

Students who transfer to the College of Agriculture from another institution, or from another college with The University of Tennessee, should consult the dean if in doubt as to the credit they wish to follow, and for assignment to an appropriate adviser. Requests for substitutions or special examinations should be submitted for consideration during the first quarter of study in the selected curriculum.

BASIC CURRICULUM FOR AGRICULTURE
All students working for a degree of Bachelor of Science in Agriculture will include in their course of study the following minimum requirements. The sequence and the selection of courses not specified will be guided by the adviser.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1110: Introduction to Social Sciences Agriculture</td>
<td>4</td>
</tr>
<tr>
<td>1120: Introduction to Agricultural Engineering</td>
<td>4</td>
</tr>
<tr>
<td>1140: Animal Science for Agriculture</td>
<td>4</td>
</tr>
<tr>
<td>1140: Plant Science for Agriculture</td>
<td>4</td>
</tr>
<tr>
<td>1150: Food Technology and Science for Agriculture</td>
<td>4</td>
</tr>
<tr>
<td>1150: Agricultural Science (courses listed in department curricula)</td>
<td>26</td>
</tr>
<tr>
<td>1150: English and Communications. (*English 1510-20, Speech 2311, and elective 6 hours—literature or communications)</td>
<td>18</td>
</tr>
<tr>
<td>1500: Mathematics 1540-50-60. (general mathematics)</td>
<td>12</td>
</tr>
<tr>
<td>1510: Biological Science. (agricultural biology, biology, botany, microbiology, or zoology)</td>
<td>12</td>
</tr>
<tr>
<td>1510: Physical Science. (Chemistry 1110-20 plus 15 hours physics or geology)</td>
<td>16</td>
</tr>
<tr>
<td>1510: Social Science and Humanities. (*Economics 2110-20 plus electives, 12 hours—not more than 3 areas)</td>
<td>18</td>
</tr>
<tr>
<td>1510: Other Courses or Elective Hours Specified by Departments</td>
<td>76</td>
</tr>
<tr>
<td>TOTAL</td>
<td>198</td>
</tr>
</tbody>
</table>

*Equivalent honors courses.
**The Mathematics sequence may be necessary in some courses of study.
***Exception—See Agricultural Business and Agricultural Economics.
****Exception—See Agricultural Education.

The five basic courses in agriculture are not departmental, but the course outlines and content were prepared by a group of professors representing the appropriate subject-matter areas. They are presented by a team of teachers who work together in developing the material in each course. The five courses are the required part of all agricultural students who seek the degree of Bachelor of Science in Agriculture, and the five teaching teams coordinate their work carefully to form a unified program. A major purpose of this basic program is to present freshman agricultural students an appropriate concept of modern agriculture, its role in our economic and social structure, the unity among its several segments, and its relation to other areas of study. Basic subject-matter concepts are presented to prepare suitable foundations for further study. These courses serve as a strong motivation for study in the physical, biological, and social sciences, and are prerequisite to advanced courses in technical agriculture.

An Honors Section is offered as a challenge to exceptional students who desire to explore in greater depth some special topic of unusual significance to agriculture. A team of faculty members shares in this seminar as participants and resource people. The students gain experience and are encouraged to assume responsibilities not available in formally organized courses. Association with students in the Honors Section provides an unusual challenge.

COURSE LOAD
Students desiring to take more than 19 hours per quarter must have the approval of the dean of the College.

Agricultural Biology
Adviser: Professor Southards

No undergraduate curriculum exists in agricultural biology, but a program leading to the Master of Science degree with a major in agricultural biology is available (see Graduate Catalog). Courses in economic entomology, plant pathology, soil microorganisms, and plant parasitic nematodes are available to agricultural students. The department is currently comprised of two major disciplines: economic entomology and plant pathology. The primary objective of offering a major at the graduate level is to provide training in these disciplines which deal with the natural hazards that are the major causes of losses in agricultural production. The training gives such a graduate the foundation necessary for coping with the myriad insect and plant disease problems that constantly threaten Tennessee's dynamic agriculture.

Agricultural Economics and Rural Sociology

AGRICULTURAL BUSINESS CURRICULUM
Advisers: Professor Martin; Associate Professors Brooker, McLelland, Mundy, Snell, and Trevena

This curriculum is designed to prepare
students for employment in the rapidly expanding field of agricultural business. Recognition is given to the desire of many college graduates to continue to work with agriculture through many private and public services where major emphasis is in areas other than farm production. This program emphasizes particularly those capacities needed for the management phases of agricultural business. Course offerings in the College of Business Administration have been used freely in this curriculum. Preparation is given for such work in crops, livestock and poultry marketing, fertilizer and feed businesses, cooperative business management, agricultural credit agencies, farm real estate and appraisal services, agricultural representatives with banks, public and private market analysis, agricultural journalism and farm information services utilizing mass communications.

Freshman: Hours Credit

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1110-20-30-40-50</td>
<td>20</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td>12</td>
</tr>
<tr>
<td>Biological science electives</td>
<td>8</td>
</tr>
</tbody>
</table>

Sophomore: Chemistry 1110-20-30 or 1510-20-30 and 4 hours geology or physics or Chemistry 1610-20 and 8 hours of geology and/or physics

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
</tr>
<tr>
<td>Journalism 2210</td>
<td>3</td>
</tr>
<tr>
<td>Nondepartmental social science and humanities electives</td>
<td>12</td>
</tr>
<tr>
<td>Psychology elective</td>
<td>4</td>
</tr>
<tr>
<td>Biological science elective</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

Junior: Accounting 2110-20-30

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural economics electives</td>
<td>6</td>
</tr>
<tr>
<td>Rural sociology elective</td>
<td>3</td>
</tr>
<tr>
<td>Economics 3110</td>
<td>3</td>
</tr>
<tr>
<td>Nondepartmental agricultural electives</td>
<td>9</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Statistics 2100, 3220</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

Senior: Agricultural economics and rural sociology electives

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Law 4110</td>
<td>3</td>
</tr>
<tr>
<td>Economics elective</td>
<td>3</td>
</tr>
<tr>
<td>Finance elective</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 4320</td>
<td>3</td>
</tr>
<tr>
<td>Speech 3201 or communications elective</td>
<td>4 or 3</td>
</tr>
<tr>
<td>Electives</td>
<td>16 or 17</td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

*Or equivalent honors courses.

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY CURRICULUM

Advisers: Professor Martin; Associate Professors Brooker, McLemore, Mundy, Snell, and Trevena

This curriculum is designed to provide students with training in the social sciences as well as in the physical and biological sciences and technical agriculture. Recognition is given to the desire of many college graduates to work in agriculture where the major emphasis is in farm production and related areas. Students are prepared for positions such as farm managers, county agricultural agents, managers of farm supply and purchasing firms, agricultural journalism and farm loan agents. This curriculum also provides the necessary background for graduate work in agricultural economics.

Freshman: Hours Credit

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1110-20-30-40-50</td>
<td>20</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td>12</td>
</tr>
<tr>
<td>Biological science electives</td>
<td>8</td>
</tr>
</tbody>
</table>

Sophomore: Chemistry 1110-20-30 or 1510-20-30 and 4 hours geology or physics or Chemistry 1610-20 and 8 hours of geology and/or physics

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
</tr>
<tr>
<td>Biology elective</td>
<td>4</td>
</tr>
<tr>
<td>English elective</td>
<td>4</td>
</tr>
<tr>
<td>Nondepartmental social science and humanities electives</td>
<td>12</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
</tbody>
</table>

Junior: Agricultural economics electives

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural sociology elective</td>
<td>6</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Finance 3110</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 2100 or statistics elective</td>
<td>9</td>
</tr>
<tr>
<td>Economics 3110-20</td>
<td>6</td>
</tr>
<tr>
<td>Nondepartmental agricultural electives</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

Senior: Agricultural economics and rural sociology electives

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics elective</td>
<td>3</td>
</tr>
<tr>
<td>Speech 3021 or communications elective</td>
<td>4 or 3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>23 or 24</td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

*Or equivalent honors courses.

Agricultural Education

Advisers: Professor Wiegens; Associate Professors Craig and Todd

The curriculum in agricultural education is planned in cooperation with the College of Education. All agricultural education courses are offered in the College of Education.

This curriculum is designed to prepare students for entering professional agricultural education service. Graduates are qualified to teach vocational agriculture. The curriculum also provides training for those who wish to enter farming, industry and governmental services associated with agriculture, and other occupations.

The senior courses in agricultural education are taught at selected off-campus centers. These courses are scheduled concurrently each quarter during the regular school year.

Students should file applications for student teaching in the agricultural education department at least two quarters prior to the quarter in which the student teaching is desired.

Freshman: Hours Credit

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1110-20-30-40-50</td>
<td>16</td>
</tr>
<tr>
<td>Introductory biological sciences</td>
<td>12</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td>12</td>
</tr>
</tbody>
</table>

Sophomore: Agriculture 1150

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1150</td>
<td>4</td>
</tr>
<tr>
<td>Agricultural Biology 3210</td>
<td>4</td>
</tr>
<tr>
<td>Plant and Soil Science 2130</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 1510-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Economics 2110-20</td>
<td>6</td>
</tr>
<tr>
<td>Psychology 2500, and Educational Psychology 3110 or equivalent</td>
<td>8</td>
</tr>
<tr>
<td>Microbiology 2910-11</td>
<td>4</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
</tbody>
</table>

*Physical education or health electives.

Junior: Agricultural Education 3450-60-70

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational Psychology 3810</td>
<td>3</td>
</tr>
<tr>
<td>Educational C &amp; I 3200</td>
<td>3</td>
</tr>
<tr>
<td>Animal Science 3310</td>
<td>3</td>
</tr>
<tr>
<td>Animal Science 4820</td>
<td>3</td>
</tr>
<tr>
<td>Horticulture electives</td>
<td>3</td>
</tr>
<tr>
<td>Geology or physics elective</td>
<td>4</td>
</tr>
<tr>
<td>English, journalism, speech electives</td>
<td>6</td>
</tr>
<tr>
<td>Agricultural Mechanization 3110</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization elective</td>
<td>3</td>
</tr>
<tr>
<td>Agricultural electives</td>
<td>9</td>
</tr>
</tbody>
</table>

Senior: Agricultural Economics 4120

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Education 4350-60</td>
<td>15</td>
</tr>
<tr>
<td>Social science and humanities elective</td>
<td>4</td>
</tr>
<tr>
<td>Agricultural electives</td>
<td>10</td>
</tr>
<tr>
<td>Health electives</td>
<td>16</td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

*One hour must be in PE.

*Requires admission to teacher education.

Agricultural Engineering

AGRICULTURAL ENGINEERING CURRICULUM

Advisers: Professors Luttrell and Valinger

The College of Agriculture, with the cooperation of the College of Engineering, offers a four-year curriculum leading to the degree of Bachelor of Science in Agricultural Engineering. The curriculum is fully accredited by the Engineers' Council for Professional Development. Industry, government agencies, research and testing organizations, and foreign service offer employment opportunities to agricultural engineers.

The minimum requirements for admission include two units of algebra, one unit in geometry, and one-half unit in trigonometry. Students may remove deficiencies by registering for special classes during the freshman year.

The curriculum gives training in the fundamentals of engineering applied to problems of agriculture. In the senior year, the comprehensive design of systems and their components is emphasized. Graduates may pursue careers in design, analysis, or development in these following specialties areas: agricultural power and machinery; agricultural structures and environment; electric power and processing; soil and water conservation engineering; food engineering.
The curriculum provides for elective courses which can be taken in the student's area of interest. Students should check with their advisers each quarter regarding the selection of courses.

Students majoring in agricultural engineering are eligible to participate in the Engineering Cooperative Scholarship program, Engineers' Day program, and other student activities in the College of Engineering. They are also eligible for selection into Tau Beta Pi and Alpha Zeta. Agricultural engineering majors interested in the Cooperative Engineering Scholarship program should consult with the head of the Department of Agricultural Engineering.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Engineering 1130</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Basic Engineering 1310-20-30</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Basic Engineering 1410</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Engineering and Mechanics 3311, 3700</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>English or communications elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Physics 2120-20-30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1130-40</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Biology 1210-20 or 310-20</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Engineering and Mechanics 3311, 3700</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>English or communications elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Physics 2120-20-30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Engineering 3100</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Agricultural Engineering 3610-20-30</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Electrical Engineering 2120-20</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Engineering Sci. and Mechanics 310</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Engineering Sci. and Mechanics 3120 or 3320</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Engineering Sci. and Mechanics 3510 or Civil Engr. 3710</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer Science 3150</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mechanical Engineering 3311, 3540</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Speech 2311</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Plant and Soil Science 2130</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Humanities-socia scient elect</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 2110</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Engineering 3640</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Agricultural engineering elective group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural Engineering 4120-30-30</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Electrical Engineering 3030 or 3130</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Humanities-socia scient elect</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>Technical electives</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

Agricultural Mechanization Curriculum

Advisers: Professors Lutrell and Shelton

The agricultural mechanization curriculum is administered by the Department of Agricultural Engineering and leads to the degree of Bachelor of Science in Agriculture. The curriculum prepares students to apply principles, techniques and systems of engineering, agriculture, science and business to the broad industry of agriculture.

Agricultural mechanization courses encompass power and machinery, electrification and processing, structures and environment, and soil and water conservation. By selecting either the Production and Processing Option, or the Business and Industry Option, students, with assistance from their adviser, may structure their program to obtain either a broad or a highly specialized education.

Graduates are employed by industry, government and educational institutions generally in the areas of management, promotional sales and training related to agricultural products, materials and services.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Mechanization 1110-20-30-40</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Biology 1230</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Mechanization 1150</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Agricultural Mechanization 2130</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 1110-20-30 or 1510-20-30</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Economics 2110, 2130</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>English or communications elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Journalism 2210</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Physics 1210-20</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Plant and Soil Science 2130</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Speech 2311</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting 2110</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Biology 3210</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 3110</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 3210-20</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Agricultural Mechanization 3510 or 3560</td>
<td></td>
<td>4 or 3</td>
</tr>
<tr>
<td>Agricultural Mechanization 3160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Animal Science 2810</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Microbiology 2910-11</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Computer Science 1410</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Plant and Soil Science 3220</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Humanities-social science electives</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Electives in option</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>6 or 7</td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Economics 4610</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Economics 4710</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Agricultural Extension 3110</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 4120-30</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 4160</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 4210-20</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Food Technology and Science 3020 or 3840 or 4410</td>
<td></td>
<td>3 or 4</td>
</tr>
<tr>
<td>Humanities-social science electives</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>11 or 12</td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

A. Business and Industry Option Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting 2120</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2210</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Economics 3320</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Economics 3420</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Economics 4320</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 4270</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Animal Science 3310</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Business Law 4110</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Industrial Management 4460</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Journalismism 2220</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Psychology 3450</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

B. Production and Processing Option Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Economics 4120</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 4270</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Agricultural Mechanization 4280</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Animal Science 2610</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Animal Science 3310</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Animal Science 3510</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Food Technology and Science 3020</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Food Technology and Science 3460</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Food Technology and Science 4410</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Forestry 2610</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Forestry 3500</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Plant and Soil Science 3110</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Plant and Soil Science 3510</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Ornamental Horticulture 3010</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Ornamental Horticulture 3020</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Agricultural Extension Education

Advisers: Professor Dotson; Associate Professor Carter

No formal undergraduate curriculum is offered in agricultural extension education, but undergraduate courses are available as electives in each formal curriculum. Courses are designed to: (1) develop in prospective extension workers and other interested students an understanding of the functions, responsibilities, and techniques of the Cooperative Agricultural Extension Service, and (2) provide prospective extension workers with practical extension work experience in selected training counties. Graduate majors and minors are offered in agricultural extension education. Graduate courses are designed to develop in present extension workers and other interested students those competencies needed for improving the effectiveness of the Extension Service. Professor Dotson will give guidance for desired emphasis in agricultural extension education.

Animal Science

Advisers: Professors Johnson, Bleiter, Chamberlain, McLaren, Merriman, Montgomery, Murphy, Richardson, Shirley, Shrode, Swanson; Associate Professors Barth, Lidvall, Masincup; Assistant Professors Corrick, Hitchcock, Holloway, and Smalling.

This curriculum is designed to prepare students for leadership careers in livestock and in related industries. Swine, poultry, sheep, dairy and beef cattle production and management may be involved, providing the opportunity for special or additional training in the dynamic livestock and husbandry technology (production). Through course selection, the student, therefore, may prepare for general or livestock farming, management, business, or science or elect the pre-veterinary courses preparatory for specialization. Elective selection permits special training for work with feed companies, meat animal, milk,
PREVENTVETERINARY MEDICINE OPTION
CURRICULUM
Advisers: Professors Merriman, Bleiner, Chamberlain, McLaren, Montgomery, Murphree, Richardson, Shirley, Shrode; Associate Professors Barth, Libwall, Masincup; Assistant Professors Corrick, Hitchcock, Holloway, Smalng

This program is designed to guide the student in meeting the admissions requirements of the University of Tennessee College of Veterinary Medicine. The completion of specific subject matter requirements and the attainment of a satisfactory grade point average will generally fulfill the requirements for entrance into the College of Veterinary Medicine. However, each year the number of applicants is much greater than the number of available spaces. Therefore, exceeding or surpassing the minimum requirement does not assure acceptance by the Veterinary College. Therefore, each pre-veterinary medical student should, early in the college career, elect a possible veterinary career choice. The admission requirements listed below are those required by The University of Tennessee College of Veterinary Medicine. Their completion will generally fulfill the requirements for other veterinary colleges. However, students intending to apply to schools other than The University of Tennessee should check the requirements of their specific schools. Students intending to apply to The University of Tennessee College of Veterinary Medicine must complete a minimum of 120 hours. Students must complete their pre-veterinary requirements by the end of the spring quarter of the year in which they are applying. It is strongly recommended that each interested student plan to pursue at least a three-year program. Inquiries concerning possible course substitutions and the combining of the pre-veterinary program with a degree program should be directed to the department's pre-veterinary advisers. It is possible for students who are accepted into the College of Veterinary Medicine at the end of their third year to receive a B.S. in Agriculture with a major in animal science upon successful completion of the first year in the College of Veterinary Medicine. See the College of Veterinary Medicine for additional information.
A suggested schedule for the Pre-veterinary Medicine—Animal Science student is given below which will 1) allow for the completion of the above pre-veterinary requirements by the end of the third year and 2) allow the student to make normal progress toward completing the requirements for a degree in agriculture with a major in animal science. It is strongly recommended that the student carry a normal load of at least 16 to 18 hours per quarter.

TOTAL: 198 hours

1Students with a strong math background may omit Math 1540 and start with 1550 or elect to take the 1540-50-60 series.
2A recommended elective for students with limited or no practical animal experience and required for those attempting to obtain the B.S. in Agriculture with a major in animal science in the regular program; also for those accepted to UT College of Veterinary Medicine after 3 years and who wish to obtain the B.S. in Agriculture with a major in animal science after completion of the first year in the College of Veterinary Medicine (see below).
3It is recommended that the student include AS 3430, one 300-level evaluation course and one management course.
4For the student accepted at the end of the third year of pre-veterinary medicine and desiring to receive a B.S. in Agriculture with a major in animal science upon successful completion of the first year in the College of Veterinary Medicine, the following are required: Agriculture 1150 or equivalent food technology and science course, Plant and Soil Science 2130, other agriculture outside of animal science 8 hrs. (suggested Agricultural Mechanization 4160), Food Technology and Science 3460, Agriculture Biology 3210, Plant and Soil Science 3140).
5Students wanting to complete pre-vet requirements, but wishing to major in a department other than animal science, should consult with the appropriate departmental adviser for a proper selection of electives.

ANIMAL SCIENCE CURRICULUM WITH A PREVENTVETERINARY OPTION

This program is designed for students accepted by the UT College of Veterinary Medicine after the third year who wish to obtain a B.S. in Agriculture with a major in animal science upon completion of the first year in the College of Veterinary Medicine.

The student will need to complete the requirements as established by the College of Veterinary Medicine. In addition, the student will need to complete the following courses in the College of Agriculture:
- AG 1110 or equivalent AG Econ. course; AG 1150 or equivalent FT & S course; AS 2810, 3420, one 3000 evaluation course, and one 4-hour management course; P & SS 2130; agriculture other than AS, 6 hours. In addition, the following general requirements must be met in order to meet certain rules of UTK and the College of Agriculture in granting degrees:
1. The last 45 hours of the three-year program must be taken at UTK.
2. At least 18 hours of upper division technical agriculture must be taken at UTK.
3. The student must complete the first year in the UT College of Veterinary Medicine and with the substitution of appropriate courses from the first year and the completion of a minimum of 198 hours will be granted a B.S. in Agriculture with a major in animal science. It is the student’s responsibility to complete the above requirements and to initiate the request for the degree.

Food Technology and Science
Advisers: Professors Miles and Overcast; Associate Professors Collins and Melton.

Food technology and science is the application of the sciences and engineering to food manufacturing, preservation, storage, transportation, and consumer use of food products. Processing of raw food materials into consumer products by canning, freezing, dehydrating, fermenting, pickling, etc., is taught with emphasis on basic principles rather than on specific commodity procedures. Therefore, young men and women who plan to enter food technology must have an interest in the sciences, particularly chemistry, biology, microbiology, and physics.

This curriculum is designed to prepare students for a professional career in positions in the food industry such as food microbiologist, food chemist, quality evaluation and control supervisor, plant foreman and manager, packing specialist, ingredients specialist, etc. The Model Curriculum of the Institute of Food Technologists was used as a guide in developing this curriculum. A special problem course provides opportunity for practical training in food processing plants and laboratories or federal and state laboratories.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1110-30-40-50</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Mathematics 1450-50-60</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Physics 1210-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Social science elective</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1120</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>*Chemistry 1110-20-30 or 1510-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Food Technology and Science 2110-20-30</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Microbiology 2910-19</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Communications or English elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Social science elective</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Mechanization 3510</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chemistry 2260 or Nutrition 3310, Nutrition 3200-30-39</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Food Technology and Science 3210-20</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Food Technology and Science 4210</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Microbiology 3810</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Plant and Soil Science 3120-30</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Communications or English elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Social science elective</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>*Electives</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Technology and Science 4010</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Food Technology and Science 4110-20, 4310, 4810, 4920</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Food Science 4010</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Nutrition 3410</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>*Electives</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

*Mathematics 1450-50-60 are desirable alternates for students with suitable entrance scores.

Those students pursuing employment in the food industry should select business electives from such areas as agricultural economics, accounting, business law, industrial management, and marketing. Students should consult with advisers before taking any elective.

Forestry, Wildlife, and Fisheries
Adviser: G. Schneider

The department offers two majors. The major in forestry leads to the degree Bachelor of Science in Forestry and the major in wildlife and fisheries science leads to the degree Bachelor of Science in Wildlife and Fisheries Science. The Forestry major has two options, Forest Resource Management Option and Forest Recreation Option.

FOREST

The profession of forestry is the science, the art, and the practice of managing and using for human benefit the natural resources which occur on land and in the aquatic environment. Benefits are derived from the multiple resources of the forest: wood, water, wildlife, recreation, forage, and environmental amenities. Foresters are managers of these resources. Thus, our principal instructional objective is to provide the broad education needed to deal effectively with the complex of forest resources.

FOREST RESOURCE

MANAGEMENT OPTION

The Forest Resource Management Option provides an opportunity to obtain an education leading to the management of the broad spectrum of forestland resources. In addition to the core of required courses there are about thirty elective credit hours for broad studies or specialized training in one or more areas of forestry. These areas and examples of related fields of study include:

- Forest Biology—plant physiology and morphology, ecology, genetics, tree nutrition, forest soils.
- Forest Business Management—economics, accounting, finance, marketing, management science.
- Forest Economics—economics, business administration, social sciences.
- Forest Engineering—mathematics, computer science, photogrammetry.
- Forest Inventory—mathematics, statistics, computer science, photogrammetry.
- Forest Recreation—natural and social sciences.
- Wildlife Management—ecology, zoology, botany.
- Wood Utilization and Production Management—business administration, engineering, statistics, technology of wood.

Wood Science—physics, chemistry, botany, mathematics, engineering, statistics, anatomy.

The University has over 21,000 acres of forest land available for teaching, research, and demonstration. The Tennessee Valley Authority, Great Smoky Mountains National Park, and Cherokee National Forest provide additional land and facilities available to the teaching program. Included within these areas is a wide variety of tree species and forest types ranging from elements of the boreal forest to southern pines and hardwoods.

Lumber, pulp and paper, and other wood-using industries cooperate in conducting tours and demonstrating industrial processes.

Upon completion of the four-year forest resource management curriculum including the recreation option, the degree of Bachelor of Science in Forestry (B.S.F.) is awarded.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 1110-20 or Biology 1210-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>*English 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>*Forestry 1620</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Physics 1210-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>*Electives</td>
<td>3-4</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1510-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>*Computer Science 1410</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Forestry 3310-20-30</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Plant and Soil Science 3120, 3140</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>*Electives</td>
<td>9-12</td>
<td></td>
</tr>
</tbody>
</table>

Students entering the junior year should check with advisers to assure completion of courses prerequisite to spring quarter junior field session.

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting 2110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Agricultural Biology 3120</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Agricultural Mechanization 3120, 3140</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Forestry 3110-20-30, 3230, 3320</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Forestry 4002-03-04-06</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>*Electives</td>
<td>9-12</td>
<td></td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Biology 3210</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Forestry 3310-20-30</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Forestry 4210-20-30, 4330, 4340</td>
<td>20-27</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

*Botany 1210-20 is recommended in lieu of botany for students interested in wildlife management.

*Or equivalent honors courses.

*Enough electives must be taken to total 198 hours including a minimum of 6 hours of communications electives selected from a Department of Forestry approved list and a minimum of 11 hours of social science and/or humanities and Agriculture 1110 is recommended.

*Computer Science 1510 is accepted in lieu of 1410 for those wishing to elect additional courses in this area.

FOREST RECREATION OPTION

The Forest Recreation Option provides students with opportunities to obtain an education in preparation for professional positions in the planning, development, interpretation, and management of private and public forested lands for recreational purposes. Students are also exposed to the basic philosophy and principles associated with leisure time and its use and the relationship of forest resources to the constructive utilization of leisure time.
Freshman
Botany 1110-20 or Biology 1210-20
12
English 1510-20
8
Forestry 1620
3
Mathematics 1540-50-60
12
Physics 1210-20
3
Speech 2311
4
Electives
6
Sophomore
Chemistry 1510-20
8
English 1510-20
4
Economics 2110-20
6
Forestry 3040-50
3
Sociology 1510-20
3
Psychology 2500
3
Plant and Soil Science 2130
3
Journalism 2210
3
Political Science 2020
4
Electives
6-8
Jr
Forestry 3210, 3110, 3230, 3240, 3320
16
Plant and Soil Science 3610
3
Anthropology 2530
3
Recreation 3140
3
Journalism 3710
3
Electives
21-24
Senior
Forestry 3210, 4210, 4230, 4240, 4230, 4440
20
Planning 4100
3
Ornamental Horticulture and Landscape Design 4120, 4180
8
Electives
16-21
TOTAL: 198 hours

Or equivalent honors courses.

WILDLIFE AND FISHERIES SCIENCE
Wildlife and fisheries management is the science and art of maintaining populations of wildlife at levels consistent with the best interest of wild species themselves and of the American public. Management goals may be aesthetic, economic, or ecological. Success depends upon wildlife and fisheries biologists giving assistance in attaining the goals for which they serve; scholarly application of scientific information and methods to these goals; ecological perspective; and execution of programs to maintain past successes, to prevent repetition of past failures, and to prepare for future needs.

Upon completion of the four-year wildlife and fisheries science curriculum, the degree of Bachelor of Science in Wildlife and Fisheries Science is awarded.

Freshman
Biology 1210-20-30
12
Mathematics 1540-50-60
12
English 1510-20
8
Speech 2311
4
Forestry 1620
3
Physics 1210-20
3
Electives
6
Sophomore
Chemistry 1510-20-30
12
Economics 2110-20
6
Biology 3130
4
Forestry 3040-50
3
Plant and Soil Science 2130, 3010
7
Animal Science 3520
4
Computer Science 1410
3
Electives
11
Junior
Zoology 3060, 4240
6
Wildlife and Fisheries Science 3230
3
Forestry 3110, 3320
7
Plant and Soil Science 3430
4
Botany 3030
4
Agricultural Mechanization 3210
3
Electives
21
Senior
Zoology 4200, 4660
9
Wildlife and Fisheries Science 4450, 4460
8
Wildlife and Fisheries Science 4510, 4520
8
Forestry 4210
3
Electives
18-21
TOTAL: 198 hours

Or equivalent honors courses.

Ornamental Horticulture and Landscape Design
Adviser: Professor Williams
Human needs go beyond food, clothing, and shelter. We require a degree of control over the environment, especially immediate surroundings. Ornamental plants and their use are recognized as part of the environment, hence a curriculum in ornamental horticulture and landscape design. The four areas of study within this curriculum are horticulture, nursery management, turfgrass management, and landscape design.

The area of floriculture includes the science of producing flowering plants in field and greenhouse and the art and science of using these plants for the benefit of humans. Opportunities are available as greenhouse managers, floral designers, retail salesmen, garden writers, research workers, and teachers.

The management deals with the growing of trees, shrubs, and other traditional plants. Skills necessary to be a nurseryman include horticultural knowledge and business sense. Students in this area are prepared to work in nurseries, garden centers, botanical gardens, and arboreums. They may find opportunities also in research, teaching, writing, sales, and landscape maintenance.

Turfgrass management includes all aspects of growing and caring for turfgrass, whether it be golf greens or home lawns. The increasing number of golf courses and home lawns and the emphasis on better quality make new opportunities for turfgrass managers. Such opportunities include golf course superintendent positions, and recreational turf managers, operation of a lawn maintenance business, producer and seller of sod, research, teaching, and sales.

Landscaping means modifying the outdoor environment to the greatest use, comfort, and enjoyment. It not only means the use of trees, shrubs, and other plant material to accomplish this goal, but it also means having an understanding of the requirements for working, recreation, and housing. Emphasis in the area of landscape design is on plant material and design courses. Opportunities in this area include landscape nurserymen, landscape maintenance, garden center operation, allied sales, highway landscaping, park development, research, teaching, and writing.

Freshman
Hours Credit
Agriculture 1110-20-30-40-50
20
Introductory biology electives
12
English 1510-20
8
Mathematics 1540-50-60
12
Sophomore
Chemistry 1110-20-30 or 1510-20-30
12
Economics 2110-20
6
Speech 2311
3
Physics 1210 or 2210 or Geology 1410
4
Oral or written communications electives
6
Sociology or anthropology electives
6
Social science or humanities electives
6
Plant and Soil Science 3100
3
Zoology 3020
3
Zoology 3040, 3050, 4290, 4300, 4670, 4720-29
3
Computer Science 1510 is accepted in lieu of 1410 for those wishing to elect additional courses in this area.

Junior
Social science or humanities electives
6
Chemistry 2230 or 3211-19
6
Agricultural Biology 3130, 3210
8
Plant and Soil Science 3110
4
Orn. Hort. and Landscape Design 3200
3
Orn. Hort. and Landscape Design 3100
3
Orn. Hort. and Landscape Design 3210
4
Orn. Hort. and landscape design electives
7
Electives
8
TOTAL: 198 hours

Or equivalent honors courses.

* Students should consult with departmental adviser for suggested electives and suggested course of study.

* Or equivalent physiology course.

* Mathematics 1460-50-60 may be substituted for students with high mathematics scores.

Plant and Soil Science
Advisers: Professors Seatz, Skold and Swingle; Associate Professors Coffey, Lessman, Reynolds and Smith.

Plant and soil science deals with field and vegetable crops and soils. Plant science includes genetics and crop improvement and the introduction of new varieties; crop management for high yields of high quality products; and weed control for efficient crop production.
Soil science includes studies in soil formation and classification for a better understanding of our soil resources; soil management for optimum crop production and conservation; soil fertility for utilizing fertilizers efficiently; and basic studies in chemistry, physics, and biology as they apply to the soil and to a better understanding of its properties and proper uses.

The plant and soil scientist must have a knowledge of the basic physical and biological sciences and, in addition, be trained in communication skills. The scientist may be broadly trained or may specialize in a more specific phase of the subject. Regardless of interest, many good jobs are available for the well-trained plant and soil scientist. Employment opportunities differ depending upon the individual's type of training and interest. For the person who is scientifically inclined, positions are available in research with both public and private agencies. For those who wish to apply their knowledge to the solution of practical problems, positions are available with the Agricultural Extension Service as extension agents or as specialists, with the Soil Conservation Service, Forestry Service, Farmers Home Administration, Production Credit Association, and other public agencies. Many plant and soil scientists are employed in private industry as technical specialists, supervisors, and salesmen. Banks and other financial institutions employ plant and soil scientists as appraisers and farm managers for clients who own farms on their own, manage farms for others, or work in foreign agricultural programs. Certainly, plant and soil science is basic to all agriculture, and people trained in this important field will find many opportunities to serve in modern agriculture. Each student selecting this major must complete the basic curriculum for agriculture and fulfill the major group requirements. The curriculum in plant and soil science showing the manner in which the required courses may be taken by years is as follows:

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1110-30-40-50</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Lower-division biological sciences</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>1English 1510-2-3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>1Mathematics 1540-50-60</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Chemistry 1110-20-30 or 1510-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>1Economics 2110-20</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Agriculture 1120</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Plant and Soil Science 2130</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Physics 2120 or 2210</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>1English and communications electives</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>1Social science or humanities electives</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1Social science or humanities electives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1Biological or physical science electives</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Agricultural Biology 3130 or 3210 or 4010</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Chemistry 2230 or 3211-19 or Nutrition 3310</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Animal Science 3310 or 3230</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Plant and Soil Science 3022 or 3040</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1Plant and soil science electives</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Nondepartmental electives</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Senior**

| Botany 3210 | 4 |
| Plant and Soil Science 4910 | 1 |
| 1Plant and soil science electives | 10 |
| Electives | 35 |

TOTAL: 198 hours

*Or equivalent honors courses.

*Students should consult with departmental adviser for suggested courses.

In addition to the specific courses, students can specialize in areas of their interest by selecting courses from the following groups. These lists are suggestive only. The departmental adviser will guide the student according to the student's individual objective.

**Agriculture**

| Agricultural Economics 4120, 4140, 4330; Agricultural Mechanization 3210, 4210; Animal Science 3810, 3410, 3510; Food Technology and Science 3840; Rural Sociology 3420. |

**Business**

| Accounting 2110-20; Business Law 4110-20-30; Economics 2130; Finance 3110; Industrial Management 3010; Marketing 3110-20; Office Administration 4310-20. |

**Science**

| Biology 3110-20-30; Botany 3030, 4310; Chemistry 3140-49, 3221-21-31, 3219-29-39; Geology 1510-20; Physics 1220-30. |

**Credit for Cooperative Work**

A maximum of nine quarter hours credit may be earned by supervised employment on approved jobs. To receive credit, the student must receive the recommendation of the employer, must present a satisfactory written report, and must receive a passing grade from the University professor in charge. Employment periods shall not be less than twelve weeks. At least one quarter must be spent in study on the campus between periods of employment. Prerequisites: Junior classification, with grade point average of 2.2 or above, and permission of the department head and the dean of the College of Agriculture to register. Three hours credit, each quarter.

**Short Courses and Special Events**

Practical short courses in agriculture are offered for those who desire special training in certain fields. Some of these short courses are held on the Knoxville campus, others at the Buford Ellington 4-H Club Training Center, Milan, Tennessee, or appropriate research stations. The Resident Instruction, Research, and Extension staffs join in teaching these special courses annually and others are offered to meet immediate needs for special instruction. They are service courses and do not carry college credit.

In-service training is provided special groups, such as the teachers of vocational agriculture, through short-term courses which are offered at convenient locations in the state.

A special occasion known as Varsity Visit is held during the year. Delegates from all Future Farmers of America chapters are invited to spend a day on the agricultural campus with their advisers. Approximately 500 attend and inspect each department of the College.

**Departments of Instruction**

**Interdepartmental Offerings**

**Agriculture (028)**

1110 Introduction to Social Sciences for Agriculture (4) Social sciences as they relate to agriculture—agriculture in the economy; tools of social science analysis applied to agricultural problems; agriculture, its development, relation to man, industry and government. 4 hrs and 1 lab.

1120 Introduction to Agricultural Engineering (4) Agricultural power and machinery fundamentals, agricultural structures, soil and water conservation controls, and agricultural uses of electricity. 3 hrs and 1 lab.

1130 Animal Science for Agriculture (4) Animals in agriculture—body systems and development, principles of inheritance, fundamentals of feeding, and function of farm animals. Animal sanitation, animal products, and the relationship to public health. 3 hrs and 2 labs.

1140 Plant Science for Agriculture (4) Plant structure, physiology, heredity and environment in relation to growth, adaptation, and management of crops. 3 hrs and 2 labs.

1150 Food Technology and Science in Agriculture (4) Utilization, processing, and distribution of food products. 3 hrs and 1 lab.

4018 Honors: Seminar (3) Selected topics. Offered alternate years. Open to juniors and seniors by invitation.

4110 Agricultural Industry Field Seminar (3) A travel study of the agricultural industry involving agricultural production, processing, marketing and services, and their interrelationships. Written report required. Prerequisite: Junior standing and permission of instructor.

**Department Programs**

**Agricultural Biology (037)**

Professors:

- C.J. Southards (Head), Ph.D. North Carolina State; J.W. Hilley, Ph.D. Ohio State;
- L.F. Johnson, Ph.D. Louisiana State.

Associate Professors:

- R.R. Gerhard, Ph.D. North Carolina State;
- C.D. Piess, Ph.D. Clemson; H.E. Reed, Ph.D. Ohio State.

Assistant Professor:

- P.L. Lambdin, Ph.D. Virginia Tech.
Agricultural Economics (047)

2410 Economics of Food and Rural Resources (3)
Analysis of contemporary problems and issues of public concern relating to food, agriculture, and rural areas using fundamental economic concepts. Farm income, food prices, world food problems, natural resources, environment, rural development.
3120 Agricultural Prices (3) Factors determining prices of farm products. Effects on price of varying degrees of competition and monopoly. Sources of information on prices and related market data. Uses of price information and techniques of analysis in determining outlook for farm prices. Prereq: Agriculture 1110 and Economics 2120.
3320 Marketing Farm Products (3) American marketing system; alternative market structures, functions of marketing system, commodity marketing problems, current marketing problems and possibilities for improvement. Prereq: Agriculture 1110 and Economics 2120.
3410 Farm Business Analysis (3) Techniques of analyzing a farm business. Factors affecting farm income and efficiency. Resource acquisition, cash flow, risk, tax, and tenure consideration. Practice in decision making on simulated farm. Prereq: Agriculture 1110 and Economics 2120. 2 hrs and 1 lab.
3510 Commodity Futures Markets (3) Futures market as an instrument in marketing of primary industry products; process of passing to others the risk of adverse price changes. Price analysis from two view points: supply-demand and history (fundamentalist and chartist). Prereq: Junior standing. 3 hrs.
3710 Consumer Demand for Agricultural Products (3) Specification of economic principles, practices and budgeting techniques to use in purchasing of goods and services. Evaluation of advertising and other related information. Prereq: Agriculture 1110 and Economics 2120.
4120 Farm Management (3) Principles of farm organization and operation; allocating land, labor, and capital to meet changing technologies; tenure arrangements and use of credit; risks; measures of success. Use and analysis of records; exercises in planning farms. Field trips arranged. Prereq: Agriculture 1110 and Economics 2120. 2 hrs and 1 lab.
4140 Introduction to Agricultural Production Economics (3) Resource allocation, product selection, scale of operation of agricultural firms, aggregate effects of decisions made by individual agricultural firms. Prereq: Agriculture 1110 and Economics 2120, and senior standing.
4210 Problems in Agricultural Economics (3) Supervised laboratory course in methods of collecting and analyzing economic data in writing a report. Prereq: Agriculture 1110 and Economics 2120. May be repeated to a maximum of 9 hours credit.
4240 World Agriculture and Trade (3) Economic bases of world agricultural production and trade; resource location, land tenure systems, international trade and commercial policy. Prereq: Agriculture 1110 and Economics 2120, or consent of instructor.
4250 Agricultural and Rural Planning (3) Decision-making concepts applied to design and implementation of local action programs. Case examples from the U.S. and other countries. Prereq: Agriculture 1110 and Economics 2120, or consent of instructor.
4310 Agricultural Finance (3) Nature and source of capital; credit problems of farmers; kinds and sources of farm credit. Agricultural insurance and taxation. Prereq: Agriculture 1110 and Economics 2120.
4320 Agricultural Policies (3) Meaning of agricultural policy in democratic society; relationship of farm groups to public policy; problems giving rise to policy; types of agricultural policy and appraisal of results; current policy problems. Prereq: Agriculture 1110 and Economics 2120.
4330 Land Economics (3) Problems and policies of land use, conservation, development, taxation, and tenure; population growth and demand for land; principles and theories of rent, property, value, and location. Prereq: Agriculture 1110 and Economics 2120.
4510 Management of Farm Supply and Marketing Firms (3) Operations of firms selling farm supplies and merchandising agricultural products. Emphasis on accounting data and the economic theories for decision making. Prereq: Agriculture 1110 and Economics 2120.
4710 Agricultural Law (4) Survey of law and application to the farmer, his family, and agricultural industry. Property, contracts, torts, drainage and water rights, landlord-tenant relationships, taxation and insurance. Business organization, estate planning, regulatory laws, and other selected topics.

GRADUATE
5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5011 Special Problems in Lieu of Thesis (3)
5120 Agricultural Price Analysis (3)
5130 Advanced Agricultural Production Economics (3)
5210 Seminar: Agricultural Policy (3)
5220 Seminar: Methodology of Research (3)
5230 Seminar: Adjustments to Industrialization (3)
5310 Research (3)
5410 Agricultural Marketing Analysis (3)
5420 Advanced Land Economics (3)
5440 Economics of Agricultural Development (3)
5610 Quantitative Methods in Agricultural Economics (3)
5710 Quantitative Methods in Agricultural Economics (3)
6000 Doctoral Research and Dissertation
6120-30 Seminars in Agricultural Economics (3, 3)
6210 Agricultural and Rural Transformation Problems (3)
6410 Agricultural Supply Analysis (3)
6420 Marketing and Resource Use (3)

Rural Sociology (880)
3420 Rural Sociology (3) Nature of rural society; social systems concept; rural-urban differences; nature of social relations; population characteristics and movement; problems of rural people, tenure, farm labor, health, services, educational facilities, churches, local government; impact of industrialization.
4450 Diffusion of Agricultural Technology (3) Analysis of diffusion process, newly introduced technology spreads from scientists to final adopters. Topics discussed include adoption process, communication, behavior, new people, role of professional change agents, opinion leadership, and two-step flow hypothesis. Prereq: Rural Sociology 3420, or consent of instructor.
Agricultural Extension Education (075)

Professor: R.S. Dotson (Head), Ph.D. Pennsylvania State.
Associate Professor: C.E. Carter, Jr., Ph.D. Ohio State.

3110 Introduction to Agricultural Extension (3) History; philosophy; organization; teaching methods; and relationships with other educational agencies.

4110-20 Field Studies (3, 3) Supervised work experience with county extension agents in a designated county. For senior and graduate students. Prereq: 3110 and consent of instructor. Requires living off-campus for a specified time.

GRADUATE

5000 Thesis

5011-21 Special Problems in Lieu of Thesis (3, 3)

5100 Special Problems in Agricultural Extension (1-6)

5210 Long-Range Extension Program Planning (3)

5220 Seminar (3)

5230 Evaluation in Programs of Agricultural Extension (3)

5310 History, Philosophy, and Objectives (3)

5320 Volunteer Leadership in Agricultural Extension Programs (3)

5330 Supervision of Agricultural Extension Programs and Personnel (3)

Animal Science (113)

Professors: R.R. Johnson (Head), Ph.D. Ohio State; M.C. Bell, Ph.D. Oklahoma State; J.K. Bletner, Ph.D. Ohio State; C.C. Chamberlain, Ph.D. Iowa State; S.L. Hansard, Ph.D. Florida; H.M. Jamison, Ph.D. Tennessee; J.B. McLuren, Ph.D. Auburn; M.J. Montgomery, Ph.D. Wisconsin; G.M. Merriman, D.V.M. Michigan State; R.L. Murphee, Ph.D. Wisconsin; D.O. Richardson, Ph.D. Ohio State; H.V. Shirley, Ph.D. Illinois; R.R. Shrode, Ph.D. Iowa State; E.W. Swanson, Ph.D. Missouri; R.L. Tugwell, Ph.D. Kansas State; C.E. Wyile (Emeritus), A.M. Missouri.


Assistant Professors: R.E. Cartee, D.V.M. Kansas State; J.A. Corrick, Ph.D. Tennessee; D.G. Doyle, Ph.D. Cornell; J.P. Hitchcock, Ph.D. Michigan State; J.W. Holloway, Ph.D. Oklahoma State; S.A. Kincaid, D.V.M. Purdue; R.G. Schaub, Ph.D. Washington State; M.H. Sims, Ph.D. Auburn; J.D. Smalling, Ph.D. Texas A & M.

Instructors: N.G. Kincaid, M.S. Purdue; G.C. McGhee, B.S. Tennessee.

In addition, academic expertise of staff members at CARL and Oak Ridge are used on appropriate occasion.

2810 Fundamentals of Meat Animal Evaluation (3) Criteria for live animal and carcass evaluation; set classes and grades of beef, pork and lamb; subjective and objective techniques for determining muscle and fat relationships in cattle, hogs and sheep. 1 hr and 2 lab.

2710 Introduction to Biometrical Aspects of Animal Science (3) Biometrical concepts for optimum comprehension of material presented in animal science courses. Basic ideas in probability as introduction to concepts of distributions. Expected values of variables as most probable values, and normal distributions and their prevalence in biological material. Planning effective experiments. Association or regression, and assessment of validity of hypotheses. 2 hrs and 1 lab.

2810 Farm Animal Management Practices (3) Integration of management practices and skills into cattle, horse, sheep, poultry and swine enterprises. Practices and skills include dehorning, castrating, docking, foot care, shearing, age determination, identification, preparing for show and sale, vaccinating and immunizing, controlling parasites. Facilities needed in livestock management including buildings, fences, corrals, equipment, space requirements and restraining devices. 2-3 hr labs.

2820 Introduction to Light Horses (3) Scope and role of light horse industry; breeds—development, function and use; unsoundness; tack; introduction to management problems. May not be used by animal science majors to meet graduation requirements. 2 hrs and 1 lab.

3210 Anatomy and Physiology of Farm Animals (4) Skeletal and joints, skeletal muscles, blood and microcirculation, cardiac functions, cardiovascular, respiratory, digestive, renal and endocrine systems; demonstration of physicochemical phenomena. Prereqs: Zoology 1210 or Agriculture 1130. 3 hrs and 1 lab.

3220 Physiology of Reproduction (3) Comparative anatomy and physiology of reproductive systems of higher vertebrates; gametogenesis, fertilization, implantation, gestation, parturition and initiation of lactation; endocrine regulation of reproductive phenomena. Prereq: Zoology 3210 or consent of instructor. 2 hrs and 1 lab. (Same as Zoology 3220.)

3310 Introduction to Animal Nutrition and Feeding (3) Nutrient utilization, function and requirements of farm animals; animal feeds, nutrient content and factors affecting feeding value; balancing rations for beef and dairy cattle, swine and poultry. Not available to students with credit in 3320. Prereq: Agriculture 1130, Chemistry 1130 or 1530. 2 hrs and 1 lab.

3320 Animal Nutrition (3) Properties, functions, utilization and deficiency symptoms of essential nutrients; nutritive value determinations and their use. Prereq: 1130 and one quarter of organic chemistry. 2 hrs and 1 lab.

3330 Feeds and Ration Formulation (3) Feedstuffs, additives, feeding standards, nutrient requirements and ration formulation for beef and dairy cattle, sheep, horses, swine, poultry and laboratory animals. Prereq: 3320, 2 hrs and 1 lab.

3410 Heredity in Animals (3) Basic chromosomal mechanism of heredity with emphasis on Mendelian principles and exceptions such as linkage and cytoplasmic inheritance. Introductions to biochemical basis of heredity and to quantitative inheritance. Illustrations of principles related to species familiar to agriculture students. Prereq: Agriculture 1130, 2 hrs and 1 lab.

4220 Principles of Animal Breeding (3) Genetic principles involved in breeding of economic species. Genetics of variation. Partitioning of variation according to various kinds of causative differences such as differences in genetic makeup and environment. Selection and consequences. Matching systems and effects on populations. Planning breeding programs. Prereq: 3410 or equivalent. 2 hrs and 1 lab.

3430 Breeds of Farm Animals (3) Study of evolution and formation of breeds of cattle, horses, poultry, sheep and swine. Breeding structure. History, development, characteristics and improvement programs of various breeds. Prospects for purebred industry and impact of cross-breeding programs. 2 hrs and 1 lab.

3510 Animal Hygiene and Sanitation (4) Parasitic, viral and bacterial organisms in farm animals; immunology; control and prophylaxis against disease; veterinary regulations and quarantine; herd health programs. Prereq: Microbiology 2910-11 or 2910-19 or consent of instructor. 3 hrs and 1 lab.

3520 Avian Diseases (3) Major diseases; characteristics, prevention and treatment, management practices and systems for domestic birds, upland game birds and water fowl. 2 hrs and 1 lab.


3620 Dairy Cattle Judging and Classification (3) Comparative judging, oral reasons; type classification. Economic value of classification ratings. 3 labs.

3630 Judging Poultry and Poultry Products (3) Grading of poultry and poultry products according to USDA standards; factors influencing quality. 1 hr and 2 labs.

3640 Horse Selection and Judging (3) Selection, judging, evaluating, showing, working and pleasure horses for functional efficiency. Prereq: Consent of instructor. 1 hr and 2 labs.

3810 Nutrition and Management of Laboratory Animals (3) Principles of feeding, breeding and handling of animals in scientific investigations; specific species' requirements, peculiarities and research for which best fitted; laws governing use and handling of laboratory animals. Prereq: Agriculture 1130 and consent of instructor. 2 hrs and 1 lab.

4110 Special Problems in Animal Science (1-4) Special research and/or special reports based on supervised independent study or review of literature dealing with subjects applicable to field of animal science; approved supervised work experiences in state-federal laboratories or in private industry. May be repeated for a maximum of 9 hrs credit. Prereq: Senior standing and consent of instructor and department head.

4210 Physiology of Lactation (3) Development, anatomy and function of mammary glands; endocrine interactions for mammary development and milk secretion; factors affecting yield and composition of milk. Prereq: 3210.

4220 Avian Physiology (3) Anatomy and physiology of avian species with emphasis on poultry. Prereq: 3210. 2 hrs and 1 lab.

4230 Applied Reproduction in Farm Animals (3) Application of methods and techniques in collecting, evaluating, processing and preserving semen; insemination of females; pregnancy determination; gestation and parturition. Male and female infertility. Prereq: 3220. 1 hr and 2 labs.

4310 Feeding Systems for Ruminants and Horses (3) Application of nutrition and feeding principles in comparison of feeding systems utilized during the life cycle of cattle, horses and sheep. Prereq: 3320. 2 hrs and 1 lab.

4320 Feeding Systems for Poultry and Swine (3) Application of nutrition and feeding principles in comparison of feeding systems utilized during the life cycle of poultry and swine. Laboratory feeding trials to demonstrate basic nutrition concepts. Prereq: 3330. 2 hrs and 1 lab.

4410 Applied Animal Breeding (3) Applications of principles studied in 3420. Team taught by specialists in breeding of dairy cattle, meat animals and poultry. Prereq: 3420. 2 hrs and 1 lab.
4610 Advanced Beef Cattle, Dairy Cattle, Horse, Poultry, Sheep and Swine Judging (2) Specifications in judging, evaluation, selection, and presentation of oral reasons on classes of beef cattle, dairy cattle, horses, poultry, sheep and swine. May not be repeated for credit. Prereq: Consent of instructor. 2 labs.

4810 Beef Cattle Production and Management (4) Integration of principles of nutrition, physiology and breeding into complete beef cattle management program. Topics will include structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Alternatives evaluated in terms of production response and economic returns. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4820 Dairy Cattle Production and Management (4) Integration of principles of nutrition, physiology and breeding into complete dairy cattle management program. Topics will include structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Alternatives evaluated in terms of production responses and economic returns. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4830 Pork Production and Management (4) Integration of principles of selection, nutrition, breeding, physiology and marketing into complete pork production and management program. Topics will include structure of industry, enterprise establishment, systems of production, production practices and herd improvement program. Alternatives evaluated in terms of production responses and economic returns. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4840 Poultry Production and Management (4) Structure of poultry industry, organization and management of poultry enterprises including rearing, housing, feeding, processing and marketing. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4860 Light Horse Production and Management (3) Integration of principles of nutrition, physiology and breeding into light horse production program. Topics include structure of industry, systems and commercial production; individual animal and herd improvement programs; equipment and facilities for both pleasure ownership and commercial and economic returns. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4865 Sheep Production and Management (3) Integration of principles of nutrition, physiology and breeding into complete lamb and wool production and management program. Topics will include structure of industry, enterprise establishment, systems of production responses and economic returns. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 2 hrs and 1 lab.

4910 Seminar (2) Review of literature and presentations on special topics and current research in animal science field. Prereq: Senior standing. 1 hr and 1 lab.

GRADUATE

5000 Thesis

5011 Problems in Lieu of Thesis (1-6)

5110 Special Problems in Animal Science (1-6)

5210 Endocrine Relations in Animal Production (4)

5230 Advances in Mammalian Reproduction (3)

5240 Advanced Studies of the Secretion of Milk (3)

5311 Analytical Techniques in Animal Nutrition (3)

5321 Energy in Animal Nutrition (4)

5331 Proteins in Animal Nutrition (3)

5341 Vitamins and Minerals in Animal Nutrition (3)

5410 Genetics of Animal Populations (3)

5710 Methods of Evaluating Experimental Data in Animal Science (3)

5720 Design and Interpretation of Experiments in Animal Science (3)

5910 Seminar (1)

6000 Doctoral Research and Dissertation

6150 Topics in Milk Constituents (3)

6160 Topics in Dairy Microbiology (3)

6211 Advanced Topics in Animal Physiology (1-6)

6220 Environmental Physiology of Farm Animals (3)

6230 Animal Growth and Development (3)

6311 Advanced Topics in Animal Nutrition (1-6)

6411 Advanced Topics in Animal Breeding (1-6)

6420 Animal Breeding Research Methods and Interpretation (3)

6811 Advanced Topics in Animal Products (1-6)

6910 Seminar (1)

Food Technology and Science (390)

Professors: J.T. Miles (Head), Ph.D. Wisconsin; J.L. Collins, Ph.D. Maryland; T.B. Harrison (Emeritus), M.S.A. Tennessee; W.W. Overcast, Ph.D. Iowa State.

Associate Professors: B.J. Demott, Ph.D. Michigan State; D.H. Haynes, Ph.D. Illinois; C.C. Melton, Ph.D. Kansas State; S.L. Melton, Ph.D. Tennessee.

Assistant Professors: S.D. Cunningham, Ph.D. Texas A & M; G.W. Davis, Ph.D. Texas A & M.

2110 Food Regulations and Standards (3) Federal and state laws regulating food industry. Quality grades and standards and methods of evaluating processed foods. 2 hrs and 1 lab.

2120 Food Manufacturing (4) Preparation of raw material, cleaning, grading, slicing, crushing, extracting, filtering, pumping, mixing and heat processing. Prereq: Math 1550. 3 hrs and 1 lab.

3200 Dairy Products I (4) Procurement, processing and distribution of fluid milk. Manufacture of frozen and condensed dairy products. 3 hrs and 1 lab.

3210 Food Composition (3) Determination and study of major constituents of fresh and processed foods with attention to changes and interactions occurring during processing and storage. Prereq: Chemistry 1120 or 1520 or 1620. 2 hrs and 1 lab.

3220 Food Preservation (4) Survey of food industry and preservation methods for prevention of deterioration of food. Prereq: Microbiology 2910-19. 3 hrs and 1 lab.

3570 Evaluating and Grading Dairy Products (3) Market standards and grades of dairy products with practice in grading milk, ice cream, butter, cheese and other specialized dairy products. 1 hr and 2 labs.

3610 Meat Evaluation and Grading (3) Grading standards for quality and quantity and principles of evaluating beef, pork and lamb. Practice in grading and judging carcasses and cuts. 1 hr and 2 labs.

3840 Meat Science (3) Processing methods, carcass characteristics of meat animals; slaughter, cutting, selection, curing, freezing and cookery. 2 hrs and 1 lab.

4000 Problems in Food Technology (1-4) Research problems in student's area of interest. Written reports. Supervised experience in state or federal laboratories or approved industries encouraged. May be repeated. Maximum 9 hours credit. Prereq: Consent of department head.

4010 Food Technology and Science Seminar (1-3) Review of literature; oral and written reports. May be repeated for a maximum of 3 hours credit. Prereq: Junior standing and consent of instructor.

4030 Dairy Products II (4) Principles in the manufacture of butter, cheese and specialized dairy products. Prereq: 3200. 3 hrs and 1 lab.

4050 Advanced Food Composition (3) Intensive study of food constituents and changes affected by processing and storage. Prereq: 3210 and Nutrition 3320 or equivalent. 2 hrs and 1 lab.

4110 Food Plant Sanitation (3) Environment for manufacturing and preserving foods. Prereq: Junior standing. 2 hrs and 1 lab.

4120 Food Quality Assurance (3) Systems for quality assurance in food industries. Various methods including statistics used by food industries to assure desired quality of food products. Prereq: Junior standing and 3 hrs statistics. 2 hrs and 1 lab.

4210 Food Additives (3) Substances used in food manufacturing with emphasis on properties and functions. Prereq: Nutrition 3320 or equivalent.

4310 Food Packaging (3) Characteristics and application of materials and containers to packaging requirements of food. Prereq: 3220. 2 hrs and 1 lab.

4410 Food Crop Products (3) Food products from crops with emphasis on types, manufacturing systems, quality attributes and utility.

4510 Microbiology in Food Manufacturing (3) Relationship of growth of common food microorganisms in fresh and processed foods. Enzymatic changes occurring during processing and manufacturing of foods. Prereq: Microbiology 2910-19 or equivalent. 1 hr and 2 labs.

4820 Fermented Foods (3) Role of microorganisms in preparing foods with emphasis on development of certain desirable characteristics, flavor, aroma, texture, and keeping quality. Prereq: Microbiology 3810. 2 hrs and 1 lab.

4840 Meat Products Manufacturing (3) Prepared meat products with emphasis on sausage making and information relating to cost controls, inspection and meat science. Prereq: 3840 or consent of instructor. 1 hr and 2 labs.

4920 Physical Phenomena of Foods (4) Physical states of food materials, foams, emulsions, colloidal sols, hydrates, crystals, gels. Effects of manufacturing practices on these properties. Prereq: Consent of instructor. 3 hrs and 1 lab.

GRADUATE

5000 Thesis

5100 Seminar (1)

5120 Food Color (3)

5130 Food Enzymology (3)
Forestry, Wildlife and Fisheries

Professors: G. Schneider (Head), Ph.D. Michigan State; J.W. Barrett (Emeritus), Ph.D. Syracuse; H.A. Binkley, Ph.D. North Carolina State; F.W. Woods, Ph.D. Tennessee.


Assistant Professor: B.L. Dearden, Ph.D. Colorado State.

Forestry (396)

Introduction to Forestry (3) History of forestry; forest protection, and use of forest stands; forest products industries; organization and agencies for establishment of forest policies; forest resources.

3020 Forest Environments and Ecology (3) Environments and ecology of forests and associated lands; emphasis on the application of ecological principles to contemporary problems. Available for graduate credit only. Prereq: 8 hours of biology, botany, or zoology. 3 hrs.

3040 Dendrology and Silvics of Woody Angiosperms (3) Classification, nomenclature, identification, and silvical characteristics of the more common woody angiosperms native to North America; range, distribution patterns, and habitat; growth and yield requirements; regeneration requirements; and life history, place of succession; ecological significance and commercial importance. Available for graduate credit only. Prereq: 30 hours of biology or botany. 3 hrs and 1 lab.

3050 Dendrology and Silvics of Gymnosperms (3) Classification, nomenclature, identification, and silvical characteristics of the major North American conifers. Distribution patterns, habitat, and ecological communities. Prereq: 30 hours of biology or botany. 3 hrs and 1 lab.

3110 Forest Measurements and Biometry (4) Measurements of individuals in animal and plant populations; linear regression; sampling of forest populations; growth and potential production. Prereq: Plant and Soil Science 3610 and Computer Science 1410 or equivalent. 3 hrs and 1 lab. Available for graduate credit for non-forestry majors only. Prereq: 8 hours basic biology or botany. 2 hrs and 1 lab.

3120 Wood Technology (4) Wood properties; identification of commercial woods by macro and micro characteristics. Prereq: 3040, 3050 (3050 may be taken concurrently). 2 hrs and 2 labs.

3130 Forest Protection (3) Destructive agencies; fire, insects, diseases, chemical, mechanical, and biological control; prevention and suppression.

3210 Forest Resource Economics (4) Allocation of forest resources via market and institutional systems. Application of economics to forest resource decision making in the private and public sector. Prereq: Economics 2120.

3220 Forest Products and Utilization (3) Harvesting, processing, marketing factors in stand conversion, intermediate and harvest cuts. Prereq: 3120.

3230 Wildlife Management (3) Lives and ecological relationships of wild animals; biological, social, and economic aspects of their management. 2 hrs and 1 lab. Available for graduate credit for non-forestry and non-wildlife & fisheries science majors only. (Same as Wildlife and Fisheries Science 3230.)

3240 Introduction to Forest Recreation (3) Concepts of leisure time in recreation. Historical development of forest recreation. Forest recreation resources. Development, management, and administration of forest recreation areas and systems.

3320 Principles of Silviculture (3) Influence of site factors on reproduction, growth, development, and character of forest vegetation; classification of forest species; silvicultural laws. Prereq: 3020 or Biology 2130, 3040, Plant and Soil Science 2130. 3 hrs.

3730 Conservation (3) Forest resources of state, nation, and world; forests in soil and water conservation; wildlife management and recreation; conservation programs.

4002 Utilization (3) Wood-using industries; processing forest products—sawmills, tree-timber grading; pulpwood operations, flooring plants, treating plants; plant layout, flow diagrams. Prereq: 3120.

4003 Field Methods of Timber Inventory (4) Field measurements of forest trees; timber cruising; determining appropriate sample design for specific purposes; tree and stand growth; site evaluation; field problems. Prereq: 3110 and Agricultural Mechanization 3140.

4004 Forest Practice (3) Management of forest lands by public and private organizations; multiple-use concept. It influences management decisions; impact of public pressure for outdoor recreation on management decisions; management of forest lands. Prereq: 3140 and 3000, C or NC.

4006 Silvicultural Methods (4) Methods and application of intermediate and regeneration cuttings; site preparation, planting and seeding, modifications of cutting methods to obtain desired goods and benefits. Prereq: 3320, 4002, 4003.

4020 Forest Watershed Management (3) Water as a forest resource; role of forests in the hydrologic cycle; control of water quality, quantity, and regimen; watershed planning. Prereq: 3320 or consent of instructor. 3 hrs. Two overnight field trips.

4110-20-30 Problems in Forestry (1-6, 1-6, 1-6) Special research or individual problems in forestry. Prereq: Senior standing. Total not more than 9 hrs.

4210 Forestry Organization and Administration (3) Planning, organizing, and leadership concepts and cases; problem analysis and decision making in forest resource management. Prereq: Senior standing in forestry or wildlife and fisheries science or consent of instructor. 2 hrs and 1 lab.

4220 Forest Resource Management (4) The forest as an integrative resource concept; review of traditional timber-management concepts; the multiple-use concept; valuation of forest resources for decision making and planning; taxation of forest firm. Prereq: 4210.

4230 Forest Resource Management Plans (4) Field problems and case studies in forest-resource management; the forest as a system; management of forest resources as a producer of timber, recreational services, watershed services, and wildlife; producing multiple services; preparation of a comprehensive plan based on optimizing forest uses. Prereq: 4210.

4240 Interpreting Forest Resources (3) Principles and techniques of interpreting forest resources; importance of environmental interpretation to management of forest resources; development and administration of interpretive services. Possible overnight field trips required. Prereq: 3240 or equivalent.

4330 Forest Policy (3) History of forestry in United States with emphasis on development of forest resource policies; current policies influencing development and management of forest resources; brief survey of policy implications of forest resource organizations in public and private sectors. Prereq: 4004.

4340 Aerial Photography in Forest-Resource Management (3) Use of conventional aerial photograpb in forest-resource management; interpretation of detail, aerial inventories, preparation of cover-type maps, uses of other remotely sensed imagery. Prereq: Civil Engr. 4200 and Foresty 3110 or equivalent. 1 hr and 2 labs.

4420 Forest Tree Improvement (3) Forest tree improvement related to silviculture; nature and purposes of tree improvement and forest genetics; principles of tree genetics and population genetics; importance of seed source; variation, selection of superior pheno-types and development of seed orchards; hybridization; seed production and seed certification. Prereq: 4006, Botany 1120. 2 hrs and 1 lab.

4430 Regional Silviculture of the United States (3) Factors that influence silvicultural management of important tree species in North America. Importance of forests and forestry to a region; physiography, geology, soils, climate and weather, sites and site types, ecology, problems of protection, and silvical characteristics of the more important species. Prereq: 4006 and 4210.

4440 Forest Recreation (3) Forest lands as a recreation resource, interrelationships of forest recreation and other management activities; development and management of forest recreation areas; socioeconomic and political determinants of forest recreation development and management. Prereq: 6 credits in sociology and/or economics. Junior standing. 2 hrs and 1 lab.

GRADUATE

5000 Thesis

5110 Special Problems in Forestry (1-6)

5220 Seminar in Forest Tree Biology (3)

5230 Seminar in Forest Management (3)

5240 Seminar in Forest Genetics (3)

5250 Recreation Planning for Forests and Associated Lands (3)

5260 Industrial Forestry (3)

5270 Topics in Forest Industries Management (3)

5310 Seminar (1)

Wildlife and Fisheries Science (933)

3200 Wildlife Resources and Their Conservation (3) Wildlife resources of the United States; their interrelationships with soil, water, and forests; the wildlife animal and plant populations; wildlife and fisheries resources in society and economic development; importance and methods of conserving wildlife. General course for non-wildlife and fisheries science majors.
3230 Wildlife Management (3) (Same as Forestry 3230.)

4480 Game Mammals (4) Classification, identification, distribution, natural history, and management principles of game mammals in North America. Prereq: 3230 or one year of zoology. 2 hrs and 2 labs.

4480 Game Birds (4) Biology, classification, identification, distribution and management of game birds in North America. Prereq: 3230 or one year of zoology. 2 hrs and 2 labs.

4500 Problems in Wildlife and Fisheries Sciences (1-4) Special research or individual problem in wildlife and fisheries science. Prereq: Senior. May be repeated. Maximum 9 hours credit.

4510 Freshwater Fishery Biology (4) Principles and methods of fish population estimation; population dynamics; sampling techniques and equipment; warm and cold-water environments as commercial and sport fisheries. Prereq: 1 year biology and 8 hrs mathematics, or consent of instructor. 3 hrs and 1 lab or field period.

4520 Management of Lakes and Ponds (4) Principles and methods of lake and pond management for commercial and sport fisheries; design, renovation, and stocking procedures; biology and culture of managed species. Prereq: 4510 or consent of instructor. 3 hrs and 1 lab or field period.

4600 Seminar (1) Review of literature. Oral and written reports. Prereq: Senior standing. May be repeated to maximum of 3 hrs credit.

GRADUATE

5000 Thesis

5110 Special Problems in Wildlife and Fisheries Science (1-5)

5210 Seminar in Wildlife Conservation (3)

5310 Seminar (1)

5400 Advanced Topics in Wildlife Science (3)

5450 Wildlife Diseases (3)

5460 Predator Ecology (3)

5500 Advanced Topics in Fisheries Science (3)

Ornamental Horticulture and Landscape Design (740)

3030 Plant Propagation (3) Physiology, methodological, and environmental requirements for propagation. Prereq: 8 hrs of biological science. 2 hrs and 1 lab.

3040 Floral Design (3) Principles and techniques in floral arranging with emphasis on arrangements for home, church, and special occasions. 1 hr and 2 labs.

3110 Greenhouse Management (3) Factors involved in management of greenhouses for production and research. Structures, soils, pest control measures, heating, ventilating, lighting, water supply, crop succession. Prereq: Junior standing and consent of instructor. 2 hrs and 1 lab.

3210 Turfgrass Management (4) Practical turfgrass management; cultivar selection, identification, and establishment; basic applied fertility programs, mowing and irrigation practices, and thatch control, pest identification and control. Prereq: Plant and Soil Science 2130 and 8 hrs biological sciences. 3 hrs and 1 lab.

3810 Ornamental Trees (3) Classification, identification, adaptation, and landscape design values. Prereq: 8 hrs of biological science or consent of instructor. 3 labs.

3820 Ornamental Shrubs and Vines (3) Classification, identification, adaptation, and landscape design values. Prereq: 8 hrs biological science or consent of instructor. 3 labs.

3830 House Plants (3) Classification, identification, native habitat, propagation, adaptation, and indoor care. Prereq: 8 hrs biological science or consent of instructor. 1 hr and 2 labs.

4120 Landscape Design I (4) Design and development of properties; planning, organization, structure, selection and use of plant and structural materials, methods of presentation, specifications. Prereq: Senior standing and consent of instructor. 2 hrs and 2 labs.

4140 Landscape Design II (4) Advanced theory of design. Pictorial and abstract approach to landscape design. Emphasis on recreational design from analysis of contemporary trends and objectives to projected needs and development of plans. Prereq: Senior standing and consent of instructor. 2 hrs and 2 labs.

4150 Wholesale Nursery Management (3) Production, labor, and sales management; location, layout, culture, equipment and facilities. Prereq: 3030 or equivalent. 2 hrs and 1 lab.

4160 Retail Nursery Management (3) Essentials of good nursery management: layout, location, and operation of landscape nurseries, garden centers and chain store outlets. 2 hrs and 1 lab.

4180 Park Design (4) Design criteria for parks and outdoor recreation areas. Park site selection, analysis, planning and management as related to needs and natural and economic resources. Evaluation of aesthetic and functional quality of parks and their impact on environmental quality of rural and suburban communities. Prereq: 4120. 4140 recommended. 2 hrs and 2 labs.

4220 Advanced Turfgrass Management (4) Principles and scientific basis of turfgrass culture: adaptation, ecology, physiology, soil fertility and grass nutrition; climatic influences on grass culture; physiology of clipping and water management; traffic effects and compaction; and the physiological influences of pest infestations and control measures. Prereq: 3210, 3 hrs and 1 lab.

4310 Floriculture I (3) Principles and practices employed in producing cut flower crops. Application of principles of plant physiology as they control flowering, plant quality, and harvesting schedules. Prereq: 3110; Plant and Soil Science 3040 or equivalent. 2 hrs and 1 lab.

4320 Floriculture II (3) Principles and practices employed in producing horticultural crops in pots and other containers. Analysis of problems associated with growing plants in a very restricted soil volume under controlled greenhouse conditions. Prereq: 3110; Plant and Soil Science 3040 or equivalent. 2 hrs and 1 lab.

4400 Individual Problem Study (1-5) May be repeated to maximum of 10 hrs credit.

4610 Seminar (1) Current problems in ornamental horticulture and landscape design. Prereq: Junior standing and consent of instructor.

GRADUATE

5000 Thesis

5011-21 Special Problems in Lieu of Thesis (3-5, 3-5)

5100 Special Problems in Ornamental Horticulture and Landscape Design (3)

5210 Golf Course Design, Development, and Management (4)

5310 Park and Public Grounds Management Systems (4)

5410 Histological Microtechnique (4)

5500 Seminar (1)

Plant and Soil Science (792)

Professors: L.F. Seat1 (Head), Ph.D. North Carolina State; F.F. Bell, Ph.D. Iowa State; H.A. Fribourg, Ph.D. Iowa State; L.M. Josse, Ph.D. Wisconsin; W.L. Parks, Ph.D. Purdue; B.S. Pickett (Emeritus), Ph.D. Michigan State; L.N. Skold, M.S. Kansas State; M.E. Springer, Ph.D. California (Berkeley); H.D. Swingle, Ph.D. Louisiana State.

Associate Professors: D.L. Coffey, Ph.D. Purdue; R.V. Conig, Ph.D. Washington State; L.S. Jeffery, Ph.D. North Dakota State; W.A. Krueger, Ph.D. Illinois; G.M. Lessman, Ph.D. Michigan State; R.J. Lewis, Ph.D. North Carolina State; V.H. Reich, Ph.D. Iowa State; J.H. Reynolds, Ph.D. Wisconsin; H.C. Smith, M.S. Tennessee

Assistant Professor: F.L. Allen, Ph.D. Minnesota

1Oclyde B. Austin Distinguished Professor.

2130 Soils (4) Nature and properties of soils. Physical, chemical, biological processes in soils and their influence on plant growth. Prereq: Chemistry 1120 or 1520 or 1620. 3 hrs and 1 lab.

3020 Crop Ecology (3) Crops and environment; geographic location, site, heat, light, water and interplant relationships as a basis for judgment of cultural practices used to modify environmental factors. Prereq: 8 hrs biological science. 2 hrs and 1 lab.

3040 Crop Physiology (3) Physiology of crop plants; growth phenomena related to crop production; use of general theories of physiology; effects of environment, especially regulating substances, functions of light, heat, air, minerals, and water. 2 hrs and 1 lab. Prereq: 8 hrs biological science.

3110 Soil Fertility and Fertilizers (4) Properties of soils in relation to plant nutrient availability and uptake. Methods of soil fertility evaluation and principles of fertilizer use; manufacture and properties of fertilizers. Prereq: 2130. 3 hrs and 1 lab.

3120 Grain and Oil Crops (3) Distribution, improvement, morphology, culture, harvesting, and utilization of corn, soybeans, grain sorghum, and oilseeds. Prereq: 2130; 8 hrs biological science. 2 hrs and 1 lab.
4400 Problems in Plant and Soil Science (1-6)
Special research or library problems in some phase of plant and soil science. May be repeated. Maximum 9 hrs credit.
GRADUATE
5000 Thesis
5011-21 Special Problems in Lieu of Thesis (3, 3)
5100 Special Problems in Plant and Soil Science (1-6)
5200 Soil-Crop Relationships (3-6)
5240 Soil Productivity and Management (3)
5250 Pedology (4)
5310 Design and Interpretation of Experiments (3)
5340 Soil Physics (3)
5370 Advanced Soil Fertility (3)
5390 Soil Physical Chemistry (3)
5600 Seminar (1)
5710 Advanced Plant Genetics (3)
5720 Quantitative Genetics (3)
5750 Advanced Plant Breeding (4)
5810 Crop Climatology (4)
5820 Advanced Crop Physiology and Ecology (4)
5850 Mechanisms of Herbicide Action (3)
6000 Doctoral Research and Dissertation
6100 Special Topics in Soil Science (3)
6200 Special Topics in Plant Breeding (3)
6300 Special Topics in Crop Physiology and Ecology (3)
6410 Experimental Designs (3)
6510 Growth Control with Chemicals (3)
6600 Seminar (1)

College of Veterinary Medicine
Willis W. Armistead, Dean
C.F. Reed, Jr., Associate Dean
W.H. Grau, Jr., Assistant Dean

However, the professional curriculum provides an excellent basic medical education, in addition to training in diagnosis, disease prevention, medical treatment, and surgery. Graduates consequently are qualified to pursue careers in many aspects of veterinary medicine and related health professions. Most American veterinarians are engaged in private practice. The majority of these are in general practices, which deal with the diseases of all kinds of animals. About one-fourth of the veterinarians in the United States are engaged exclusively in pet or companion animal practice. A growing number are concerned with the health problems of zoo animals, laboratory animals, wildlife, and aquatic species.

Veterinarians also find rewarding careers in the U.S. Public Health Service, the U.S. Army, the state, county, or local health agencies. A large number of veterinarians are employed by the U.S. Department of Agriculture and by state departments of agriculture for important work in livestock disease control, meat and poultry inspection, and the protection of our country against the importation of foreign animal diseases. Excellent opportunities exist also for veterinarians interested in research—both research for the direct benefit of animals and research conducted with animals but for the benefit of humans. Such opportunities are available at colleges and universities, and with governmental agencies, private research institutions, and biological and pharmaceutical companies.

Facilities
Administrative offices of the College of Veterinary Medicine are located in Morgan Hall on the Agricultural Campus. The Department of Animal Science is housed in Brehm Animal Science Building, also on the Agricultural Campus, and the Department of Pathobiology is located in Watters Life Sciences Building on "The Hill" of The University of Tennessee, Knoxville.

The remainder of the College will be housed in a large teaching hospital which is under construction and scheduled for occupancy in 1976. In the interim, the Departments of Environmental Practice, Rural Practice and Urban Practice are located in Building 1691, and the Department of Pathobiology is located in McCord Hall, both on the Agricultural Campus.

The College has also developed interim clinical facilities at Lakeview and Lone Oak Farm adjacent to the UT Hospital. These will become research facilities when the Teaching Hospital is occupied. Satellite teaching-research facilities are also being developed in Middle and West Tennessee.

Admission Requirements
Admission to the professional program of the College of Veterinary Medicine is limited to that number for which an education of high quality can be provided with the resources available to the College.
To qualify for admission a candidate must have completed at least the following minimum preveterninary requirements:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Minimum Credits</th>
<th>Quarter Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>English, including speech</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Humanities</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Social sciences</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics through</td>
<td></td>
<td></td>
</tr>
<tr>
<td>introductory calculus</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Chemistry; general</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>organic</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>biochemistry</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Physics</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Biology or zoology</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Microbiology</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Animal science, nutrition</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>and genetics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: 115 credits 78 hours

Excluding laboratory.

*Includes history, literature, music or art appreciation, philosophy, religion or foreign language.

*Includes economics, anthropology, political science, psychology, sociology and geography.

Preveterninary requirements may be completed in any accredited college or university which offers courses equivalent to those at The University of Tennessee. The College of Agriculture of The University of Tennessee offers an excellent 3-year preveterninary curriculum which satisfies all the course requirements for admission to the College of Veterninary Medicine. (For description see Preveterninary Medicine curriculum, College of Agriculture.) Students who are admitted to the College of Veterninary Medicine following completion of this preveterninary curriculum will receive a Bachelor of Science degree in Animal Science upon completion of the first year (3 quarters) of the professional veterninary medicine curriculum. (For the specific description see Preveterninary Medicine curriculum, College of Agriculture.)

Admission Procedure

Admission of new students will be for the fall quarter each year. Applicants will be screened carefully by a faculty committee to determine those best qualified for admission within the College enrollment quota.

Applicants will be considered in the following order of priority: (1) residents of Tennessee; (2) legal residents of states with which The University of Tennessee has contracts for veterinary medical education; (3) residents of other states or foreign countries.

Forms and instructions for making application for admission may be obtained from:

Director of Admissions
320 Student Services Building
University of Tennessee
Knoxville, Tennessee 37916

Applications must be completed and mailed so as to reach the Director of Admissions by January 31 each year. All preveterninary requirements must be completed by the end of the spring term of the year in which the student plans to enroll in the College of Veterninary Medicine.

Course Load

The professional curriculum of the College of Veterninary Medicine requires a specific number of hours for each quarter. A student may enroll for fewer or more than that number only with the permission of the dean. Because of the sequential and highly integrated character of the professional curriculum, all courses in a given quarter are considered prerequisite to those in the succeeding quarter.

Professional Curriculum

The professional curriculum in veterninary medicine is a three-year, year-round program, including summers. The first year (3 quarters) consists mostly of preclinical subjects such as anatomy, physiology, microbiology, parasitology, and general pathology. The second year (4 quarters) includes the study of diseases, their causes, diagnosis, treatment, and prevention. The final year (4 quarters) is devoted to intensive training in the solving of animal disease problems, including extensive clinical experience in the teaching hospital. The curriculum also provides for education in the science and art of veterinary medicine and in paramedical subjects such as animal behavior, medical communication, professional ethics, jurisprudence, economics, and practice management.

FIRST YEAR

<table>
<thead>
<tr>
<th>Fall Quarter</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vet. Animal Science 8510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Vet. Animal Science 8540</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Vet. Medicine 8310</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Vet. Medicine 8102</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Environmental Practice 8611</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

19 hours

19 hours

SECOND YEAR

<table>
<thead>
<tr>
<th>Summer Quarter</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vet. Medicine 8340</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Vet. Medicine 8341</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Vet. Medicine 8342</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Vet. Medicine 8343</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Vet. Medicine 8344</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

21 hours

Winter Quarter

| Vet. Medicine 8360 | 6 |
| Vet. Medicine 8361 | 6 |
| Vet. Medicine 8362 | 7 |
| Vet. Medicine 8363 | 2 |
| Vet. Medicine 8364 | 1 |
| Vet. Medicine 8365 | 1 |
| Vet. Medicine 8344 | 1 |

21 hours

Spring Quarter

| Vet. Medicine 8370 | 9 |
| Vet. Medicine 8371 | 3 |
| Vet. Medicine 8372 | 3 |
| Vet. Medicine 8373 | 4 |
| Vet. Medicine 8374 | 3 |
| Vet. Medicine 8344 | 1 |

22 hours

TOTAL: 85 hours

Departments of Instruction

Animal Science (114) — Veterinary Medicine

Professors: R.R. Johnson (Head), Ph.D., Ohio State; M.C. Bell, Ph.D., Oklahoma State; J.K. Bieker, Ph.D., Ohio State; C.C. Chamberlain, Ph.D., Iowa State; S.L. Hantsard, Ph.D., Florida; H.M. Jamison, Ph.D., Tennessee; J.B. McLanen, Ph.D., Auburn; M.J. Montgomery, Ph.D., Wisconsin; G.M. Merriman, D.V.M. Michigan State; R.L. Murphy, Ph.D., Wisconsin; D.O. Richardson, Ph.D., Ohio State; H.V. Shirley, Ph.D., Illinois; R.R. Shrode, Ph.D., Iowa State; E.W. Swanson, Ph.D., Missouri; R.L. Tugwell, Ph.D., Kansas State; C.E. Wylie (Emeritus), A.M. Missouri.


Assistant Professors: R.E. Carte, D.V.M., Kansas State; J.A. Corrick, Ph.D., Tennessee; D.G. Doyle, Ph.D., Cornell; J.P. Hitchcock, Ph.D., Michigan State; J.W. Holloway, Ph.D., Oklahoma State; S.A. Kincaid, D.V.M., Purdue; R.G. Schaub, Ph.D., Washington State; M.H. Sims, Ph.D., Auburn; J.D. Smalling, Ph.D., Texas A & M.


In addition, academic expertise of staff members at CAIUL and Oak Ridge are used on appropriate occasion.

8240-50 Veterinary Physiology (3, 4) Introduction to concepts and problems in physiology which form a base for clinical applications and for formal training in pharmacology, medicine, pathology and surgery. Order of sequence; respiratory, cardiovascular, digestive, and genito-urinary, Three hrs of lecture for 8240; 4 hrs of lecture for 8250.

8510-20 Histology (4, 4) Microscopic anatomy of respiratory, cardiovascular, digestive, urinary, and reproductiive systems; histology, cell form and structure. Three hrs of lecture as above. Correlated with 8240-50. Two hrs of lecture and two labs.
Pathobiology (742)

Professors:
RL. Michel (Head), V.M.D., Pennsylvania, Ph.D., Michigan State; M.D. McGavin, M.S., Queensland (Australia); Ph.D. Michigan State.

Associate Professors:
R.G. Schollens, D.V.M., Michigan State, D.A.P.E. London School of Hygiene & Tropical Medicine; M.D. McCracken, D.V.M. Kansas State, Ph.D. Purdue.

Assistant Professors:
J.R. Easley, D.V.M. Auburn; S. Patton, Ph.D. Kentucky.

Instructor:
L.W. Shipman, D.V.M. Texas A & M.

8710 Veterinary Pathology (5) Principles of pathobiology including causes of disease, disturbances of cell growth, inflammation, and neoplasia; introduction to clinical hematology. Three hours of lecture and two labs.

8730 Veterinary Parasitology (4) Basic principles of parasitology (protozoology, helminthology, and entomology) and their relation to disease in animals. Three hours of lecture and one lab.

3812 Introduction to Veterinary Medical Practice (3) Basic surgical principles, preparation for surgery, wound healing, fundamental principles of radiology. Correlated with 8320. Two hrs of lecture and one lab.

8320 Medical Science Interactions (3) Multidisciplinary laboratory. Demonstrations and surgical experiments to illustrate variety of physiologic and pharmacologic principles. Emphasis on anesthetic techniques, basic clinical chemistry (i.e., acid-base) principles for interpretation of survival and emergency techniques and for drug action. Correlated with 8312. Two hrs of lecture and one lab.

8340 Integumentary System (4) Diseases of integumentary system of animals, with emphasis on laboratory examination, interpretation of pathologic features, diagnosis, and treatment.

3841 Hemopoietic System (3) Pathogenesis, diagnosis, and clinical management of diseases of hemopoietic and lymphoid organs and tissues.

8342 Alimentary Tract (6) Pathogenesis, diagnosis and treatment of diseases of alimentary tract and digestive organs.


8344 Focal Problems (1) Series of sessions to consider specific diagnostic problems or para-medical subjects important to veterinary medical practice. Some sessions consider differential etiology, diagnosis, and treatment of certain disease signs or symptoms; others consider implications for veterinarians of medical jurisprudence and ethics, practice economics, and veterinary history. May be repeated. S/NC.

8350 Endocrine-Reproductive System (7) Reproductive diseases of animals with emphasis on anatomic and functional aspects. Biochemical and physiologic basis of endocrine diseases of animals, including diagnosis, treatment, and management. Endocrine interrelationships, including methods of evaluation of mammary glands and reproductive tract, diagnosis, and treatment.


8352 Cardiovascular-Respiratory Systems (7) Pathogenesis, diagnosis, and management of cardiovascular and respiratory diseases of animals. Anatomic, physiologic, and pharmacologic principles providing the basis for medical and surgical treatment.

8353 Metabolic Diseases (2) Biochemical and physiologic determinants of metabolic diseases of animals, their diagnosis and prevention.

8360 Musculoskeletal System I (6) Diagnosis and treatment of musculoskeletal diseases of small animals, emphasizing pathologic changes, radiologic techniques, interpretation of radiographs, and surgical procedures.

8361 Musculoskeletal System II (6) Diagnosis, prognosis, and management of musculoskeletal diseases of large animals, with emphasis on functional anatomy, radiographic techniques and interpretation, and surgical procedures applicable to equines and ruminants.

8362 Toxicology (3) Pharmacologic basis and pathologic features of diseases of animals caused by common toxic chemicals, with emphasis on clinical manifestations, diagnosis, and treatment.

8363 Public Health (2) Public health aspects of veterinary medicine and nature of related laws, ordinances, and regulations. Veterinarian's role in the protection of environment, ecology, and quantity and quality of food.
8364 Nutritional Diseases of Animals (1) Biochemical and physiologic determinants of nutritional disease, with rational bases for treatment and prevention.

8366 Radiology (2) Advanced and special techniques in radiology.

8370 Neurosciences (9) Normal and abnormal neural structure and function in animals, with emphasis on clinical neurology and neuropathology.

8371 Visual and Auditory Systems (3) Methods of examination and treatment of diseases involving eyes and ears of animals, with emphasis on anatomic, physiologic and pathologic features.

8372 Comparative Medicine (3) Diagnosis, prevention, and treatment of diseases of laboratory animals, avian species, and marine mammals seen most commonly by practicing veterinarians.

8373 Advanced Medicine (3) Immunologic and genetic determinants of disease of domestic animals.

8374 Pathophysiology (3) Physiologic basis for, and concomitant pathologic changes in, selected examples of human and animal disease.
School of Architecture

Donald D. Hanson, Dean
William J. Lauer, Assistant Dean

The School of Architecture presents a comprehensive program of undergraduate courses, offering opportunities for both general studies and professional specialization.

The intent of the School's program is to complement the University's learning opportunities by providing curricula and course offerings in the art and science of design. Accordingly, the program is composed of informational, analytical, and integrative studies related to the human role in shaping and changing the built environment. The welfare of this environment, which is a vital factor in the well-being of people everywhere, depends upon the knowledge and skill which those educated in the design sciences can contribute to continuing processes of developmental change.

A goal of this revised program is to provide undergraduate studies in scholarly and professional areas related to the knowledge base and methodologies for working with the built environment, while at the same time utilizing the School's resources, faculty, and facilities to their maximum effectiveness.

Facilities

The design laboratories, classrooms, computer room, library, and administrative offices of the School are located in three buildings—Estabrook Hall, Melrose Annex, and Alumni Gym. It is entirely appropriate that one of the newest schools, and particularly architecture, should be temporarily housed in venerable Estabrook Hall constructed in 1988. Other disciplines that share direct interests with the School—engineering, fine arts, and industrial arts—are also located in the building. The Melrose Annex provides additional space for upperclass research and design activities.

The principal library holdings of the School are contained in the James D. Hoskins Library. Extensive general collections and reference volumes in architecture and the fine arts are housed there. These sources are augmented by the branch library of the School where students have access to all the reference books in current use.

Student Sponsorship

A number of $500 sponsorships are made available each year by architectural firms of Tennessee. These grants cover tuition and fees, travel expenses to a designated U.S. city for study purposes, subscription to a foreign architectural journal, purchase of special drafting equipment, and purchase of special reference books for the student recipients' personal libraries. Honor students in all the upper four years are eligible for this aid, but it is primarily awarded to students of third- and fourth-year standing.

Lecture Program

ROBERT B. CHURCH MEMORIAL LECTURESHIP

The income from the endowment is used to sponsor outstanding speakers from the profession.

General Information

Students are advised to consult the University's general requirements as stated in the front section of this catalog as well as the requirements for the School of Architecture.

Self advising will not be permitted in the School of Architecture. Students must plan their schedule by consulting with an assigned adviser in the student's area of concentration. Electives will be chosen with the concurrence of the adviser and with full consideration of the necessary prerequisites.

Requirements for Admission to Second-Year Architecture

(1) satisfactory completion of first year architectural program with grade point average at least 2.3, exceptions may be made by petition only;
(2) a personal interview and evaluation of applicant's work by a designated member of the School of Architecture;
(3) application to the School of Architecture no later than June 15 preceding the start of the second year.

Students must maintain an overall 2.3 grade point average by the end of 48 hours (attempted) in order to maintain "full status" in the program. Delinquent students will be put on "temporary status" for one quarter. These students will have one quarter to raise overall GPA to a 2.3 or have minimum 2.3 on each quarter's work until overall average is raised to a 2.3. If GPA is not brought up to a 2.3, the student will be dropped from the architecture program.

Third-Year Prerequisites

Students are required to have all first- and second-year courses satisfactorily completed before entering the third-year design courses, Architecture 3001-02-03. Students who register for a third-year design course holding first- or second-year deficiencies may be required to drop the course at any point during the quarter.

Minor

An undergraduate minor in architecture is offered in order to enable students in other colleges to pursue studies in architecture which are relevant to their major areas of concentration. The minor will consist of not less than 18 hours. Persons interested must obtain the consent of the Admissions Committee of Architecture and dean of the School of Architecture, who will approve specific programs of study proposed by students.

Course Load

The average course load in any quarter is 17-18 credit hours. The minimum which may be taken by full-time students is 12 hours; the maximum which may be taken without approval of the dean is 20 hours.

Satisfactory/No Credit Courses

These courses, if successfully completed, will count as hours for graduation, although neither S nor NC grades will be calculated in the student's grade point average. Satisfactory is defined as C or better work on the traditional grading scale, and no credit is defined as less than C. The following regulations apply: (1) S/NC courses may not count for required courses or controlled electives; (2) A student who

74
desires to take a course S/NC should indicate this intention at the start of registration. A change from S/NC grading to regular grading or from regular grading to S/NC will not be permitted beyond the add deadline for each quarter. Exception: students who register for a course S/NC in a restricted area will be required to change to regular grading when the error is discovered.

Program Description

The undergraduate curriculum has two major components: a core of general and professional studies, and a range of concentrations for in-depth study. Within the scope of a professional degree program, thus provides a number of study areas from which students may select according to their individual interests and aptitudes. Four areas of concentration—Administration, Design, History/Humanities, and Technology—each with a subset of paths, are offered; they share a common core which provides the basic prerequisites for entry into one of the study concentrations.

GENERAL CORE

The general core is an introduction to the knowledge base of the School's professional program. The courses are neither highly specialized nor overly technical; thus they are open and accessible to other disciplines within or outside the University. Although it is recommended that the series of core courses be taken in sequence, it is so constituted as to permit flexibility in scheduling, particularly to accommodate transfer students seeking elective credits. Courses in the general core, in addition to English, math, and physics, are from the following five divisions:

- Basic Design and Visual Studies
- Analytical Studies
- Man-Environment Systems
- Physical Systems
- Historical Studies

PROFESSIONAL CORE

Courses in the professional core represent subjects fundamental to professional competence in architecture. The following four divisions constitute this core:

- Structural Analysis and Materials
- Environmental Control Systems
- Professional Practice
- Architectural Design

Through controlled electives, required in this core, students can intensify and extend their professional skills and technical knowledge.

ACCELERATED CORE

Students demonstrating an exceptional proficiency in any of the professional core subjects may be approved for selected accelerated studies, thereby reducing the time needed to complete core requirements and allowing more time for concentration in the student's chosen area. Formal review and approval by the School are required of all accelerated core candidates.

Curricula for Architecture

All students studying for a Bachelor of Architecture degree will include the following requirements in their first three years of study. During the fourth and fifth years, the students' work will be concentrated in one of the following tracts: design, history, criticism, restoration/preservation, management, and technology. Each with a subset of paths, are offered; they share a common core which provides the basic prerequisites for entry into one of the study concentrations.

HISTORY/HUMANITIES CONCENTRATION

<table>
<thead>
<tr>
<th>HISTORY TRACT</th>
<th>Hours Credit</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture design</td>
<td>8</td>
<td>8</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 4311</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 3101, 3102, 3137</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>History 1510-20</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Controlled electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Fifth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture design</td>
<td>8</td>
<td>8</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 4115, 4180</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Controlled electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Total: 240 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CRITICISM TRACT

<table>
<thead>
<tr>
<th>CRITICISM TRACT</th>
<th>Hours Credit</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture design</td>
<td>8</td>
<td>8</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 4311</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 3101, 3102, 3137</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>History 1510-20</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Controlled electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Fifth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture design</td>
<td>8</td>
<td>8</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 4115, 4180</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Controlled electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Total: 240 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RESTORATION/PRESERVATION TRACT

<table>
<thead>
<tr>
<th>RESTORATION/PRESERVATION TRACT</th>
<th>Hours Credit</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture design</td>
<td>8</td>
<td>8</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 4311</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 3101, 3102, 3137</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>History 1510-20</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Controlled electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Fifth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture design</td>
<td>8</td>
<td>8</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 4115, 4180</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Controlled electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Total: 240 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ADMINISTRATION CONCENTRATION

MANAGEMENT TRACT

<table>
<thead>
<tr>
<th>MANAGEMENT TRACT</th>
<th>Hours Credit</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fourth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture 4501-02, 4531</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Industrial Engr.</td>
<td>3</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 3701, 4525.</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Architecture 4510-15, 4531</td>
<td>4</td>
<td>4</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Fifth Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architecture 4503-04, 4340</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Controlled electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Total: 240 hours</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ADMINISTRATION CONCENTRATION

| Accounting 2110-20, 2210; Architecture 4510, 4515, 4520, 4525, 4530, 4531, 4532, 4553, 4550, 4554, 4555, 4556, 4656; Business Administration 1110; Business Law 4110, 4120, 4130, Civil Engineering 4230, 4430; Economics 2110-20, 3210, 3211, 3340, 3410, 4240, 4110, 4130; Finance 3110, 3120-30, 3640; Industrial Engineering 4150, 5250, 5260, 5600; Insurance 3320; Industrial Management 3010, 3110, 3120, 4330, 4630, Journalism 3710; Marketing 3110, 3120, 3120, 4140, 4150; Office Administration 4510, 4540; Real Estate 2610, 3610, 3650, 4110, 4120, 4130; Statistics 2100; Transportation 3115, 4720.

### TECHNOLOGY CONCENTRATION

| Architecture 3712, 4710, 4711-12, 4715, 4720, 4721-22, 4725-26-27, 4731-32, 4734, 4735, 4736-37, 4739, 4771-72-73, 4775, 4778, 4780, 4785, 4910, 4920; Audiology and Speech Pathology 4750; Civil Engineering 4330, 5110-20, 5270; Computer Science 3410, 4410; Electrical Engineering 4850; Environmental Engineering 3000; Geography 4720, 4720; Geographical Engineering 4150; Mechanical Engineering 4220; Planning 4100, 5230, 5450; Statistics 3450; Theatre 3321-22, 4341-42.

### Faculty


### Lecturers


- On leave.

---

### 1001 Introduction to Human and Environmental Properties and Transactions (4)

- Properties and concepts of developmental change and specific "builder" process; historical study of events of human activities and products in context to their contemporary perceptions, philosophies and methodologies to the present.

### 1002 Visual Studies (4)

- Principles of functional organization and order introduced through examination of behavioral and physical properties of natural and man-made environments. Emphasis on space-spanning systems.

### 1004 Analytical Studies I (4) Introduction to General Systems Theory in relation to environmental analysis and design. Covers theory and application of the general systems approach and introduces problem-solving techniques, statistical analysis and design methodologies.
4725-26-27 Structural Innovation and Design Research Lab (4-4, 4-8, 4-8) Theory and experimentation of building design utilizing innovative structural configurations and old materials. Resist structural concepts, space and form properties, and economic factors such as systems costs, and netted in 4th and 8th quarter of 3rd-year standing with consent of instructor.

4731-32 Earthquake Resistant Structure I, II (4, 4) Introduction to dynamic systems. Faults, earthquakes, nuclear effects, internal and external explosions. Building code and engineered design of building structures to resist extreme effects. Protective construction for human and system needs. Fire protection and protection of human life. Safety analysis, high-rise building fires. Prerequisite: 4732 or equivalent.

4734 Advanced Design of Steel Buildings (4) Construction and maintenance of steel buildings. Large span and special structures. Composite construction. Fireproofing; building costs. Prerequisite: 4732 or equivalent.

4735 Advanced Design of Concrete Buildings (4) Precast and on-site concrete construction and maintenance, foundations, floor and wall systems, domes and shell roofs. Prerequisite: 4732 or equivalent.


4738 Aesthetics of Engineering Structures (4) Architecture of steel, masonry, concrete; and wood structures: theory and utilization of space, design, and materials in large structures. Bridges, exhibition halls, power plants. Prerequisite: 4741 or equivalent.

4741 System Theory, History and Methodology (4) Investigation of general system theory and system research methodology. Overview and analysis of systems on an international basis.

4742 Types of Systems (4) Comprehensive examination of systems types, concepts and approaches. Comparative analysis of unit assemblies, components, panels, boxes and self-help systems. Exploration of all building types, housing, schools, garages, hotel, dormitories, hospitals, factories, and their cultural ramifications. Prerequisite: 4741.


4751 Structural and Architectural Innovations (4) Exploration of new concepts, advanced design, and new water approaches to design, architecture and structural systems as they effect design drawings, detailing, specifications, and construction. Study of component assembly, panel, and box systems; wood, steel, concrete and plastic systems. Architectural concepts, structural and architectural Prerequisite: 4743.

4752 Mechanical Innovations (4) New technological concepts and techniques for heating, ventilating, and air conditioning. General and electrical systems. Concepts of mechanical components at factory, and mechanical connections at the site, their applications are emphasized. Students' activities will involve proto-typing of innovative systems. Acceptable for design credit in 4TH and 8TH quarter of 3RD year standing with consent of instructor.


4756 Systems Design Laboratory I, II (8, 8) A vertical multi-disciplinary design and research system laboratory and studio. Integrating simultaneously, undergraduates, graduates, professionals, intra-professionals, and extra-professionals. Total systems ("software" and "hardware") approach to individual and group problems. Prerequisite: 4751.

4757 Thesis/Systems Laboratory (16) Independent project undertaken by individual or group with faculty making a significant contribution to the art and/or science of systems building, design and architecture. Prerequisite: Approval of the thesis and the building core and completion of the systems building core.

4771-72-73 Advanced Mechanical and Electrical Systems (4, 4, 4) In-depth study of analysis and design of heating, ventilating, air-conditioning systems, lighting systems, and electrical distribution in buildings. Prerequisite: 4756.

4775 Energy Conservation in Buildings (4) Comprehensive examination of energy conservation in buildings. Engineering and economics of energy practices in building design; determination and prevention of energy losses. Prerequisite: 4756.

4780 Fire Protection in Structures (4) Fire protection of buildings. Characteristics of fires; fire codes; building evacuation. Sprinkler and other fire protection systems; emergency lighting; fire resistant materials and construction. Prerequisite: 4785.

4785 Sound, Noise and Vibration Control in Building (4) Proven sound and vibration control techniques. Specific methods, procedures, materials most effective in solving acoustical problems. Prerequisite: Audio & Speech Path. 4750 or Mechanical Eng. 4220.

4850 Elementary Structural Matrix Methods (4) Introduction to the generalized matrix methods of analysis of structures. Review of matrix algebra and vectors; development of member stiffness and flexibility matrices; assembly of structure stiffness and flexibility matrices. Prerequisite: Consent of Instructor. (Same as Civil Engineering 4850 and Engineering Science and Mechanics 4850).

4900 Aspects of Urban Environment (4) Interdisciplinary course in urban problems. Prerequisite: Consent of one department. (Same as Human Services 4900, Political Science 4900, Psychology 4900 and Real Estate 4900).

4910 Architectural Photography (4) Photography as a design, research and presentation medium. Emphasis on camera and darkroom technique. Use of black and white media.

4920 Advanced Architectural Photography (4) Application of special photographic techniques with emphasis on digital imaging and processing. Prerequisite: Consent of instructor.

4940 Proxemics (4) Seminar for graduate students and upper division students. Introduction to the science of proxemic variables. Proxemic notation exercises. Analysis of etic data with the use of statistical techniques. Prerequisite: Observer bias and methods of bias reduction. Members of seminar required to design, conduct, and present their own research projects. Prerequisite: 4900 or consent of instructor.

5050 Environment as Code (4) Advanced lecture of graduate students and upper-division students in design and construction. Social issues involved in considering environment as a medium of human communication. Codes and nature of code building between architecture and human behavior. Relationships between coding behavior and the organization of the central nervous system. Coding and social behavior. Communication process as a generic model of human-environment relations. Hierarchical aspects of environmental communications. Prerequisite: 4900 or consent of instructor.

ACCELERATED CORE COURSES

4020 Accelerated Visual Studies (4) Identification and application of theories and methodologies of universal configurations of built environments. Knowledge, i.e., principles of visual coding and ordering applicable to behavioral analysis. Descriptive and behavioral properties of visual systems and architectural environment. Selected exercises shall demonstrate manipulation of both static and dynamic proprieties. Study of code behavior and human responses and man experiences. Prerequisite: Admission to accelerated core program. Core: 4022.

4021 Accelerated Basic Design and Analysis I (4) Investigation of the generative and constitutive behavior of complex physical systems. Theories and methodologies of optimization applicable to design decision-making and solving. Investigation of complex system behavior. Study and analysis of traditional and contemporary design exercises. Prerequisite: 4020.

4022 Accelerated Analytical Studies (4) General systems theory and scientific methods of analysis applicable to design decision-making processes and design methodologies. Contextually, study traces emergence of contemporary architectural practice through evolution of design theory, building technology, and processes of developmental change. Prerequisite: Admission to the accelerated program. Core: 4020.

4023 Accelerated Basic Design and Analysis II (4) Investigation of human response to varied configurations of built environments. Knowledge of response to human behavior and activity patterns applied through design process to create new possibilities of environmental and visual experience evaluation measured to anticipated response. Experimental design exercises included. Case studies. Exercise shall incorporate scientific research methods and design methodologies. Prerequisite: 4020 and 4022.

4024 Accelerated Analytical Studies II (4) Basic research methods and environmental problem-solving techniques. Presentation of information and skills necessary for collecting, ordering, manipulating and displaying quantities of diverse data for research and evaluation purposes. Objective is to be qualified in: (a) scientific methods and concepts and techniques to utilize potential of electronic data processing technologies as a research tool. In addition to presentation of lecture series of 2014, students are required independently to research an area of interest for presentation to an accelerated seminar supplement. Prerequisite: 4022. Core: 4023.

4027 Accelerated Man-Environment Systems (4) Study of causal, descriptive, and design properties of man and environmental systems and their transactions. Selected examination of the cultural and environmental systems, their social, physical and biological change. Study of systems' applications to the regular lecture series of 2000, students are required to independently develop research on an objective of interest for presentation to the regular semester and human development supplement. Prerequisite: Admission to the accelerated core program.
4029 Accelerated Professional Practice (4) Examination of legal responsibilities of architect in servicing contractual agreements; contract documents, contract administration, codes and zoning, liability and insurance. Principles of economics and management; project production and management, cost analysis, budgeting, programming and construction management. Prereq: Admission to accelerated core program.

4031 Accelerated Historical Studies I (4) Introduction to evolution of architectural periods with selected illustrations from local examples. Advanced examination of relationship of historical and cultural developments to the built environment from antiquity through Byzantine period with applications to present-day design issues. Independent student projects on topics related to course materials. Prereq: Admission to accelerated core program.

4032 Accelerated Historical Studies II (4) Advanced examination of relationship of historical and cultural developments to the built environment from Romanesque period through neoclassicism with applications to present-day design issues. Study of historical research methods and analysis. Independent student projects on topics related to course material. Prereq: 4031.

4033 Accelerated Historical Studies III (4) Advanced examination of historical and cultural events of Industrial Revolution which gave rise to modern movement in architecture and design with applications to present-day design issues. Changing concepts of ethics, aesthetics, and architectural theory. Independent student projects on topics related to course material. Prereq: 4031 and 4032.
The College of Business Administration has been a member of the American Assembly of Collegiate Schools of Business since 1941.

Transfer Admission
All students who have attempted 36 or more quarter hours of college-level work must have a grade point average of at least 2.00 to be eligible to transfer into the College of Business Administration. This requirement applies both to students transferring from other institutions (including those of The University of Tennessee System) and to those transferring from other colleges and schools of The University of Tennessee, Knoxville.

The College of Business Administration stands ready to assist any student seeking a business education, regardless of credit hours attempted or earned, and regardless of the grade point average. All such students should be referred to the Office of the Dean for counseling and discussion.

Student Advising Center
The College of Business Administration maintains a Student Advising Center. The Center is staffed with full-time academic advisers to assist the freshman and sophomore students on an individual basis with their programs. Junior and senior students are assigned to advisers from the faculty of the student's selected major. The objective of working with students individually is to assist them in their own particular needs for academic information and to prepare them to answer their own questions and concerns.

Center for Business and Economic Research
The staff of the Center for Business and Economic Research engages in studies of the business and economic environment in Tennessee, the Southeast, and the nation. The Center serves the business community, state government, individuals, and the University through dissemination of information and aids the faculty in preparing research proposals. Staff members conduct research in regional economics, public finance, demography and related socio-economic problems. The Center publishes results of its research and that of others, in monograph form, so that significant developments in the various business disciplines can achieve widespread exposure. In addition, the Center staff does contract research on business and economic problems for governmental organizations and private industry. As periodicals, the Center publishes the Tennessee Statistical Abstract and the Survey of Business.

The Center is a member of the Southeastern Economic Analysis Conference and the Association for University Business and Economic Research.

Tennessee Executive Development Program
The Tennessee Executive Development Program (TEDP) is designed to provide extensive continuing educational opportunities for executives from firms and organizations in Tennessee, the South, and nationally. The major objective of the program is to prepare and develop executives for increasingly higher levels of management responsibility and to sharpen existing executive skills needed for comprehensive decision making and leadership. Other major aims of the TEDP are to teach the fundamentals of analytical thinking and the use of the decision tools, and to examine the economic, political, technological, and other environmental factors affecting the firm's operations.

The TEDP limits enrollment to 36 participants who live on campus for a total of four weeks spread over a three-month period. The fall Executive Seminar brings participants and spouses of all TEDP classes back to campus for sessions on relevant topics and current key issues. The Executive Seminar offers a continuing
opportunity for personal growth and professional development. This arrangement provides executives with extensive opportunities to exchange ideas and operational concepts with contemporaries in other business areas and with TEPD faculty as well. The faculty for the TEPD consists of senior professors who teach business-related subjects in the University's graduate programs and nationally-recognized professors of other institutions. Each participating faculty member has deep experience in either consultation or actual operations in business and industry. The TEPD faculty is augmented by outstanding practitioners in their fields of business and industry.

Cooperative Program in Business

The College of Business Administration offers qualified students, who have completed at least one year of work at the University and whose grades conform to the standards set in the College, the opportunity to participate in the Cooperative Program in Business which, under the direction of a coordinator, combines classroom study with practical experience. Effort is made to place students in jobs which offer maximum educational and financial advantages. Students alternate quarterly between work in business or industry and study at the University.

The Cooperative Program gives the student an opportunity for practical experience, develops a sense of responsibility and cooperation, helps in selecting a vocation, creates greater interest and incentive in studies, enables earning part of expenses, and may lead to permanent employment after graduation. The student may earn a maximum of nine hours elective credit for field work but must do a satisfactory job as determined by the employer and coordinator, including reports covering job experiences.

Preparation for Teaching

Students enrolled in the College of Business Administration desiring to teach business or distribution in the secondary schools of Tennessee may follow majors in accounting, office administration, or marketing and also meet the requirements for certification by the State Department of Education. Students should consult an adviser in business or distributive education regarding the proper courses.

Master's and doctor's degree programs leading to teaching in junior colleges and senior colleges or universities are available.

Course Load

The normal course load for a quarter is 15-17 hours. The maximum number of hours which may be taken by a freshman is 18. Other students may take 19. In unusual circumstances a student in junior or senior year may take a course load in excess of these maximums may be granted by the assistant dean for Undergraduate Programs in Business Administration.

Requirements for All Curricula

A student must complete the curriculum outlined by the major department in order to receive a degree. Where no course number is specified or where a choice is allowed, the student will fulfill the requirement by selecting from specified courses. Where electives are provided, the courses taken must meet the approval of the adviser. Nondepartmental electives are considered as courses outside the student's major department. No more than 42 hours are permitted in any one subject area.

A maximum of thirty credit hours of unconventional grades (S/NC, P/F, P, etc.) courses may be applied to the total credit hours required for a degree of Bachelor of Science in Business Administration. Such credit hours may be used to meet only the requirements identified in the curriculum as "nonbusiness electives," "nondepartmental electives," "business and/or nonbusiness electives," and "business electives."

A Management Science Option is available for students with facility and interests in mathematical applications to business. See page 87.

NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

BUSINESS CORE REQUIREMENTS

The following core courses are required in all business curricula: Accounting 2110-20-30 (2110-20, 3210 for accounting, industrial management, personnel management majors); Business Administration 4430; Business Law 4110 and 4120; Economics 2110-20-30; Finance 3110-20-30; Industrial Management 3010, 3110 (3111, for industrial management and personnel management majors); Marketing 2110-20; Office Administration 2750 or Computer Science 1410 (3150 for Management Science Option) and Statistics 2100 and three hours upper-division statistics courses as designated by the curriculum (3450-60 for Management Science Option).

ENGLISH REQUIREMENT

The English requirement can be fulfilled by English 1510-20 and hours selected from English 2510-20-30, 2540, 2580-70-80, 2590, 2680-70-80. Speech 2311, unless specifically required by a curriculum, may be used to satisfy four of the elective English hours required. English courses beyond 1000 level may be taken in any order. Students making a B in freshman English are permitted to substitute for the 2000-level courses listed above any upper-division courses which the Department of English will allow them to take.

NATURAL SCIENCE REQUIREMENT

The natural science requirement can be fulfilled by an eight-hour sequence (any two eight-hour sequences for the Industrial Management and the Personnel Management curricula and any eight-hour sequence plus any additional four hours of natural science for the Business Administration curriculum) in any of the following fields: astronomy, biology, botany, chemistry, geology, or physics.

SOCIAL SCIENCE REQUIREMENT

The social science requirement can be fulfilled by taking courses in the following fields: Anthropology 2510-20-30; Geography 1610-20, 2110-20-30; History 1510-20 (1518-28), 1610-20, 1950-60, 2510-20 (2518-28); Honors 1138; Human Services 2690; Philosophy 1510-20, 2310, 3110-20; Political Science 2690, 3110-20 (2518-28); Psychology 2500 (2518), 2530-40; Religious Studies 2610 (2611), 2620; and Sociology 1510-20. Students who have not completed a year of American history in high school must select American Social History [History 2510-20 (2518-28) and 2511 or 2521] as part of the 16 hours of social sciences.

COMPUTER SCIENCE REQUIREMENT

A computer programming course satisfies requirement; Computer Science 1410 or Office Administration 2750 is recommended.

Accounting

The curriculum provides preparation for professional accounting careers in public accounting, industry, and government. Graduates are eligible for the CPA examination in Tennessee.

To graduate with a major in accounting, a minimum of 30 quarter hours of required upper-division courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 15 hours of accounting courses numbered 3000 or above. Students must include Accounting 4110, 4140, 4430, and 4630.

<table>
<thead>
<tr>
<th>Hours Credit</th>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20, 1550</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1840-50-60</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>*Natural science electives</td>
<td>4</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>*Social science electives</td>
<td>4</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>*Nonbusiness electives</td>
<td>-</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>*English elective</td>
<td>4</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>3</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Economics 2110-20-30</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2110-20</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 2100</td>
<td>3</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>*Computer science elective</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Management Science 2110-20</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>*Social science elective</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Computer Science 3410, 3910</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting 3110-20-30</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 3210-20-30</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 3430</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Economics 3110</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Finance 3110-20-30</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Management 3010, 3110</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>3</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Statistics 3410</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>
Business Education

This major is offered in cooperation with the Department of Vocational-Technical Education in the College of Education. The program meets requirements for certification in business subjects as approved by the State Department of Education. At least a C average must be made in each endorsement area in business for which a student is to be recommended.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1840-50-60</td>
<td>4</td>
</tr>
<tr>
<td>Natural science electives</td>
<td>4</td>
</tr>
<tr>
<td>Office Administration 2130, 2180</td>
<td>2</td>
</tr>
<tr>
<td>Anthropology elective</td>
<td></td>
</tr>
</tbody>
</table>

### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philosophy elective</td>
<td>4</td>
</tr>
<tr>
<td>English literature elective</td>
<td>4</td>
</tr>
<tr>
<td>Accounting 2110-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Economics 2110-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Computer science elective</td>
<td>3</td>
</tr>
<tr>
<td>Psychology 2560</td>
<td>3</td>
</tr>
<tr>
<td>School Health 3510, Public Health 3210, or Nutrition 1230</td>
<td>3</td>
</tr>
<tr>
<td>Physical education elective</td>
<td>2</td>
</tr>
<tr>
<td>Statistics 2100</td>
<td></td>
</tr>
</tbody>
</table>

### Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philosophy, anthropology, or upper-division history elective</td>
<td>4</td>
</tr>
<tr>
<td>Industrial Management 3010, 3110</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>3</td>
</tr>
<tr>
<td>Business Education 4130, 4101</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 3210</td>
<td></td>
</tr>
<tr>
<td>Teaching English</td>
<td>3</td>
</tr>
<tr>
<td>Educational Psychology 3180</td>
<td>3</td>
</tr>
<tr>
<td>Education C&amp;J 3010 and 3020</td>
<td>3</td>
</tr>
</tbody>
</table>

### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistics upper-division elective</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration 4120-10</td>
<td>3</td>
</tr>
<tr>
<td>Business Education 4130</td>
<td>3</td>
</tr>
<tr>
<td>Business Education 4150</td>
<td>3</td>
</tr>
<tr>
<td>Education C&amp;J 4710-20 and Business Education 4610</td>
<td>18</td>
</tr>
<tr>
<td>Office Administration 4310, 4320</td>
<td>3</td>
</tr>
<tr>
<td>Business Education 4120</td>
<td>2</td>
</tr>
<tr>
<td>Office Administration 4330</td>
<td>3</td>
</tr>
<tr>
<td>Economics elective</td>
<td>3</td>
</tr>
<tr>
<td>Health or physical education elective</td>
<td>4</td>
</tr>
</tbody>
</table>

### Hours Credit

- Freshman: 18 hours
- Sophomore: 24 hours
- Junior: 21 hours
- Senior: 21 hours

**Total: 187 hours**

*See Requirements for All Curricula.

Banking

Students planning careers in management of commercial banks and branches, or as trust officers, investment or loan officers, or in savings or industrial banks, the Federal Reserve System, international monetary institutions, or state and federal bank regulatory agencies may major in banking.

To graduate with a major in banking, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of finance courses.

### Hours Credit

- Freshman: 4
- Sophomore: 4
- Junior: 3
- Senior: 3

**Total: 187 hours**

*See Requirements for All Curricula.

Economics

The Department of Economics offers specialized courses for those who desire to serve as economic analysts and specialists in business, education, government, and various international agencies. Students majoring in economics, particularly those desiring to teach, should plan, whenever possible, to take graduate work.

To graduate with a major in economics, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 15 hours of economics courses.

Students may also elect to major or minor in economics in the College of Liberal Arts. See page 204 for further information on the B.A. curriculum.

### Hours Credit

- Freshman: 4
- Sophomore: 4
- Senior: 3

**Total: 187 hours**

*See Requirements for All Curricula.

Finances

Curricula in the finance department include those in finance, banking, insurance, and real estate and urban development. Areas of concentration in the finance curriculum include business finance and financial management, investments and security analysis, public finance and fiscal policy, and monetary theory and policy.

To graduate with a major in finance, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of finance courses.

### Hours Credit

- Freshman: 4
- Sophomore: 4
- Junior: 3
- Senior: 3

**Total: 187 hours**

*See Requirements for All Curricula.

To be taken when topic is banking.
## Industrial Management

This major is designed for students interested in the field of business and manufacturing management.

In general, the curriculum has been developed to include a judicious combination of technical and business courses in order to prepare the graduate for employment in an industrial enterprise. Job opportunities in this field include industrial purchasing, materials control, quality control, production control, methods analysis, and positions as foremen and production management trainees. Internships in industry are available under the Cooperative Program.

### Hours Credit

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
</tr>
<tr>
<td>English 2650-60</td>
<td>4</td>
</tr>
<tr>
<td>Business Law 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Accounting electives</td>
<td>3</td>
</tr>
<tr>
<td>Finance electives</td>
<td>3</td>
</tr>
<tr>
<td>Business and/or nonbusiness electives</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL: 187 hours</td>
<td></td>
</tr>
</tbody>
</table>

*See Requirements for All Curricula.

## Logistic

Business logistics concentration is recommended for students who desire to prepare for employment in physical distribution management or planning with industrial or marketing organizations. The overall program also prepares students for the examination waiver program of the American Society of Traffic and Transportation. A number of scholarships for this curriculum are available.

To graduate with a concentration in logistics, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of insurance courses.

### Hours Credit

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
</tr>
<tr>
<td>Business Law 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Marketing, insurance, or real estate electives</td>
<td>3</td>
</tr>
<tr>
<td>Marketing or transportation electives</td>
<td>3</td>
</tr>
<tr>
<td>Business and/or nonbusiness electives</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL: 66 hours</td>
<td></td>
</tr>
</tbody>
</table>

*See Requirements for All Curricula.

## General Business

This major is intended for those who desire a broad business background without extensive concentration in any single business field. To that end it includes advanced work beyond the introductory courses in accounting, economics, finance, personnel management, marketing, statistics, and transportation as specified below.

To graduate with a major in general business, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of accounting, economics, and finance courses.

### Hours Credit

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2110-20</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 3310</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>3</td>
</tr>
<tr>
<td>Finance electives</td>
<td>3</td>
</tr>
<tr>
<td>Business and/or nonbusiness electives</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL: 187 hours</td>
<td></td>
</tr>
</tbody>
</table>

*See Requirements for All Curricula.

## Insurance

The insurance major is for students planning careers in business risk management, insurance company and bureau administration, actuarial work, pension administration, life underwriting, estate planning, property-casualty agency management, insurance consulting, loss adjustment, and state regulation of insurance. Graduates are eligible to take the national examinations for the C.L.U. or C.P.C.U. designation.

To graduate with a major in insurance, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of insurance courses.

### Hours Credit

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2110-20</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 3310</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>3</td>
</tr>
<tr>
<td>Finance electives</td>
<td>3</td>
</tr>
<tr>
<td>Business and/or nonbusiness electives</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL: 66 hours</td>
<td></td>
</tr>
</tbody>
</table>

*See Requirements for All Curricula.

### Notes

1. A major in transportation is offered. See page 86.
### Marketing
This major is designed to prepare students for careers with companies engaged in the marketing of consumer and industrial goods and their distribution by manufacturers, wholesalers, and retailers. The curriculum trains students for positions in sales, advertising, promotion, research, and marketing management. The integrated sequence of courses enables students to obtain broad training in the analysis of marketing decision problems.

To graduate with a major in marketing, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include the following required marketing courses: 3210, 4210, 4510, 4650, 4710.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Business Law 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Business electives (9 hours from)</td>
<td></td>
</tr>
<tr>
<td>Marketing 4140, 4150, 4230, 4310,</td>
<td></td>
</tr>
<tr>
<td>4410, 4520, 4650, 4818-28,</td>
<td></td>
</tr>
<tr>
<td>Transportation 4270-30, Business</td>
<td></td>
</tr>
<tr>
<td>Administration 4610)</td>
<td></td>
</tr>
<tr>
<td>Marketing 4210</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 4650</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 4710</td>
<td>3</td>
</tr>
<tr>
<td>Transportation 315</td>
<td>3</td>
</tr>
<tr>
<td>Business and/or nonbusiness</td>
<td>3</td>
</tr>
<tr>
<td>electives</td>
<td></td>
</tr>
<tr>
<td>Nondepartmental electives</td>
<td>6</td>
</tr>
<tr>
<td>Nonbusiness elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL: 187 hours**

*See Requirements for All Curricula.

It is strongly recommended that marketing majors select as many of their electives as possible from the following:
- Psychology 3120, 3220, Sociology 3010, 3130, 3220, 3320, 3330, 4320, 4330, 4510, 4550, 4620.
- Recommended.

### Office Administration
Students entering the field of office administration may choose a specialized secretarial program or prepare for supervisory, administrative or managerial positions in the office. Students following the office administration major may prepare teacher certification requirements by taking the appropriate education courses in consultation with the faculty advisor.

To graduate with a major in office administration general or a major in office administration secretarial, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. For office administration secretarial, these must include Office Administration 4410, 4420 and 4430. For office administration general, these must include a minimum of nine hours of office administration courses, including 4430.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>I II III</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4</td>
</tr>
<tr>
<td>English electives</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50 or 1840-50</td>
<td>4</td>
</tr>
<tr>
<td>Natural science electives</td>
<td>4</td>
</tr>
<tr>
<td>Social science electives</td>
<td>4</td>
</tr>
<tr>
<td>Nonbusiness elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting 2110-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Economics 2110-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Administration 4720</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 4310</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 4320 or 4250</td>
<td>3</td>
</tr>
<tr>
<td>Nonbusiness electives</td>
<td>6</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 3110</td>
<td>3</td>
</tr>
<tr>
<td>Economics 3120 or 3210 or 3340</td>
<td>3</td>
</tr>
<tr>
<td>Finance 3110-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Management 3110</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 4510</td>
<td>3</td>
</tr>
<tr>
<td>Transportation 3110</td>
<td>3</td>
</tr>
<tr>
<td>Nondepartmental electives</td>
<td>3</td>
</tr>
<tr>
<td>Nonbusiness elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Business Law 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Business electives (9 hours from)</td>
<td></td>
</tr>
<tr>
<td>Marketing 4140, 4150, 4230, 4310,</td>
<td></td>
</tr>
<tr>
<td>4410, 4520, 4650, 4818-28,</td>
<td></td>
</tr>
<tr>
<td>Transportation 4270-30, Business</td>
<td></td>
</tr>
<tr>
<td>Administration 4610)</td>
<td></td>
</tr>
<tr>
<td>Marketing 4210</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 4650</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 4710</td>
<td>3</td>
</tr>
<tr>
<td>Transportation 315</td>
<td>3</td>
</tr>
<tr>
<td>Business and/or nonbusiness</td>
<td>3</td>
</tr>
<tr>
<td>electives</td>
<td></td>
</tr>
<tr>
<td>Nondepartmental electives</td>
<td>6</td>
</tr>
<tr>
<td>Nonbusiness elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL: 187 hours**

*See Requirements for All Curricula.*

### Office Administration-General

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Management 3110,</td>
<td>I II III</td>
</tr>
<tr>
<td>Accounting 3220</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>3</td>
</tr>
<tr>
<td>Finance 3110-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Statistics upper-division</td>
<td>3</td>
</tr>
<tr>
<td>electives</td>
<td></td>
</tr>
<tr>
<td>Economics elective</td>
<td>3</td>
</tr>
<tr>
<td>Accounting elective</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 3210, 4310,</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 4410, 4420</td>
<td>3</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Law 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 4410, 4520,</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Nonbusiness electives</td>
<td>6</td>
</tr>
<tr>
<td>Business and/or nonbusiness</td>
<td>3</td>
</tr>
<tr>
<td>electives</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL: 187 hours**

### Two-Year Secretarial Program
The two-year program in office administration is offered to high school graduates who wish to prepare for secretarial work but who do not plan to complete four years of University training and earn a degree. All courses taken in this program have full University credit and may be applied toward a degree.

A certificate may be awarded to students who have completed the program with an overall average of at least 2.0, an average of 2.2 in office administration, and within the first 120 hours of credit.

Information regarding the recommended sequence of courses may be obtained from the office of the department head.

### Subject

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office Administration 2120-30, 2180</td>
<td>7</td>
</tr>
<tr>
<td>Office Administration 2310-20-30, 4410-20</td>
<td>15</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>English literature</td>
<td>4</td>
</tr>
<tr>
<td>Business Administration 1110</td>
<td>3</td>
</tr>
<tr>
<td>General Business</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 3210</td>
<td>3</td>
</tr>
<tr>
<td>Office Machines</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 4710 or</td>
<td>3</td>
</tr>
<tr>
<td>Computer Science 2410</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 4310</td>
<td>3</td>
</tr>
<tr>
<td>Business Letter Writing</td>
<td>3</td>
</tr>
<tr>
<td>Office Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2110-20</td>
<td>6</td>
</tr>
<tr>
<td>Economics 2110-20</td>
<td>6</td>
</tr>
<tr>
<td>Social science</td>
<td>6-8</td>
</tr>
<tr>
<td>Psychology 2500</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540</td>
<td>4</td>
</tr>
<tr>
<td>Physical education</td>
<td>2-4</td>
</tr>
<tr>
<td>Music, art, health, or CIDH</td>
<td>3-4</td>
</tr>
<tr>
<td>Electives</td>
<td>5-9</td>
</tr>
</tbody>
</table>

**TOTAL: 90 hours**

*Previous training in shorthand or typewriting may exempt a student from the beginning courses in these subjects. If no typewriting has been taken, a prerequisite of Office Administration 2110 is necessary.*
Personnel Management
This major is designed for students who wish to prepare for employment in industrial personnel administration. Job opportunities range from general personnel work in small companies to specialized fields such as employment, wage and salary administration, job evaluation, training, and labor relations in larger enterprises.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1540-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Natural science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English elective</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110-20-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2110-20-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Computer science elective</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 2100</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Business and/or nonbusiness electives</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 3410, 3340</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Finance 3110-20-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 3510</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Management 3010</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Statistics upper-division</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Political Science 3545-46</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Political Science 3565-66</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

See Requirements for All Curricula.

Real Estate and Urban Development
This major is designed for students who are interested in the many fields of business and government where real estate is of significance. Such fields include real estate brokerage, appraising, taxation, law, property management, real estate development, mortgage lending and mortgage banking, construction, government loan guarantees, and insurance.

To graduate with a major in real estate and urban development, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of real estate and urban development courses.

Public Administration
This major is intended for students who wish to prepare for management positions in the public service. In general, it presents a combination of general education together with studies in governmental and business management. It is designed to give initial preparation for such governmental employment as organization and methods work, budgeting work, and personnel management.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English elective</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1540-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Natural science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Political Science 2510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Business and/or nonbusiness elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English elective</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1540-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Natural science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance 3110-20-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Management 3010</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Statistics upper-division</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Economics 3110-20</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Real estate electives</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Nonbusiness elective</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

See Requirements for All Curricula.

Statistics
A major in statistics is recommended for students interested in positions involving process control and quantitative research in business, industry, and government.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English elective</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1540-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Natural science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Computer science elective</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Statistics 2100</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Social science electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English elective</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Accounting 2110-20-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Statistics 2100</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Computer science elective</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Social science elective</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Nonbusiness elective</td>
<td>3</td>
<td>6</td>
</tr>
</tbody>
</table>

See Requirements for All Curricula.

Transportation
A major in transportation is recommended for students who desire to prepare for employment with carriers supplying transportation service, both passenger and freight, or regulatory bodies and planning agencies of federal, state, and local governments. The overall transportation program also prepares students for the examinations of the
American Society of Traffic and Transportation. A number of scholarships for transportation majors are available. To graduate with a major in transportation, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 21 hours of transportation courses.

**Accounting M.S.O.**
Transfer students with 9 quarter hours of introductory accounting will receive 6 hours of credit in Accounting 2110-20 and 3 hours of lower-division accounting credit. These students must take as one of their technical electives an upper-division course approved by the accounting department adviser, and it must not be an "as elective." To graduate with an option in Accounting M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 15 hours of accounting courses numbered 3000 or above and must include Accounting 4110, 4630, and either 4140 or 4430.

**Management Science Option**
The increasing use of electronic computers and modern management methods by industry and the business community has created a rapidly growing demand for persons capable of using mathematics, statistics, and computer methods for the use of quantitative techniques in solving management problems. In response to this growing demand, the College of Business Administration has established a Management Science Option which is available to qualified students who wish to prepare themselves for careers involving this type of work. The Management Science Option is designed for students who have demonstrated a high level of ability in mathematics and who are interested in applying this ability toward solving management problems. The Management Science Option is available to students majoring in accounting, finance, general business, industrial management, marketing, personnel management, real estate and urban development, statistics, and transportation.

**General Business M.S.O.**
To graduate with an option in General Business M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 12 hours of accounting, economics, and finance courses.

*See Requirements for All Curricula.*

Include senior-level transportation courses (not to exceed 12 hours) and/or upper-division business courses.
### Industrial Management M.S.O.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>Business Law 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Economics electives</td>
<td>3</td>
</tr>
<tr>
<td>Finance, insurance, and real estate electives</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Management 4610-20</td>
<td>3</td>
</tr>
<tr>
<td>and/or nonbusiness elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 187 hours</td>
<td></td>
</tr>
</tbody>
</table>

### Marketing M.S.O.

To graduate with an option in Marketing M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include the following required marketing courses: 3210, 4210, 4510, 4650, 4710.

### Logistics M.S.O.

To graduate with a concentration in Logistics M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at The University of Tennessee, Knoxville. These must include a minimum of 21 hours of transportation courses.

### Personnel Management M.S.O.

### Real Estate and Urban Development M.S.O.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>Business Administration 4430</td>
<td>3</td>
</tr>
<tr>
<td>Business Law 4110-20</td>
<td>3</td>
</tr>
<tr>
<td>Industrial Management 4610-20</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 187 hours</td>
<td></td>
</tr>
</tbody>
</table>

### Credits

- **Freshman:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Sophomore:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Junior:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Senior:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

### Credits

- **Freshman:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Sophomore:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Junior:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Senior:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

### Credits

- **Freshman:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Sophomore:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Junior:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours

- **Senior:**
  - Business Law 4110-20
  - Business Administration 4430
  - Business Administration 4110-20
  - Economics electives
  - Finance, insurance, and real estate electives
  - Industrial Management 4610-20
  - and/or nonbusiness elective
  - **TOTAL:** 187 hours
Sophomore

- English elective ........................................ 4
- Economics 2120-30 ................................ 3 3
- Accounting 2110-20-30 ............................... 3 3 3
- Statistics 3450 ........................................... 3
- Computer science elective ......................... 3
- Social science elective ............................... 4
- Mathematics 2840-50-60 ............................ 4 4 4
- Nonbusiness electives ................................. 3 6

Junior

- Finance 3110-20-30 .................................. 3 3 3
- Industrial Management 3010, 3110 .............. 3 3 3
- Statistics 3410, 3550, 4310 ......................... 3 3 3
- Economics 3110-20 .................................... 3 3 3
- Real Estate 3110, 4110, 3630 ....................... 3 3 3
- Marketing 3110-20 .................................... 3 3 3

Senior

- Finance 4110, 4120 .................................... 3 3 3
- Business Administration 4430 ..................... 3 3 3
- Industrial Management 4610-20 ..................... 3 3 3
- Real Estate 4120-30, 3640 ............................ 3 3 3
- Finance 4850, 4370, 4990 ............................. 3 3 3
- Business and/or nonbusiness electives .......... 3 3 3
- Business Law 4110-20 ................................. 3 3 3

TOTAL: 187 hours

*See Requirements for All Curricula.

Statistics M.S.O.

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>I</td>
</tr>
<tr>
<td>English 1510-20 .............................................. 4 4</td>
<td></td>
</tr>
<tr>
<td>English elective ........................................ 4 4</td>
<td></td>
</tr>
<tr>
<td>Mathematics 1840-50-60 ................................. 4 4</td>
<td></td>
</tr>
<tr>
<td>Social science electives ............................... 4 4</td>
<td></td>
</tr>
<tr>
<td>Business Administration 4430 ......................... 3 3 3</td>
<td></td>
</tr>
<tr>
<td>Economics 4120-30 ........................................ 3 3 3</td>
<td></td>
</tr>
<tr>
<td>Finance 4850, 4370, 4990 ................................. 3 3 3</td>
<td></td>
</tr>
<tr>
<td>Business and/or nonbusiness electives .......... 3 3 3</td>
<td></td>
</tr>
<tr>
<td>TOTAL: 187 hours</td>
<td></td>
</tr>
</tbody>
</table>

*See Requirements for All Curricula.

Graduate Studies

The College of Business Administration offers advanced programs in economics leading to the Master of Arts, the Master of Science, the Master of Arts in College Teaching, and the Doctor of Philosophy degrees. The Master of Business Administration degree program is offered in the fields of accounting, economics, finance, natural science electives, and social science electives. The Doctor of Business Administration degree program is offered in the fields of accounting, finance, management, marketing, and transportation and logistics. Advanced programs in management science lead to the M.S. and the Ph.D. degrees. The M.S. degree in statistics is also available. The M.S. and the Ph.D. degrees are granted in industrial and organizational psychology jointly with the Department of Psychology.

Students applying for the MBA and DBA programs are required to take the Graduate Management Admission Test (GMAT). Applicants for the M.A., M.A.C.T., M.S., and Ph.D. programs may take either the GMAT or the Graduate Record Examination (GRE). Applicants whose native language is other than English must submit results of the Test of English as a Foreign Language (TOEFL). Scheduled dates and locations for taking these examinations may be obtained from Educational Testing Service, P.O. Box 696, Princeton, New Jersey 08540, and from most colleges and universities.

Departments of Instruction

Accounting and Business Law

Professors:

Associate Professors:
P. J. Harel (Advisor), Ph.D. Iowa; H. C. Herring, III, Ph.D. Alabama, CPA; F. A. Jacobs, Ph.D. Georgia, CPA; G. E. Nichols, Ph.D. Louisiana State, CPA; I. A. Posey, M.S. Tennessee, CPA; N. E. Shurtle, J.D. Ohio State; W. L. Slagle, M.S. Tennessee, CPA; R. L. Townsend, Ph.D. Texas, CPA; F. E. Watkins, Jr., Ph.D. Louisiana State, CPA.

Assistant Professors:
M. C. Letsinger, M.S. Tennessee, CPA; L. E. Rittenburg, Ph.D. Minnesota.
Accounting (009)

2110-20 Fundamentals of Accounting (3, 3) Introductory courses in financial accounting theory and practice with emphasis on preparation, reporting, and analysis of financial information. Prerequisite: all other courses in accounting except for engineering majors. Courses must be passed in sequence.

2130 Survey of Managerial Cost Accounting (3) User-oriented survey of managerial cost accounting topics designed as a terminal course. Topics include product costing, cost behavior analysis for decision making, standard costing, and budgeting. Prerequisite: 2120.

3110-30 Intermediate Accounting (3, 3, 3) In-depth study of theory, principles, and procedures related to the valuation of assets, liabilities, and equities; measurement of periodic income, and preparation of financial statements. Prerequisite: 2120 for 3110; 3110 with grade of C or better for 3120; and 3120 with a grade of C or better for 3130.

3210-30 Managerial Cost Accounting (3, 3, 3) In-depth analysis of costing for products, projects, and management control. Special topics include performance measurement of decentralized operations, accounting aspects of quantitative techniques for decision analysis, governmental regulation of cost accounting standards, and other current issues. Prerequisite: 2120. Courses may be taken in sequence. Credit not given for both 2130 and 3210.

3430 Federal Income Tax (3) Concepts of gross income and deductions applicable to taxable entities. Prerequisite: 2120.

3510 Not-for-Profit Accounting (3) Theory and practice of budgeting, financial and managerial accounting and reporting, planning-programming, budgeting, and auditing for not-for-profit entities. Prerequisite: 2210 or equivalent.

3630 Electronic Data Processing Concepts and Control (3) Elements and operation of computers in a business environment; accounting systems are emphasized. Topics include input, storage, data manipulation, output, control, and cost control. Prerequisite: 2210, Computer Science 3410 or equivalent.

4110 Principles of Auditing (3) Role of auditing in society, professional auditing standards, auditor's legal responsibility, internal control, use of statistical sampling, audit evidence, and reporting. Prerequisite: corequisite: Statistics 3410.

420 Advanced Auditing (3) Case-oriented course including audit of specific asset, liability, revenue and expenses accounts, with emphasis on reporting, data analysis, and statistical sampling, and internal auditing. Prerequisite: 4110 with grade of C or better.

4400 Accounting for Business Combinations (3) Theory and practice of reporting for interrelated business entities. Prerequisite: 3130 with grade of C or better.

450 Advanced Accounting (3) Analysis of issues and alternatives in advanced problem areas including objectives of financial reporting, authoritative accounting pronouncements, price-level and current-value accounting, partnerships, and selected other current topics. Prerequisite: 3130 with a grade of C or better.

430 Advanced Federal Taxes (3) Fundamental problems of federal taxation with emphasis on alternatives available for reporting taxable income. Prerequisite: 3130 and 3430.

4400 Taxation of Estates and Gifts (3) Topics include transfers at death, inter vivos transfers, life insurance, annuities and employee death benefits, marital and other deductions and exemptions, and estate and gift tax returns. Prerequisite: 4430.

4630 Analysis and Design of Information Systems (3) General systems concepts, flow charting, planning of systems studies, determination of systems objectives, development and evaluation of design alternatives, implementation, documentation and control. Prerequisite: Computer Science 3910.

4950 Individual Research in Accounting (3) Special projects undertaken by undergraduate majors in accounting under direction of faculty members of professorial rank. Prerequisite: 3130 with grade of C or better.

4990 Accounting Theory (3) Theory and conceptual framework underlying measurement of income and financial position as related to the resolution of key reporting problems. Prerequisite: 3130 with grade of C or better.

GRADUATE

See page 89 for information on graduate programs.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5050-60 Introduction to Accounting (3, 3)

5110 Seminar in Accounting Theory (3)

5120 Seminar in Advanced Auditing (3)

5130-40 Seminar in Current Accounting Topics (3, 3)

5150 Research in Accounting (3)

5160 Graduate Internship in Accounting (3)

5210-20 Seminar in Advanced Managerial Cost Accounting (3, 3)

5310 Auditing Concepts (3)

5330 Advanced Income Tax (3)

5340 Consolidations and Business Combinations (3)

5420 Tax Research (3)

5430 Tax Planning (3)

5510 Not-for-Profit Accounting (3)

5630 Accounting Systems and EDP Concepts and Control (3)

5840 Seminar in Accounting Information Systems (3)

5810 Accounting for Control (3)

5820 Corporate Reporting Problems (3)

6000 Doctoral Dissertation and Research

6110-20-30 Doctoral Seminar in Accounting (3, 3, 3)

Business Law (210)

4110 Environmental Business Law (3) Principles of law comprising legal environment appropriate to common business transactions. Strongly integrated with basic political and economic concepts. Review of U.S. legal system and business-related law.

4120 Law of Business Organizations and Regulation (3) General principles of law, as these pertain to business partnerships and corporations, affect taxation, and treat with agencies regulating business. Prerequisite: 4110.

4130 Administrative Regulation of Business (3) Analyzes nature and extent of business operations are controlled by administrative agencies operating at federal, state, and local levels. Includes nature of administrative agencies, jurisdiction, administrative procedures, and significant laws administered by such agencies. Prerequisite: 4120.

4330 Business Law (3) Fundamentals of business law designed for professional examination required for licensing, or certificants in fields of public accounting, certified public accounting, chartered property and casualty underwriters, chartered life underwriters and certified professional secretaries.

GRADUATE

5050 Legal Environment of Business (3)

Economics (283)

Professors: J.R. Moore (Head), Ph.D. Cornell; R.L. Bowby, Ph.D. Texas; W.E. Cole, Ph.D. Texas; G.R. Feiwel, Ph.D. McGill (Canada); J.F. Holy, Ph.D. Clark; H.E. Jensen, Ph.D. Texas; F.Y. Lee, Ph.D. Ohio State; H.R. W.C. Neal, Ph.D. London (England); G.A. Spiva, Jr., Ph.D. Texas; F.B. Ward (Emeritus), Ph.D.

Assistant Professors: R.C. Pennsylvania, R.H. Wolf, Ph.D. Vanderbilt.


Requirements for a major in economics consist of: (1) Economics 2110, 2120, and 2130; and (2) a minimum of 33 additional hours in upper-division economics courses. Economics 3110 (or 3111 and 3112) and 3120 are required as a part of the upper-division work and should be taken as early in the upper-division program as possible.

2001 Current Economic Problems (3) Discussion of selected economic policies and events. Several topics including controversial problems of current or continuing interest will be considered. Emphasis will be on non-technical treatment. Designed for non-economics and non-College of Business Administration majors. May not be used for degree requirements in business administration, and may not be substituted for Economics 2110 or 2120 or 2130.

2110-20-30 Introductory Economics (3, 3, 3) 2110—Basic economic concepts introduced through study of evolution of modern capitalism and the ideas of major economists; organization of the U.S. economy. 2120—Macroeconomics: national income, money and banking, employment, inflation. 2130—Microeconomics: supply and demand, competition, monopoly. Prerequisite: 2110 for both 2110 and 2130. Third-quarter requirement for admission to 2110.

2118-2138 Honors: Introductory Economics (3, 3, 3) Honors course designed for students of superior ability and interest. Entrance into 2118 requires a B average; selected third-quarter freshmen will be accepted on basis of high school record, American College Testing Program scores, and grade record during first two quarters. Grade of B in 2118 is necessary for entrance into 2128. An A or B in 2128 automatically gives credit for 2128 also, with same grade. Students making C or D in 2128 must take 2130 in order to receive nine hours credit.

3110 Intermediate Micro Theory (3) Allocation of resources and price determination; market demand, production, cost, and supply; distribution. Prerequisite: 2110, 2130.


3112 Intermediate Micro Theory II (3) Theory of cost and short run output in the firm and industry. Derived demand and distribution theory. Introduction to general equilibrium analysis. Selected topics. Prerequisite: 3111.
3120 Intermediate Macroeconomic Theory (3) Aggregate demand, output, and level of employment; price level, inflation, and deflation; economic growth. Prereq: 2110, 2120.


3230 Regional Economics (3) Overview of regional differences: theory of industrial, agricultural and residential location; the economic basis for land use patterns and central places; regional structure, growth and methods of analysis: national assistance for regional economic development. Prereq: 2120 and 2130.

3420 Economic History of the United States (3) Historical developments in agriculture, industry, communications, transportation, banking and trade, and of changes in governmental economic policy. Prereq: 2110-20.

3250 Economic History of Europe (3) Beginnings of capitalism in early Europe, expansion of Europe and dominance of mercantilism in early modern times, mechanization of industry, changes in agricultural organization, and growing importance of commerce in the 19th century; two world wars and their economic consequences. Prereq: 2110-20.

3310 Comparative Economic Systems (3) Description and analysis of economic goals, institutions and policies in different countries with emphasis on alternative principles and structures. Systems examined will include Soviet-type economies. Prereq: 2110-20-30.

3340 Government and Business I (3) Microeconomic objectives and alternative public policies for their achievement; prevention of monopoly and concentration through the antitrust laws; direct regulation of business performance. Prereq: 2130.

3341 Government and Business II (3) Topics in antitrust policy, direct regulation and other forms of social control; regulating information, product and managerial responsibility; government-business relations; selected cases. Prereq: 3340.

3410 Principles of Labor Economics I (3) Supply of and demand for labor; market wage determination; economic role of trade unions; application of analysis to various labor market problems such as unemployment, inflation, minimum wage laws, income distribution and occupational licensing. Prereq: 2110-20.


4000 Special Topics (3) Student-generated course offered at convenience of department upon student initiative. Subject matter and contents determined by students and instructor with approval of department. Prereq determined by department each time course is offered. Numerical grade is given to law students. May be repeated for credit.

4110 Managerial Economics (3) Application of economic theory to business decision making; emphasis on profit objectives, measurement and forecasting demand and costs, and capital budgeting. Prereq: 2110-20-30. (Same as Water Resources Development 4110.)

4130 Business Cycles (3) Fluctuations in income, employment, prices, and output in the economic system; subjects discussed are historical facts concerning booms and depressions, statistical methods for analyzing business fluctuations, theoretical explanations of cycles, and policies that have been proposed to combat them. Prereq: 3120 or consent of instructor.

4150 History of Economic Thought (3) Development of economic thought, tools of analysis, and economics as a social science, together with an analysis of socioeconomic conditions which influenced this development. Period covered: 1776 through 1936. Prereq: 2110, 2120, 2130 and consent of instructor.

4170-80 Introduction to Mathematical Economics (3, 3) Application of mathematical methods in theoretical study of micro and macroeconomic phenomena. Designed for undergraduate students who have limited training in analytic geometry and calculus. Must be taken in sequence. Prereq: Economics 3110 and Mathematics 1840-50, or equivalent.

4230 Problems in International Trade and Economic Development (3) Problems or problem areas of current importance in fields both of international economics and economic development. Prereq: 3210 or 3220.

4231 The Political Economy of Latin America (3) Description, analysis, and comparison of major economic problems and policies of various Latin American countries.

4232 The Political Economy of Asian Development (3) Description, analysis, and comparison of major economic problems and policies of India, China, and Southeast Asian countries.

4233 The Political Economy of the Soviet Union and Eastern Europe (3) Analysis of the major economic strategies, policies, and problems of the Soviet Union and Eastern Europe.

4260 Economics of Resources and Environmental Policy (3) Economic analysis of environmental policy and allocation of resources. Benefits and costs of development of natural resources and impacts of growth on environment. Prereq: 2130.

4350 Industrial Organization Analysis (3) Monopoly and competition in the United States economy; market structure, business behavior, and economic performance and their interrelationships. Prereq: 2130.

4420 Manpower Problems and Policy (3) Current manpower problems and examination of possible solutions. Problems include unemployment-inflation, manpower training and education, poverty and income redistribution and/or others. Emphasis on analytical basis for understanding manpower problems. Prereq: 2110-20.

4430 Labor Legislation (3) Economic background and effects of governmental regulation of labor relations, with emphasis on detailed examination of National Labor Relations Act as amended. Prereq: 3420.


4990 Independent Study (1-4) Offers qualified student opportunity to pursue topics or projects of special interest. Prereq: Senior standing, 3.0 GPA in economics courses and consent of instructor. May be repeated. Maximum total 4 hrs credit.

GRADUATE

See page 89 for information on graduate programs.

Economic Theory

5050 Introduction to Economic Analysis (3)

5060 Introduction to Economic Problems and Policies (3)

5070-80 The Firm and Its Environment (3, 3)

5111 Microeconomics (3)

5112 Macroeconomics (3)

5121-22 Macroeconomics Theory (3, 3)

5150 History of Economic Thought (3)

5180-90 Mathematical Methods in Economics (3, 3)

5510 Quantitative Methods in Economic Research (3)

5520 Introduction to Econometrics (3)

5710 Public Finance: Revenues (3)

5720 Public Finance: Expenditures (3)

5740 Seminar in Public Finance (3)

5810 Financial Markets and Intermediaries (3)

5820 Monetary Theory and Policy (3)

5830 Commercial Bank Management (3)

6111 Seminar in Advanced Microeconomic Theory (3)

6121 Seminar in Advanced Macroeconomic Theory (3)

6150-60 History of Economic Doctrines (5, 3)

6170-80-90 Econometric Methods (3, 3, 3)

6710-20 Seminar: Fiscal Theory and Public Finance (3, 3)

International Trade and Development

5210 Seminar in International Trade Theory (3)

5220 Seminar in Economic Development (3)

5250 Economic History of Europe (3)

5260 Economic History of the U.S. (3)

5610 Location and Regional Development Theory (3)

5620 Methods of Regional Analysis (3)

6211-12, 6221-22 Seminar in International Economics (3, 3, 3)

6231-32, 6241-42 Seminar in Economic Development (3, 3, 3)

6250 Seminar in European Economic History (3)

6260 Seminar in American Economic History (3)

6270 Seminar in Economic History of the Third World (3)

6610 Seminar in Regional Analysis (3)

6650 Seminar in Environmental and Resource Economics (3)

Industrial Organization

5340 Seminar in Private Enterprise and Public Policy (3)

6351-52 Seminar in Industrial Organization (3, 3)

6361-62 Seminar in Industrial Organization (3, 3)

Economics of Centralized-Planned Economies

5310 Economic Systems (3)

6331 Theory and Practice of Economic Planning (3)

Economics of Labor and Manpower

5410 Seminar in Labor Manpower Economics (3)

5420 Seminar in Wage and Employment Theory (3)

6411-12, 6241-22 Seminar in Labor Economics (3, 3, 3)

Other Economics Courses

5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5011-12 Problems in Lieu of Thesis (3, 3)
5910-20-30 Economics Seminar (1, 1, 1)
6000 Doctoral Dissertation and Research

Finance

Associate Professors: A.B. Bisbee, Jr., Ph.D. Florida; R.A. Bohm, Ph.D. Washington (Missouri); J.C. Golden, B.A. George Washington; W.C. Goolsby, Ph.D. Wisconsin; J.H. Lord, D.B.A. Indiana; R.E. Shriver, Ph.D. California (Los Angeles); D.L. Stevens, Ph.D. Michigan State.
Assistant Professors: A.L. Auxier, Ph.D. Iowa; H.S. Banton, III, M.S. Auburn; M. Lindahl-Stevens, M.S. Illinois; R.A. Weir, Ph.D. North Carolina.

Prerequisites: Accounting 2110-20-30, Economics 2110-20-30, and Statistics 2100 for all courses offered in the finance department except Insurance 3020.

Finance (349)

3110 Money and Banking (3) Nature and functions of money and credit; analysis of monetary and credit systems; money creating role of commercial banks and the Federal Reserve Systems.
3120-30 Business Finance (3, 3) Principles of financial management. Analysis of demand for funds, internal and external supplies of funds, and their costs to the firm. Prereq: 3120 for 3130.
4110 Investment Analysis (3) Theory of investment value of various types of securities and options. Prereq: 3130 and Statistics 2320 or 4510.
4130 Topics in Investments (3) Portfolio management policies of institutions, efficient market hypothesis and evidence, options and commodities. Prereq: 4120.
4150-60 Evolution and Function of Financial Institutions (3) Financial system of the United States; emphasis on historical role and function of financial institutions.
4250-60 Public Finance (3, 3) Public expenditures, federal and state revenue systems, financial administration, budgeting and public debt management.
4370 State and Local Finance (3) Emphasis on revenue systems and division of tax sources.
4510 Monetary Theory and Policy (3) Role of money in the economy. Emphasis upon factors that affect demand for and supply of money. Evaluation of current policy.
4520 Commercial Banking (3) Operations of commercial banks, emphasis on asset and liability management. Prereq: 3110.
4660 Problems in Financial Management (3) Financial decision making, a case approach. Prereq: 3120-30; Statistics 3220.
4800 Business Executive in Residence (3) Develops practical areas of finance curriculum. Leading financial executives, bankers, insurance executives, and realtors will conduct classes. May be repeated. Maximum 6 hrs credit. Prereq: Consent of department.
4990 Senior Seminar (3) Intensive investigation of specific topic in student’s area of concentration. Taken last quarter of senior year. Required of all students majoring in finance, insurance, or real estate.

GRADUATE
See page 89 for information on graduate programs.

5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5050 Survey of Finance Functions in Business (3)
5110 Theory of Financial Management (3)
5120 Quantitative Techniques in Financial Management (3)
5130 Financial Administration (3)
5140 Seminar: Managerial Finance (3)
5420-30 Investments (3, 3)
5620 Taxation and Business Decisions (3)
5710 Public Finance: Revenues (3)
5720 Public Finance: Expenditures (3)
5730 Finance Administration of Government (3)
5740 Seminar in Public Finance (3)
5800 Executive-in-Residence Seminar for M.B.A. (3)
5810 Financial Markets and Intermediaries (3)
5820 Monetary Theory and Policy (3)
5830 Commercial Bank Management (3)
5990 Research in Finance (3)
6000 Doctoral Dissertation and Research
6110-20 Seminar in Monetary Theory (3, 3)
6410 Analysis for Financial Decisions (3)
6420 Theory of Finance (3)
6510 Seminar in Financial Management (3)
6710-20 Seminar: Fiscal Theory and Public Finance (3, 3)
6810 Financial Institutions and Markets (3)

Insurance (580)

3020 Introduction to Risk and Insurance (3) Consumer-oriented view of risks faced by individuals and business. Methods of risk management, with particular emphasis on life, property, and casualty insurance.
3220 Business Risk Management (3) Principles of risk bearing and risk analysis, economics of risk and insurance.
4710 Life Insurance and Estate Planning (3) Coordination of life and health insurance with protection, conservation, and distribution of estate assets.
4720 Employee Benefit Plans (3) Plan design, cost factors, and funding media for employee benefits, including business life insurance, group insurance, pensions, profit sharing and other forms of deferred compensation.
4740-50 Property-Casualty Insurance Planning (3, 3) Property and casualty contracts and forms and their application to business and personal risks. Must be taken in sequence.

GRADUATE
5110 Theory of Risk Management (3)
5210 Seminar in Insurance (3)

Real Estate and Urban Development (849)
2810 Introduction to Real Estate (3) Basic concepts, tools and analysis of real estate. May not be used for degree requirements in business administration.
3610 Principles of Real Estate and Urban Development (3) Introduction to real estate and urban development. Prereq: Economics 3110.
3620 Real Estate Finance (3) Institutional and governmental procedures and techniques for financing real estate transactions. Prereq: 3610.
3640 Management and Development of Real Property (3) Real estate investment analysis and taxation. Prereq: 3630.
4110 Real Estate Appraisals (3) Theory and practices of determining real estate value. Prereq: 3610.
4120 Urban Growth and Land Use (3) Analysis of urban growth processes and land use patterns. Prereq: 3610.
4130 Problems of Urban Development (3) Current problems of land use and urban developments. Prereq: 3610.
4900 Aspects of Urban Environment (4) (Same as Architecture 4900, Human Sciences 4900, and Psychology 4900.)

GRADUATE
5002 Non-Thesis Graduation Completion (3-15)
5110 Urban Economic Analysis (3)
5120 Real Estate Analysis (3)
5130 Housing and Urban Land Markets (3)
5140 Real Estate Investment and Taxation Analysis (3)

Industrial and Personnel Management

Professors: H.D. Dewhirst (Head), Ph.D. Texas; R.W. Boling, Ph.D. Stanford; C.E. Fritschel*, M.Ed. Colorado; M.E. Gordon, Ph.D. California (Berkeley); H.W. Henry, Ph.D. Michigan; A.H. Kealy (Emeritus), M.B.A. Pennsylvania; J.M. Larsen, Jr., Ph.D. Purdue; S.K. Reed, Ph.D. Edinburgh (Scotland); S.C. Vance, Ph.D. Pennsylvania (Wm. B. Stokely Professor of Management); G.H. Whitlock*, Ph.D. Tennessee.

Associate Professors: R.D. Ahvey, Ph.D. Minnesota; F.A. Chamblin, M.B.A. Indiana; R.L. Dipanye, Ph.D. Purdue; O.S. Fowler, Ph.D. Georgia; R.C. Maddox, Ph.D. Texas; C.W. Neel (Dean), Ph.D. Alabama.

Assistant Professors: J.A. Bachmann, Ph.D. Virginia Polytechnical Institute; D.A. Hake, Ph.D. Tennessee; W.B. Henderson, Ph.D. Purdue; W.W. Williams, B.S. Pennsylvania State.

*Alumni Distinguished Service Professor.
**Visiting.

Industrial Management (566)

Nine quarter hours of general economics including Economics 2110-20 or the equivalent are prerequisite to all courses in personnel and industrial management.
Marketing and Transportation


Marketing (632)

Nine quarter hours in general economics including Economics 2110-20 or the equivalent are prerequisite to all courses in marketing.


3120 Marketing Management (3) Analysis of marketing management. Identifying market opportunities, planning marketing program, and implementing competitive strategies. Prereq: 3110.

3210 Marketing Systems (3) Marketing system approaches from viewpoint of decision maker. Examination of inputs, outputs, organizations, and goals of marketing systems. Consideration of competitive marketing systems. Prereq: 3110.

4140 Marketing Communications I (3) Examination of firm's personal communications function. Managing sales force, including personal selling concepts. Particular emphasis on role of sales organization in marketing program. Prereq: 3110-20.


4310 Retailing Management (3) Structure and environment of retailing and its relationship to other parts of the economy. Research and decision making in selected areas of store management. Prereq: 3110-20.

4440 Environmental Issues in Marketing (3) Environmental forces which serve as constraints on business decision maker. Emphasis is placed upon current issues and social and ethical implications of marketing decisions. Prereq: 3110-20.

4510 Marketing Information Planning (3) Planning and obtaining information for marketing decision making. Information needs, data collection process, methods of analysis, and interpretation procedures are integrated to serve decision maker. Prereq: 3110-20; Statistics 4310, or 3220 or 4520.
4520 Applied Marketing Research (3) Quantitative techniques, basic marketing concepts, and marketing research methodology in study of consumer purchasing, sales forecasting, and other marketing problems. Prereq: 4510.

4650 Market Opportunity Analysis (3) Developing understanding of various approaches available for evaluating opportunity that may exist within a market. Emphasis on relationship between analysis of markets and marketing decision making. Topics covered will include basic consumer behavior concepts, alternative sources of market information, information analysis techniques, interpretation of marketing information, and forecasting. Prereq: 3110-20, 4510.

4710 Marketing Decisions and Strategies (3) Pragmatic orientation to application of advanced, analytical concepts and skills within marketing environment. Emphasis on integration of knowledge from the component areas of marketing into cohesive, well-organized marketing program. Prereq: 24 hrs of marketing including 4510 and 4650 or consent of instructor. Course should be taken as close to graduation as possible.

4808 Honors: Executive-in-Residence Seminar (3) Student interaction with top-level marketing executives is used as a primary vehicle to show how concepts and principles of marketing knowledge is applied in the business world in a major marketing subject area (e.g., promotion, consumer behavior, marketing strategy, etc.). Prereq: Marketing 3210, 4210, 4510, and consent of instructor. 4650 is recommended but not required prerequisite.

4818-28 Honors: Marketing (3, 3) Marketing trends and developments. Advanced marketing theory and application. Can be substituted by eligible students for other courses in marketing with consent of department. Prereq: Consent of department.

GRADUATE
See page 89 for information on graduate programs.

5002 Non-Thesis Graduation Completion (3-15)

5050 Survey of Marketing (3)

5200 Marketing Management (3)

5220 Promotion Management and Strategy (3)

5230 Analysis and Design of Marketing Systems (3)

5300 Marketing Research (3)

5310 Quantitative Techniques in Marketing Analysis (3)

5350 Buyer Behavior Analysis for Marketing (3)

5410 Marketing Strategy (3)

5450 International Marketing Management (3)

5990 Research in Marketing (3)

6000 Doctoral Dissertation and Research

6110 Seminar in Buyer Behavior Research (3)

6210 Seminar in Marketing Models and Model Building (3)

6310 Seminar in Contemporary Marketing Issues (3)

Transportation (981)

Nine quarter hours in general economics are prerequisite to all courses in transportation system. Transportation 3110-20 or consent of the instructor are prerequisite to all courses numbered above 4000.

3110 Introduction to Transportation (3) Economic, social, and political aspects of national transportation system; economic characteristics of modes of transport; regulatory problems.

3115 Business Logistics (3) Introduction to management of physical distribution and supply systems, consideration of design concepts, cost determinants, firm and environmental constraints. Prereq: 3110, Statistics 2100 or equivalent.

3120 Traffic Management (3) Concepts and problems of freight traffic management; rate-making theories; rate and classification systems. Prereq or coreq: 3115.

3310 Transportation Rates (3) Analysis of current railroad and motor carrier tariffs, classification systems, rate systems. Prereq: 3120.

4110 Railroad Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of the railroad industry.

4210 Highway Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of motor carrier industry.

4310 Water Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of water transportation system.

4420 Air Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of commercial aviation.

4510 Urban Transportation (3) Analysis of economic characteristics, regulatory provisions, and management of transportation firms operating in urban areas.

4610 Carrier Pricing Strategy (3) Historical development of carrier pricing systems and analysis of current strategy.

4620 Carrier Management (3) Application of management decision making in transportation. Prereq: Senior standing with minimum of 18 hrs in transportation.

4720 Business Logistics: System Management and Control (3) Consideration of control techniques and management decision problems in logistics operations.


4810 International Transportation and Logistics (3) Introduction to import-export traffic management, international carrier management problems, and discussion of transportation systems in other countries.

4820 Current Topics in Transportation and Business Logistics (3) Seminar designed to study specific current problem areas in transportation and distribution. Topic announced prior to offering. May be repeated once for credit. Prereq: Consent of instructor.

4830 Supervised Readings in Transportation and Business Logistics (3) Directed readings and research on subject of mutual interest to student and staff member. Prereq: Senior standing with minimum of 18 hrs of transportation.

4910 Carrier Liability and Claims (3) Rights and liabilities of carriers, consignors, and consignees; claim processing and claim prevention.

4920 Transportation Law and Procedures (3) Analysis of Interstate Commerce Act and related statutes, practices and procedures before regulatory agencies.

4930 Transportation Policy (3) Analysis of regulatory, personnel, and planning policies of federal, state, and local governmental units.

GRADUATE
See page 89 for information on graduate programs.

5002 Non-Thesis Graduation Completion (3-15)

5050 Survey of Transportation and Logistics (3)

5110 Theory and Functions of Economic Regulation (3)

5120 Management and the Pricing Problem (3)

5130 Transportation Management Problems (3)

5140 Business Logistics (3)

5220 Physical Distribution Strategy (3)

5510 Urban Transportation Policy (3)

5810 International Transportation Policy (3)

5910 Transportation Law and Carrier Liability (3)

5920 Current Topics in Transportation and Logistics (3)

5990 Research in Transportation and Business Logistics (3)

6000 Doctoral Dissertation and Research

6110 National Transportation Policy (3)

6210 Seminar in Transportation and Logistics Models (3)

6220 Transportation and Logistic Systems—Analysis and Simulation (3)

Office Administration (735)

Professors: G.A. Wegener (Head), M.S. Indiana; E.W. Davis (Emeritus), M.A. New York; D. Reese, Ph.D. Iowa.


Junior standing or the approval of the department head is required for registration in courses numbered 3000 or above.

2110 Beginning Typewriting (3) Development of typewriting skills. Straight-copy speed stressed. Special emphasis on typing letters, tabulation problems and manuscripts. For students with no previous training or with one-half unit of high school credit. Students with one year of high school typewriting may not receive credit for 2110.

2120-30 Intermediate Typewriting (2, 2) Refinement of typewriting skills with special emphasis on production of letters, tabulation, and manuscripts. Prereq for 2120—one year of high school typewriting or minimum grade of C in 2110. Prereq for 2130—two years of high school typewriting or minimum grade of C in 2120. Students with two years of high school typewriting may not receive credit for 2120.

2180 Word Processing (3) One-quarter course to convey concepts and develop techniques and basic applications of word processing. Emphasis on equipment and operational competency—integrating statistical production, word processing, and simulated office situations. Statistical typewriting, automatic typewriters, transcription skills, and judgmental decisions in producing hard copy are included. Prereq: Minimum grade of C in 2130.
2410-20-30 Beginning Shorthand and Transcription (3, 3, 3) Theory of Gregg shorthand; development of dictation and transcription abilities. First quarter for students with no previous training in shorthand. Students with one year of high school shorthand receive no credit for 2310 and should begin with 2320; students with two years receive no credit for 2310 or 2320. Prereq: 2110 or equivalent; for 2320-30, grade of C in previous shorthand course. 5 hrs. per week.

2750 Electronic Data Processing (3) Computer programming with special emphasis on business applications. Prereq: Mathematics 1560 or 1860 or equivalent.

3210 Office Equipment Problems (3) Operation of and comparative data on duplicating processes, dictating, and transcribing equipment, and adding and calculating machines; determining costs of machine operation. Prereq: 2140. 2 hrs. and 2 two-hr. labs.

4310 Business Letter Writing (3) Principles, practices and mechanics of modern business letters; principles applied by solving letter-writing problems.

4320 Business Report Writing (3) Principles and mechanics of report writing, tabular and graphic presentation, basic instruction in formal research reports and thesis writing, and sources of business information.

4410-20 Advanced Shorthand and Transcription (3, 3) Improvement of ability to take dictation and transcribe machine copy; emphasis on skill necessary to meet Occupational standards. Prereq: 2330. 3-300-hr. periods.

4430 Supervised Office Experience (3) Orientation to office positions by actual office work; telephoning techniques, sources of information required by secretary, record keeping, and office etiquette. Prereq: 3210, 4310. 2 three-hr. periods.

4510 Office Management (3) Function of office; office building; physiological factors; office environment; furniture and equipment; machines and supplies; collection of employees; compensation and incentive plans; job analysis and supervision.

4520 Office Systems (3) Routines and procedures for correspondence and mailing; filing systems; oral communications; office planning and layout; systems of control.

4540 Problems in Office Management (3) Work simplification; cost control and reduction; development of standards; use and preparation of office manuals. Prereq: 3210, 4320 or approval of instructor.

4551-61 Problems in Office Management: Systems Analysis (3, 3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4552-62 Problems in Office Management: Form Design (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4553-63 Problems in Office Management: Records (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4554-64 Problems in Office Management: Mecha- nization (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4555-65 Problems in Office Management: Core- spondence (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4556-66 Problems in Office Management: Super- vision (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4557-67 Problems in Office Management: Work Simplification (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4558-68 Problems in Office Management: Training (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4559-69 Problems in Office Management: Work Measurement (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4710 Punched Card Methods (3) Card designing, key punching, sorting, tabulating, and preparation of reports; application to problems in fields of accounting, statistics, personnel, economics, psychology, education, and other areas of research. 3 hrs and 2 two-hr labs.

4720 Punched Card Application (3) Problems on tabulator and colimator, introduction to programming, system design, and preparation of procedure manuals and flow charts. Prereq: 4710 or equivalent.

GRADUATE

5011 Problems in Lieu of Thesis (3)

5050 Data Processing in Business (3)

Statistics (962)

Professors: C.C. Thigpen (Head), Ph.D. Virginia Polytechnic; D.S. Chambers, M.B.A. Texas; R.A. McLean, Ph.D. Purdue.

Associate Professors: H.A. Lasater, Ph.D. Rutgers; J.W. Philpot, Ph.D. Virginia Polytechnic; R.D. Sanders, Ph.D. Texas; D.J. Wheelan, Ph.D. Michigan; M.S. Younger, Ph.D. Virginia Polytechnic.

Assistant Professors: G.B. Ranney, Ph.D. North Carolina State (Raleigh); S.W. Ward, B.S. North Carolina State.

Undergraduate courses numbered 4000 and above presuppose familiarity with the basic probability distributions in statistics and with the general concepts of statistical estimation and hypothesis testing. Students intending to take 2100 and one additional undergraduate course are advised to select the latter from among 3000-level courses.

2100 Probability and Statistics (3) Elementary theory of probability; frequency and density functions; expected values and variances; fundamental concepts of statistical inference. Cannot be taken for credit by students who have credit for 3450. Prereq: Mathematics 1560 or 1850.

3110 Regression and Correlation Methods (3) Methods of linear and multiple linear regression and correlation; nonparametric measures of association. Cannot be taken for credit by students who have credit for 4310. Prereq: 2100 or 3450.

3220 Analysis of Time Series (3) Some statistical methods applicable to analysis of trends and time series; graphic presentation and analysis, index numbers, curve fitting, correlation, trend, analysis, seasonal and cyclical variation. Prereq: 2100 or 3450.

3310 Industrial Statistics (3) Shewhart Control Charts, acceptance sampling by attributes, Military Standard sampling plans. Special applications of control charts, acceptance sampling theory and procedures. Prereq: 2100 or 3450.

3410 Sampling Methods Useful for Surveys (3) Expository treatment of various types of probability sampling methods illustratively developed. Emphasis on procedures for selection of sample and calculation of estimates of parameters. Not available for credit to students with credit for 4415. Prereq: 2100 or 3450.

3450 Statistics for Engineering (3) Survey of statistical methods with special application for engineering students; frequency distributions, selected sampling distributions, some tests of significance. Cannot be taken for credit concurrently with 2100. Prereq: Mathematics 2840.

3460 Statistics for Engineering (3) Continuation of 3450 with emphasis on chi-square statistic, analysis of variance, and multiple regression analysis. Prereq: 3450; Mathematics 2850.


4250 Nonparametric Methods (3) Measures of association, two-sample tests, analysis of variance with rank data, paired and multiple comparisons in preference testing; questionnaire evaluation.

4310 Regression Analysis (3) Linear regression and correlation, multiple regression, stepwise methods, polynomial regression, use of dummy variables. Use of standard regression computer programs. Elementary theory and applications.

4410 Design of Experiments (3) Principles and procedures for experimental design. Randomization, choice of number and number of experimental units, utilization of blocking arrangements. Interpretation of experimental data.

4415 Sampling Techniques and Theory (3) Procedures used in probability sampling for a variety of arrangements of statistical universes and development of estimators and standard errors associated with sampling schemes. Some properties of estimators. Determination of sample size. Not available for credit to students with credit for 3410.

4750 Statistical Problems in Business (3) Case study course of statistical problems in variety of business areas. Prereq: 15 hrs in statistics and consent of instructor.

GRADUATE

Prerequisites for a major: Mathematics 2840-50, 560, Statistics 3450 or equivalent.

5002 Non-Thesis Graduation Completion (3-15)

5050-60-70 Statistical Analysis for the Behavioral Sciences (3, 3, 3)

5110 Introduction to Probability Theory (3)

5120-30 Theory of Statistical Inference (3)

5210 Stochastic Processes (3)

5211 Elementary Statistics (3)

5311 Fundamental Concepts of Probability Theory (3)

5312 Statistical Methods (3)

5420 Intermediate Analysis of Variance (3)

5430 Intermediate Regression Analysis (3)

5610 Special Topics in Statistics (3)

5600 Applied Multivariate Analysis (3)

6070 Factor Analysis (3)

6210 Stochastic Processes II (3)

Interdepartmental Unit

Business Administration (205)

1110 Business Administration (3) Introduction to business. Not open to students with more than 3 credit hrs. of economics.

4430 Business Policy (3) Analysis of business problems and managerial decision making through case study method and written reports. Prereq: Core requirements except business law (see page 84) and senior standing.

4510 Seminar in Small Business Assistance (3) Application of classroom learning to problems of small business in the community. Student is given opportunity to apply business concepts and develop analytical skills. Upon completion of the selected readings relevant to small or minority enterprise, students are assigned a project on basis of interest, ability, and experience. Students work in teams under supervision of a participating professor or under the guidance of the Office of Business Administration. Approval for enrollment must be secured from instructor. May be repeated. Maximum 9 hrs credit.
4990 Institutional and Organizational Research (3)
Design, implementation, and evaluation of cross-disciplinary research on organizational and institutional change. Enrollment requires membership on the Standing Committee on Improvement of Learning and Teaching in the College of Business Administration. Prereq: Recommendation of student's department head and approval of selection board of Standing Committee.

GRADUATE
See page 89 for information on graduate programs.

5310 Business Policy (3)
5410 Business and its Societal Environment (3)
5610 Seminar in Applied Business Analysis (3)
5900 Academic Practicum (3)
8900 Research Methodology (3)

Center for Business and Economic Research

STAFF
D.A. Hake (Director), Research Associate Professor, Ph.D. Tennessee
W.F. Skidmore, Associate Director, M.S. George Washington
K.E. Quindry, Research Professor, Ph.D. Kentucky
W.C. Goolsby, Associate Professor of Finance, Ph.D. Wisconsin
N.O. Alper, Research Assistant Professor, Ph.D. Pittsburgh
R.D. Gustely, Research Assistant Professor, Ph.D. Syracuse
P.A. Price, Research Associate, B.S. Tennessee
N.C. Schoening, Research Associate, M.S. Ohio State
M.B. Lee, Research Assistant, M.B.A. Tennessee
Communication has become increasingly significant in today's complex society. The growth of specialization, the widening gaps among segments of society, and the inescapable nature of world conflict point up the need for a greater understanding of communication processes and for the education of young men and women capable of perceptive understanding of the communications media.

The College of Communications offers programs designed to acquaint students with the nature of communication and to prepare them for professional work in a variety of communications fields. The College is composed of the School of Journalism and the Departments of Advertising and Broadcasting. The curricula of these three academic divisions have a common base of courses beyond which choices will permit the student to develop special interests.

The American Council on Education for Journalism has accredited the News-Editorial and the Advertising programs. The College is a member of the American Association of Schools and Departments of Journalism and the Association for Professional Broadcasting Education.

**Admission Requirements**

Admission requirements are stated on page 16. Communications majors must demonstrate ability to use a typewriter proficiently before beginning their professional courses at the 2000 level.

Students transferring into the College, either from another institution or another college in The University of Tennessee, must have at least a 2.0 average. Majors must complete English 1510-20 with a minimum grade of C in each course before enrolling in any 2000-level (or higher) course in the College.

Majors will not be admitted to upper-division (3000 and 4000) courses in the College unless they have an average of at least 2.3 in lower-division courses in the College. By major these courses include:

- Advertising—Communications 1110, Journalism 2215, Advertising 3000; Broadcasting—Communications 1110, Journalism 2215, Broadcasting 2750, Advertising 3000; Journalism—Communications 1110, Journalism, 2215-20-30.

**Curriculum**

The College curriculum offers academic majors in advertising, broadcasting, and journalism. Through core introductory courses, students receive a basic view of the nature of communications.

The freedom of electives provided within the programs permits students to develop specialized interests in a variety of fields. In consultation with an adviser, they may plan individual programs leading to newspaper, magazine, radio, television, public relations, or advertising work. They may prepare for careers in agricultural or industrial journalism. They may select related courses to develop a specialty in writing news of science, government, and business. Others may elect courses to prepare themselves as writers on foods, fashions, and home interests, or they may combine training in communications with work in secretarial science.

Students in other divisions of the University may take certain courses for training in effective communication or for an understanding of the social role of the mass media.

Students who have completed the basic courses in the College may earn three quarter hours of practicum credit. Approval of the adviser and the departmental chairman must be obtained before such work is begun.

**Upper Division**

Permission of instructor is prerequisite for all 3000 and 4000 level courses, with the exception of Advertising 3000, in the College of Communications.

**Satisfactory/No Credit Option**

The purpose of this option is to encourage students to venture beyond those courses in which they usually do well and, motivated by their own intellectual curiosity, to explore subject matter in which performance may be somewhat less outstanding than work in preferred subject fields.

This option applies only to general elective courses. No course that is a part of the specific requirements of the College of Communications or the student's major department can be taken under this option. For example: social science, humanities, and speech electives required by the various departments cannot be taken under this option.

Courses earning a "satisfactory" grade will count as hours for graduation but not for calculating the grade point average. A student who wishes to take a S/NC course must indicate this at the time of registration. Under no circumstances may the student change from S/NC to regular credit or from regular credit to S/NC after the deadline for adding courses.

**Course Load**

The maximum number of hours which can be taken by an undergraduate without special permission is 19 hours. Permission to take 20 or more hours must be obtained from either the dean or assistant dean of the College.
Cooperative Program
The College, in cooperation with the University-wide Undergraduate Cooperative Education Program, has developed a cooperative program with the media, advertising and public relations agencies, and the communications departments of business organizations where interested students might combine their education with a productive work experience. At present, only a limited number of such opportunities are available. Although other arrangements can be made, a student will enter the program only after completing one or two quarters at the University. A student will alternate with another student, with one working full-time for the employer for one quarter while the other person is in school, etc. The typical program is arranged for a five-year period, with the student spending the final three quarters of the senior year on campus.

The Cooperative Program gives the student an opportunity to gain practical experience, develops a sense of responsibility and cooperation, creates greater interest and incentive in academic studies, provides part of the expenses, and may lead to permanent employment after graduation.

Information concerning this program may be obtained by writing to the Undergraduate Cooperative Education Program, Division of Continuing Education, 415 Communications and Extension Building, The University of Tennessee, Knoxville, Tennessee 37916.

The Edward J. Meeman Distinguished Professorship
As a result of a $200,000 grant to the School of Journalism by the Edward J. Meeman Foundation, outstanding journalists and journalism educators are brought to the campus as distinguished professors.

Turner Cattlede, former executive editor of The New York Times, and John Hohenberg, longtime administrator of the Pulitzer Prizes and outstanding teacher at the Columbia University Graduate School of Journalism, have held this distinguished professorship.

Equipment and Facilities
The Communications and Extension Building provides extensive facilities for communications instruction. The College has laboratories with special equipment for instruction in writing, editing, photography, advertising, and broadcasting. In addition, advanced students gain experience through summer internships or through the University’s general program of publishing and broadcasting. The Office of Public Relations, campus publications such as the Vol State, and the University radio station provide practice for communications majors. The Tennessee Association of Broadcasters, Tennessee Press Association, and Tennessee High School Press Association, all centered at the University, present opportunities for special work and study.

Requirements for Graduation
The Bachelor of Science in Communications is awarded to majors who complete a program of 194 hours prescribed under departmental requirements listed below. At least 140 of these hours must be taken in courses other than the major and related communications fields. At least 27 of the hours in the major must be taken at The University of Tennessee, Knoxville. Normally, no more than 22 transfer credits in the major will be applied to the 194 hours. Journalism 2210 is the only course in the College that may be taken by correspondence.

NOTE: Students are advised to consult the University’s degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

Undergraduate Curriculum

Advertising

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Natural science electives</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>History 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Foreign language electives</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Sociology 1510</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Communications 1110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Economics 2110-20</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sociology 1520</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Speech 2310</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Economics 2310</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>English literature electives</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Mathematics 1540-50</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Psychology 2500, 2530</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Journalism 2215</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Art 2516</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Junior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Science 2510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Anthropology 3100</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Advertising 3000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Advertising 3630</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Advertising 4000</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Journalism 3310</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Psychology 3150</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>*Professional courses</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>General electives</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Marketing 4210</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL: 194 hours

1. Students lacking a high school credit of American history must also take nine quarter hours of American history. These hours may be applied to the general electives requirement.
2. Not required of students with 2 years of high school foreign language credit. They may substitute 3 hours of liberal arts electives, from the following: Anthropology 2510-20; Geography 1010-20; or 2110-20; Mathematics 1540-50 or 1640-50 (or equivalent honors courses); Philosophy 1510-20; 2510-20, 3111; 21-31-141; Psychology 2500-30-40 (or equivalent honors courses); Religious Studies 2610-20; or they may elect to fulfill the requirement with a foreign language.
3. The 8 hours of literature may be selected from English 4510-20, 4520-40, 2560-70-80. Upper-division literature courses may be substituted by students with a B+ or better in freshman English and the University.
4. Professional courses may be selected from the following: Advertising 3740, 4510-20-30, 5310, 5350; Journalism 3130, 3410, 3710, 3730, 3750, 3910, 3940, 4110, 4240, 4950, 4990; Broadcasting 2750, 3390, 4020, 4670, 4680; Accounting 2110-20; Marketing 4140, 4230, 4310, 4500, 4510, 4520, 4530; Speech 3011; Office Administration 3410, 4320.
5. Social science courses include geography, economics, political science, psychology, history, sociology, anthropology, classics (except grammar and composition courses), and upper-division philosophy and religious studies courses. Humanities electives include English, speech and theatre, music (except applied music), art, language culture courses (not grammar and composition) and upper-division philosophy and religious studies.

Broadcasting

LOWER-DIVISION CURRICULUM
(Required of all broadcasting majors)

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Natural science electives</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>History 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Foreign language electives</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Sociology 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Communications 1110</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English literature electives</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Political science electives</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Film course electives</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Broadcasting 2750</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Journalism 2215</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Advertising 3000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Psychology 2500, and 2530 or 2540</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

NEWS AND PUBLIC AFFAIRS SEQUENCE

<table>
<thead>
<tr>
<th>Junior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcasting 3610, 3670</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Broadcasting 4020 or 4021, 4030</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Journalism 2220, 2400</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Geography 3610</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Music 1210</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>*Social science and humanities electives</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>*General electives</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadcasting 4010, 4610, 4670</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Journalism 4410</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Communications electives</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Speech electives</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>*Social science or science electives</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>*General electives</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

TOTAL: 194 hours
**MANAGEMENT SEQUENCE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broadcasting 3650, 3360</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Broadcasting 3670</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Broadcasting 4020 or 4021, 4030</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Journalism 3110, 3410</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advertising 4360</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Marketing 3110-20</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Industrial Management 310</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Accounting 2110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><em>General electives.</em></td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

**JUNIOR**

- Broadcasting 4670, 4860: 6
- Journalism 4140: 3
- Business Law 4110: 3
- *Communications electives.* 12
- *Speech electives.* 8
- *Upper-division social science and/or business electives.* 14

**TOTAL:** 194 hours

---

**PRODUCTION/PERFORMANCE SEQUENCE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broadcasting 3650, 3670</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Broadcasting 4030</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Journalism 3110, 3410</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Music 1210</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Theatre 2111</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Theatre 2221</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><em>Social science and/or speech/theatre electives.</em> 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>General electives.</em></td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

**SENIOR**

- Broadcasting 4010, 4040: 6
- Broadcasting 4201, 4670: 6
- Journalism 3910, 4140: 4
- Communications electives: 9
- Speech and Theatre 2031 and 3651 or 3671 or 4661: 8
- *Upper-division social science and/or humanities electives.* 8
- *General electives.* 3

**TOTAL:** 194 hours

---

**JOURNALISM**

**LOWER-DIVISION CURRICULUM**

(Required of all journalism majors)

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><em>History 1510-20.</em></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><em>Natural science electives.</em></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td><em>Foreign language electives.</em></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Sociology 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Communications 1110</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Sophomore**

- *English literature electives.* 8
- *Foreign language, mathematics, or science electives.* 8
- Economics 2110-20-30: 9
- *Political science electives.* 8
- Speech 2211: 4
- Journalism 2215-20-30: 11

**NEWS-EDITORIAL SEQUENCE**

<table>
<thead>
<tr>
<th>Junior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertising 3000</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Journalism 3110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Journalism 3410</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Broadcasting 3610</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><em>Social science or humanities electives.</em> 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journalism from Option A or B</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td><em>Liberal arts electives.</em></td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>

**SENIOR**

- Journalism 4410: 3
- Journalism 4200-20-30: 3
- Journalism 4990: 3
- Journalism from Option A or B: 9
- *Social science or science electives.* 16
- *General electives.* 15

**TOTAL:** 194 hours

---

| Option A: For students primarily interested in writing. Required: | | |
|---------------------------------------------------------------| | |
| Journalism 3120, 3210, 4310. Electives: | | |
| Journalism 3510-20-30, 3560, 3910, 4130. | | |

| Option B: For students primarily interested in editing. Required: | | |
|---------------------------------------------------------------| | |
| Journalism 3310, 3220, 4420. Electives: | | |
| Journalism 3510-20-30, 3810, 3910, 4130. | | |

| Option C: Any approved combination of Options A and B (including the required courses of one group) for students interested in both writing and editing. | | |
|------------------------------------------------------------------| | |
| Journalism 3510-20-30, 3810, 3910, 4130. | | |

**PUBLIC RELATIONS SEQUENCE**

<table>
<thead>
<tr>
<th>Junior</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journalism 3710-20, 3810</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Journalism 3120 and 3310 or 3910</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Advertising 3200-30-30</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Sociology 3010</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Psychology 2500 and 4210</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Speech 3011</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><em>Courses from specialization area.</em> 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>General elective.</em> 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Senior**

- Journalism 4510-20-30 or 4990
- *Advertising 4360 or 4470.* 3
- Journalism 3410, 3730, 4410: 9
- Broadcasting 3650 and 3670: 6
- Political Science 4535-36: 8
- Marketing 4520: 3
- *Courses from specialization area.* 6
- *General electives.* 10

**TOTAL:** 194 hours

---

**Specialization Area Options:**

a) Urban or Governmental Public Relations Required: Sociology 3420, Political Science 4740-50; Electives: Sociology 4330, 4530, 4930; Political Science 3555, 3666, 4610-20-30; Psychology 4900; Office Administration 4310-20.

b) Educational Public Relations Required: Sociology 4410; Educ. C & I 3020, 4750; Electives: Sociology 4530; Educ. C & I 4530; Psychology 5340; Office Administration 4310-20.

---

**c) Industrial or Corporate Public Relations**

Required: Industrial Management 3010; Marketing 4140-50; Electives: Speech 3021, 5440; Business Law 4110-20; Economics 3410-20; Educ. C & I 4750; Office Administration 4310-20.

---

**d) Other Areas**

Another area of specialization, and courses to develop it, may be selected with the adviser's help and approval.

---

**Departments of Instruction**

**Communications (259)**

Professors: J.B. Haskins (Chairman of Research), Ph.D. Minnesota; D.G. Hileman, Ph.D. Illinois; D.W. Holt, Ph.D. Northwestern; B.K. Leiter, Ph.D. Southern Illinois; J.A. Lynn, Ph.D. Southern Illinois.

Associate Professors: G.A. Everett, Ph.D. Iowa; H.H. Howard, Ph.D. Ohio.

**110 Introduction to Communications**

Nature, functions, responsibilities of mass communications media and agencies. Survey of newspapers, magazines, radio, television, film advertising, public relations, press associations, and specialized publications. Open to majors who have had no communications courses and to nonmajors below junior level.

**GRADUATE**

**5000 Thesis**

**5002 Non-Thesis Graduation Completion**

**5100 Introduction to Graduate Studies (3)**

**5120 Research Methods (3)**

**5130 Advanced Principles of Mass Communications (3)**

**5140 Communications Theory (3)**

**5150 Seminar in Communications Issues (3)**
Advertising (012)

Professors: R. Joel (Head), M.A. Wiacons; D.G. Hileman, Ph.D. Illinois; J.R. Lynn, Ph.D. Southern Illinois.

Associate Professors: A.D. Fletcher, Ph.D. Illinois; S.K. Zeigler, Ph.D. Michigan State.


3630 Advertising Copy and Layout (4) Ideas and their translation into persuasive words and pictures. Principles and techniques of copy and layouts. Lecture and labs. Prereq: 3000 or Marketing 4150.

3650 Basic Advertising Research (3) Use of research in solving media, creative, and managerial problems in advertising. Introduction to secondary information sources and primary research methodology. Prereq: 3000 or Marketing 4150.

3740 Retail Advertising and Promotion (3) Planning of retail advertising and promotion; practice in retail copy and layout; selecting media; research. Prereq: 3000 or Marketing 4150.


4360 Advertising Media (3) Media markets and audiences. Evaluation of media in relationship to communication needs of advertisers. Prereq: 3000 or Marketing 4150.


4510-20-30 Practicum (1, 1, 1) Prereq: 3000. S/NC.

GRADUATE

5310-20-30 Advertising Studies and Practices (3, 3, 3)

5350 Advanced Advertising Research (3)

5510-20-30 Creative Projects (3, 3, 3)

5970 Independent Study (3)

Broadcasting (202)

Professor: D.W. Holt (Head), Ph.D. Northwestern.

Associate Professors: H.H. Howard, Ph.D. Ohio; I.G. Simpson, M.S. Syracuse.

Assistant Professors: C.A. Lester, M.A. Tennessee, Certificate NBC Television Institute, Northwestern; R.A. Shirley, M.A. Tennessee; M.K. Sidel, Ph.D. Northwestern.

2750 Introduction to Broadcasting (3) Theory, history, regulation, and economic aspects of broadcasting industry and its functions in society.

3360 Television and Radio Advertising (3) Principles of successful radio-television advertising; emphasis on media research, rate structure, programing, creativity; television commercials.

3610 Radio-Television News (3) Theory and technique of writing news and features for broadcast media. Editing and rewriting press association dispatches, gathering local news, recording interviews, and preparing newscasts and feature programs. 2 hrs. and 1 lab. Prereq: Journalism 2220 or consent of instructor.

3650 Radio-Television Writing (3) Theory and technique of writing broadcasting scripts except news and dramatic specials. Special events, interviews, musical scripts, radio talks, documentaries, and promotion material.

3870 Television Film News (3) Theory and techniques of making films for television. Film processing and editing techniques. Emphasis on news and documentary broadcasting. 2 hrs. and 1 lab.

4100 Speech for Broadcasting (3) Fundamental broadcast conditions affecting the announcer: pronunciation and oral interpretation of general American speech; Spanish, Italian, German and French pronunciation. Prereq: Strongly recommended but not mandatory, Speech 2310, 3000.

4020 Radio Production (3) Study of radio productions, past and present. Familiarization with production tools and techniques. Group and individual production activities. Prereq: 2750 or consent of instructor.

4021 Advanced Radio Production (3) Application of the theories, techniques, and tools of radio production to create programming of a professional level of sophistication and quality. Prereq: 4020 or consent of instructor.

4030 Television Production (3) Overview of elements of television production: cameras, sound, lighting, film videotape recording, optics, and studio control centers. Presented with the layman and professional broadcast student in mind. Prereq: 4020 or consent of instructor.

4040 Advanced Television Production (3) A semi-independent course in program origination, producing, directing, and performing with orientation to the professional broadcast student. Prereq: 4040 or consent of instructor.

4510-20-30 Practicum (1, 1, 1) Prereq: Consent of instructor. S/NC.

4610 Broadcast News Operation (3) Theory and practice in covering local news and public affairs events for radio and television. Gathering and production of news broadcasts, using the format of broadcast news person. 2 hrs. and 1 lab. Prereq: 3610 and 3670 or permission of instructor.

4670 Radio-Television Management (3) Business policies and practices of networks and stations. Departmental functions, cost and income figures, sales techniques, promotion, advertising agencies, and governmental regulations. Lectures by commercial broadcasters. Prereq: 2750 or consent of instructor.

4680 Broadcast Sales Management (3) Problems and practices of television and radio sales, case studies in sales development, pricing, promotion, and other areas of sales management. Prereq: 2750 or consent of instructor.

GRADUATE

5410 Educational Broadcasting (3)

5510-20-30 Creative Projects (3, 3, 3)

5610 Public Affairs Broadcasting (3)

5620 Broadcast Law and Regulations (3)

5630 Broadcast Documentary Writing (3)

5650 Radio-Television Program Development (3)

5970 Independent Study (3)

School of Journalism (594)

Professors: D.C. Cade (Director), Ph.D. Iowa; J.B. Haskins, Ph.D. Minnesota; J.E. Kalshoven, Emeritus; M.A. Louisiana State; J.M. Lain (Emeritus), M.A. Iowa; B.K. Leiter, Ph.D. Southern Illinois; W.C. Tucker (Emeritus), M.A. West Virginia.

Associate Professors: J.T. Hadukem, M.S. Tennessee; J.A. Crook, Ph.D. Iowa State; G.A. Everett, Ph.D. Iowa; S.L. Puetz, M.S. Teachers College, Freehold; D.D. Stanford; F.B. Thornburg, Jr., M.A. Florida.


Instructor: A.R. Paddon, M.S. Columbia.

2210 Writing for Mass Media (3) Principles and practice of writing for major types of mass communication media. Not available to majors in the College of Communications.

2215 Basic Writing (4) Information gathering and writing techniques with deadline pressure. Observation, interviewing, speech reporting for print and broadcast mass media. 3 hrs and 1 lab. Prereq: Communications 1110 and typing proficiency of 35 wpm.

2220 Reporting (4) Methods of gathering and writing facts for mass media. Emphasis on news and news features. 3 hrs and 1 lab. Prereq: 2210.

2230 Editing for Mass Media (3) Copyreading methods and practice in editing types of copy for print and broadcast media. 2 hrs and 1 lab. Prereq: 2220.

3110 Communications History (3) Development of newspapers, magazines, and broadcasting in America. Biographies of major journalists.

3120 Writing Feature Articles (3) Instruction and practice in writing feature articles for newspapers, trade journals, and magazines. Market analysis, and free-lance selling. Prereq: 2210 or consent of instructor.

3210 Advanced Reporting (3) Gathering and writing news in depth on current issues and concerns under deadline pressure. Use of VDT terminals. Prereq: 2230.

3220 News Editing and Display (3) Instruction and practice in making up newspapers and magazines. Advanced work in copyreading, rewriting, news editing, and headlining. Picture editing. 1 hr and 2 labs. Prereq: 2230.

3310 Graphic Arts in Journalism (3) Printing equipment and production methods. Typography, letterpress, offset, gravure, engraving, stereotype, proofreading, copyfitting, and current developments in mechanical processes.

3410 Communications Law (3) Statutory law and judicial precedents affecting mass communications media. Libel, contempt of court, invasion of privacy, copyright. Broadcasting, advertising, and postal regulations.
3510-20-30 Practicum in Journalism, I, II, III (1, 1, 1)
Supervised experience in newspapering and writing. Prereq: 2220.

3560 Investigative and Specialized Reporting (3)
Investigative and interpretive reporting of complex or specialized subjects to place news in perspective or to clarify situations. Emphasis on writing for publication. Prereq: 2220.

3710 Public Relations (3) Theories and principles of public relations. Overview of PR as a management tool of business, government, institutions, and organizations.

3720 Public Relations: Advanced (3) Publicity organization, techniques and tools. Preparation of communications materials to gain support from target publics. Prereq: 3710.

3730 Public Relations Cases (3) Case studies and application of public relations principles to problems in business and industry, government, institutions, organizations, trades and professions. Prereq: 3720.

3810 Specialized Publications (3) Business and industrial publications. Individual projects on newspapers and magazines in fields of agriculture, business and industry, engineering, home economics. Prereq: 2230 or consent of instructor.

3910 Basic Photography (3) Principles, policies, and procedures of using pictures as an editorial medium. Press and reflex cameras and flash photography. Darkroom techniques in developing, enlarging, printing. 1 hr and 2 labs. Prereq: Consent of instructor.

4130 Editorial Writing (3) Analysis of editorial policies, practices, pages. Writing of editorials, columns, paragraphs, and interpretative articles. Prereq: Senior standing.

4310 Reporting Public Affairs (3) Reporting news of courts, politics, government, finance, labor, and social agencies. 2 hrs and 1 lab. Prereq: 2230 and senior standing.


4420 Newspaper Management (3) Daily and weekly business operations. Developments in newspaper management.

4510-20-30 Practicum in Journalism, IV, V, VI (1, 1, 1) Supervised experience in news writing and editing. Prereq: Senior standing or consent of instructor.

4810 Journalism in the High School (3) Functions and methods of publications. Staff organization, writing and editing techniques, editorial problems, and business management.

4910 News and Feature Photography (3) Advanced principles and methods in black-and-white photography. Emphasis on news and feature photographs and picture stories. Prereq: 3910 or permission of instructor.

4950 International Communications (3) Communication of news and opinion among nations and under varying types of political and economic systems: world news organizations; the press as a factor in international affairs; barriers to the flow of information; comparison of world press systems.

4990 Problems in Research (3) Independent work course for seniors. Intensive study of some phase of the major field; investigative procedures, report writing.

GRADUATE

5210 Government and the Press (3)

5250 Public Opinion and Mass Media (3)

5510-20-30 Writing and Editing Projects (3, 3, 3)

5560 Magazine Article Writing (3)

5710 Studies in Public Relations Communications (3)

5810 Magazine Editing and Production (3)

5950 Communications and International Development (3)

5970 Independent Study (3)
Division of Continuing Education, Knoxville

Joseph P Goddard, Dean
William D. Barton, Associate Dean

The Division of Continuing Education at Knoxville extends the academic programs and services for all colleges and schools on campus to the people in the area served by The University of Tennessee, Knoxville. In addition, the Division cooperates with all other campuses of The University of Tennessee in extending academic programs and services to all citizens of the state.

Conferences and Institutes
Director:
F.A. Thurman, B.A. Tennessee.
Associate Director:
R.H. Rader, M.S. Tennessee.
Assistant Director:

The purpose of the continuing education conference program is to bring together under University auspices groups of participants and qualified resource people to share new information and ideas, to develop new insights, to cope with current problems, or to impart new work performance skills. Types of persons served are practically unlimited. This includes all disciplines: the professional, technical, managerial, and service individuals from the professions, industry, government, education, and commerce.

Conferences, institutes, short courses and workshops from one day to two weeks or more in length are planned and administered by this department and the related academic departments in cooperation with business, industrial, and professional organizations.

Each program is specifically designed for the needs of the group being served and may be held on the University campus or at any other location where adequate facilities and sufficient interest exist.

Workshops and Off-Campus Programs
Director:
Assistant Directors:

This department conducts undergraduate and graduate courses in many locations away from the Knoxville campus. The courses are scheduled in response to requests and identifiable needs of adult part-time students who live some distance from the UTK campus and who take part or all their courses at off-campus locations.

All course offerings and instructors are approved by the appropriate academic department heads and the credit awarded is resident credit. The majority of the colleges and their academic departments cooperate in the off-campus program.

Credit workshops are another phase of continuing education designed to meet the student’s changing needs. They are coordinated through the various academic units of the University and provide students the opportunity to participate in short periods of intensive study. As a result, students may earn college credit within a shorter time frame than the traditional quarter system.

Workshops also offer flexibility of timing, location and content. Summer workshops are particularly popular with teachers and school administrators. Although most workshops are held on the UTK campus, geography is not a limiting factor. In the past, workshops have been held throughout the state and in the United Kingdom.

University Evening School (Knoxville and Oak Ridge)
Director:
Assistant Director:
J.C. Sekula, Ph.D. Tennessee.
Coordinator, Student Services:
L.U. Jurand-Salter, M.S. Tennessee.
Assistant Professors (full-time only):
G.M. Fisher, M.S. Tennessee; C.B. Mamantov, B.S. Louisiana State.
Instructor (full-time only):
A.J. MacCabe, M.S. SUNY at Albany.

The University Evening School with the cooperation of academic colleges and departments administers credit classes and supports activities for those students attending in the late afternoon and evening. Programs and services are offered enabling working adults to pursue their educational interests and goals.

Undergraduate Degree Programs
The following degrees are available for evening students:
College of Business Administration
Bachelor of Science in Business Administration with a major in Accounting, General Business, Economics, or Office Administration;
College of Engineering
Bachelor of Science in Engineering Science;
College of Liberal Arts
Bachelor of Arts with a major in Anthropology, Economics, History, Political Science, Psychology, or Sociology.

Graduate Degree Programs
Some departments within the Colleges of Business Administration, Education, and Engineering offer all courses required
for an advanced degree during the evening. For a specific major, consult the appropriate department. In the College of Business Administration, all courses required for the MBA degree with a concentration in industrial management are offered during the evening.

Nursing Education Program
The Nursing Education Program is conducted through contractual agreement with three area Knoxville hospitals. The diploma program is run through each hospital's independent School of Nursing. Academic courses are provided by the University Evening School in support of this program.

Oak Ridge Center
The University Evening School operates a center in Oak Ridge, Tennessee, providing undergraduate and graduate courses through the joint cooperation of the Colleges of Business, Education, and Liberal Arts. Information concerning this program is available from the Office of the University Evening School (at Oak Ridge), Providence Road, Oak Ridge, Tennessee 37830.

Student Services
A comprehensive program of services is provided by the Evening School for the adult part-time student.

REGISTRATION
Quarterly registration by mail or on campus is offered as a convenience for former Evening School students.

ADVISING
An advising-counseling program is available for the benefit of all evening students who need assistance with academic and/or personal matters. This program can accommodate students during regular daytime hours (8:30-5:30) and in the evenings by appointment. In addition, advisers from the various colleges are on hand for academic consultation during evening preregistration days. A full-time veteran adviser assists evening students, who receive educational benefits under the G.I. Bill, with their academic planning.

FINANCIAL AID
Evening School students who encounter difficulty in pursuing academic goals because of financial restrictions may be eligible for assistance through the Evening School Scholarship Fund. In addition, interested students may obtain applications for the Basic Educational Opportunity Grant Program in the Evening School Office.

Elderly and Disabled Persons
Recent statewide legislation gives Tennessee citizens who are 60 years of age or older, or those who are totally disabled, the opportunity to attend courses at the University at no charge on an audit, space available basis. Legal verification of either of these conditions is required for enrollment. Students who are 65 or over, or are totally disabled and who desire to receive UT credit for their courses, may pay a reduced charge of $5 per credit hour to a maximum of $50 for a full-time load. Registration for day and evening classes is handled by the Evening School.

For additional information concerning any of these programs or services please contact the University Evening School, 451 Communications & University Extension Building.

Non-Credit Programs
Director:
Assistant Director:

The department conducts and coordinates various non-credit courses offered on campus and off campus. It administers non-credit programs offered by the department and other courses offered in cooperation with other academic departments and service departments of the University. These non-credit courses provide opportunities for college remedial training, in-service training, upgrading of physical and some technical skills, recurrency training, and leisure type educational courses for the Knoxville and surrounding community.

Certain non-credit courses are approved for Veterans' training. For specific information, contact the Department of Non-Credit Programs.

Continuing Education Units (CEUs) are awarded to students satisfactorily completing courses described in the non-credit quarterly class schedule. A Continuing Education Unit is defined by the Southern Association of Colleges and Schools as "ten contact hours of participation in an organized continuing education experience under responsible sponsorship, capable direction and qualified instruction." A permanent record of CEUs is maintained by the Division of Continuing Education, Department of Non-Credit Programs. A transcript of all CEUs earned at The University of Tennessee may be obtained upon written request.
College of Education

William H. Coffield, Dean
E. Dale Doak, Associate Dean for Undergraduate Programs
Helen B. Watson, Associate Dean for Graduate Studies

Teacher education is historically a major function of The University of Tennessee. Beginning in 1903, when the first courses for teachers were offered, the University has increasingly fulfilled its responsibility to provide schools with competent teachers and service personnel and to improve the teaching profession by continually upgrading its membership. The College of Education was established in 1926, and all teacher preparation programs at The University of Tennessee are now coordinated within its seven departments and its School of Health, Physical Education, and Recreation.

The College of Education holds membership in the American Association of Colleges for Teacher Education, the Southern Association of Colleges and Schools, and the Tennessee State Department of Education.

The faculty of the College of Education is committed to performing three major functions: (1) to provide professional preparation for teachers, administrators, and school service personnel at undergraduate and graduate levels; (2) to collaborate with school personnel, educational agencies, professional groups, and others interested in the evaluation and improvement of educational opportunities, programs, and services; and (3) to promote and conduct experimental and research studies in education.

The teacher preparation programs represent utilization of University-wide resources and cooperation of all appropriate units. Certain requirements are of basic importance: a broad cultural background in the arts and sciences (general education), mastery of professional knowledge and skills, and thorough preparation in specific teaching fields. Through a carefully planned program of combined academic and direct experiences, the prospective teacher acquires a depth and breadth of knowledge and understanding superior to that of the typical college graduate—superior in cultural and citizenship appreciation as well as in professional and scholarly accomplishment.

The Claxton Education Building contains many modern and functional facilities for the professional training of teachers. Classrooms, laboratories, seminar rooms, faculty and administrative offices, the instructional materials center, the Bureau of Educational Research and Service, the School Planning Laboratory, and facilities for special activities such as observation and experimentation are located in this air-conditioned building.

Special Services

Bureau of Educational Research and Service. Four major types of activities—research, development, educational services, and publications—are channeled through the Bureau of Educational Research and Service (BERS), located in Claxton Education Building. The research activities involve developing research proposals, conducting research, and assisting others in development of research proposals in the College of Education. Developmental activities relate to change efforts in curricular content and instructional methodology. Educational services include a wide list of activities such as inservice educational programs, consultant services, educational services and administrative training programs. Official publications of the College of Education are developed through the Bureau. A limited number of graduate student assistantships are available. The Educational Opportunities Planning Center, the Research Coordinating Unit, and the School Planning Laboratory are integral parts of the Bureau of Educational Research and Service.

EDUCATIONAL OPPORTUNITIES PLANNING CENTER

The Educational Opportunities Planning Center (EOPC) works with school districts in the Tennessee-Kentucky area to help meet their desegregation-related needs by assisting with needs assessment and by helping develop plans to meet the needs. A new component was added during the 1975-76 year to deal with sex discrimination in the school systems of Tennessee and Kentucky. Staff follow through with inservice training of local district personnel, with such training directed toward solutions of curricular, human relations, and other types of problems created or compounded by school desegregation and sex discrimination. On-site evaluation of locally installed practices and continuing cooperative evaluation of the progress of local programs are additional major efforts. This program is funded by the U.S. Office of Education.

SCHOOL PLANNING LABORATORY

The School Planning Laboratory (SPL), located in Claxton Education Building, assists school systems and colleges in the state and in the southeastern region with problems arising from renovation of existing facilities and planning of new facilities. Course work peculiar to the field of school planning is offered through the Department of Educational Administration and Supervision. Graduate student assistantships are available each year through the Laboratory.

The Reading Center. A commitment to the concept of teaching, research, and service as the role of the University involves the Reading Center in a variety of activities. An extensive program of diagnostic and remedial reading services to children is closely tied to graduate course work and practicums in reading
methodology. Effective reading and study classes are offered for the benefit of the University student body. Service functions of the Center include extensive inservice and consultative services for public school reading program improvement. The Center also maintains a remedial reading materials center and assists in the coordination of an ERIC/CRIER Regional Information Center in reading. For further information write the Director, Reading Center, 1912 Terrace Avenue, Knoxville, Tennessee 37916.

Teacher Placement Service. The College of Education, cooperating with the University Placement Service, assists qualified students and alumni in securing positions. School and college administrators are cordially invited to make full use of these services in their efforts to employ competent personnel.

General Information

Admission to the College

For transfer into the College of Education after completion of the freshman year, a minimum grade average of 2.0 (C) is required.

Course Load—Permission for more than 19 hours in a quarter must be obtained from the Associate Dean for Undergraduate Programs. A normal course load in the College is 16-18 hours.

Admission to Teacher Education

All students who desire teacher certification, whether enrolled in the College of Education or other colleges, are required to apply for admission to the Teacher Education Program. Formal application for admission to the Teacher Education Program should be made during the second or third quarter of the sophomore year. Application forms may be obtained in the Office of the Associate Dean for Undergraduate Programs on the day of the test. Special note: Students must be admitted to the Teacher Education Program at least one quarter before taking 3010, 3030 and certain other courses in the College.

Procedure for applying for admission to the Teacher Education Program are: (1) Obtain an application form in the dean’s office during registration time at the beginning of the quarter. Speech and hearing tests are usually administered on registration days. (2) Proceed to the Speech and Hearing Center (at the corner of Yale and Stadium Drive) on one of the specified dates between the hours of 9 a.m. and 4 p.m. and complete the speech and hearing tests. Leave the application form (scan sheet) with the test administrator.

Undergraduate Programs sometime during the quarter. Students not qualifying for acceptance will also be informed of their status by the academic advisor’s consent and confirmation of the grade point average is obtained by the dean’s office and does not entail action by the student. If a student takes the speech and hearing test and does not have the required grade point average at the time, but subsequently raises it, it will be necessary to return to the associate dean’s office and request for admission to the Teacher Education Program. Students will not be admitted automatically upon raising their grade point average to the required level.

The following criteria must be met by all students applying for admission to teacher education:

Scholastic Achievement—a cumulative grade point average of 2.2 (a 2.0 GPA if transferred to University prior to fall quarter, 1966).

Physical Fitness—satisfactory ratings in general health, speech, hearing, and sight.

Personal-Social-Ethical Fitness for Teaching—satisfactory ratings from faculty advisers.

Admission to Student Teaching

Application for student teaching must be filed no later than January 1 of the academic year preceding the actual experience. For example, if a student plans to student teach during the 1979-80 academic year application must be made by January 1, 1979. Application forms may be obtained in the Office of the Director of Student Teaching, 212 Claxton Education Building.

Students majoring in special education—speech and hearing, and in special education—hearing impaired, are required to make application for clinical practice or student teaching in the Department of Special Education and Rehabilitation and in the Office of the Director of Student Teaching. Before admission to the student teaching quarter, the student must have fulfilled the following requirements:

1. Full admission to the Teacher Education Program no later than the quarter preceding student teaching (i.e., all conditions relative to admission satisfied).

2. Completion of the professional core courses (Education 3010, 3020, 3030 and Educational Psychology 2430 or 3810).

3. Completion of at least 90 percent of course work in the endorsement area(s).

4. Completion of the special methods courses at The University of Tennessee.

5. Completion of the Student Teaching Seminar and the September experience (non-credit).

6. Senior standing and a minimum grade point average of 2.0 on work completed at The University of Tennessee.

The fifteen-hour student teaching experience is evaluated on a satisfactory–unsatisfactory basis and the hours are included in the University policy requiring a 2.0 in the last 45 hours work.

The most important criterion in placing student teachers in the public schools is the value of the experience for preparing for teaching. The University cannot guarantee the geographic locale desired by the student though effort will be made to follow the student’s wishes. The University maintains student teaching centers in East Tennessee communities some of which are considerable distance from Knoxville. Married students will be placed as near their homes as possible in order to preserve family life.

Substitutions

It is sometimes necessary and advisable for students to substitute other courses for those required in a particular curriculum. This is particularly true of students who transfer to The University of Tennessee College of Education from another college or university. The general test of whether a substitution would be appropriate is “does the course you wish to substitute meet the spirit of the course requirement?” That is “is the content similar or perhaps more appropriate to your needs?” To initiate a substitution request the student should visit with the advisor first. If they agree that the substitution is an appropriate one, the substitution request form should be filed in the Office of the Associate Dean for Undergraduate Programs, Claxton Education Building 212. Approved petitions are forwarded to the Dean of Admissions for further approval, and for filing with the Undergraduate Council.

Recommendation for Certification

The application for a professional teacher’s certificate should be completed early in the final quarter before graduation. Application forms may be obtained in the Registrar’s Office, 215 Student Services Building and 212 Claxton Education Building.

Tennessee state regulations stipulate that the application for a professional certificate must be recommended by the teacher-training institution. The dean of the College of Education is the official designated to recommend University of Tennessee graduates for teacher certification. To receive this recommendation, the applicant must have fulfilled the following requirements:

1. A minimum cumulative grade point average of 2.0.

2. Satisfactory performance of the student teaching experience.

3. A minimum grade point average of 2.0 in the teaching field.

4. Completion of a methods course in each area of endorsement.

5. Fulfillment of all special recommendations of the Committee on Standards and Admissions.

Graduate Programs

The College of Education, through the Graduate School, offers programs leading to the Master of Science degree, the Master of Education degree, the Master of Arts in College Teaching degree, the
Master of Public Health degree, the Specialist in Education (advanced graduate) degree, the Doctor of Education, and the Doctor of Philosophy degrees. For further information, see the Graduate Catalog.

Undergraduate Curricula

The College offers courses of study leading to the Bachelor of Science in Education and to eligibility for teacher certification in Tennessee and in those states which grant reciprocity privileges to graduates of institutions accredited by the National Council for Accreditation of Teacher Education (NCATE).

A core of studies provides the foundation for specialization in all teacher education curricula. In addition, approved concentrations must be completed in subject fields specifically related to the public school curriculum. A choice is to be made among programs leading to recommendation for certification at one of three levels: elementary (kindergarten-9), secondary (grades 7-12), or special subjects in grades 1-12.

Courses in library science are available to students who are interested in beginning positions in any library or in preparation for further graduate study in professional librarianship. The minimum requirements for full-time librarianship in any size school in Tennessee can be met through completion of the basic library service courses (310, 3520, 3530, 4140, 4150, 4270, 4330, 4750).

Endorsement as a librarian requires 27 quarter hours in library science. At the undergraduate level, only a minor in library science is available. Students in the College will select an appropriate curriculum from those outlined under the undergraduate curriculum section.

Students interested in this program should consult with a member of the faculty of the Graduate School of Library and Information Science.

Students should work closely with faculty advisers in planning programs of study. The chosen curriculum must be followed as outlined to assure graduation and certification, and any proposed substitution for a required course should be filed for approval before the end of the junior year.

NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

I. Curricula for Elementary Teachers

A. Kindergarten through Grade 9

GENERAL EDUCATION .......................... 89 hours

Communications (12 hours)

English 1510-20 (4, 4); Speech 2021 (4) or 2311 (4) or any speech electives.

Health and Physical Education (18 hours)

P.E. 3450 (3), School Health 3610 (3). P.E. and health electives (8 hours) must include minimum of 3 hours in each area.

Humanities (12 hours)

Literature 8 hours; the remaining four hours must be chosen from foreign language (above introductory level), philosophy, religious studies, Art 1815 or 1825, or Music 1210 or 1220.

Mathematics (8 hours)

Mathematics 2110, 2120, 2130.

Natural Science (20 hours)

8 or 12 hours in biological science. Recommended series are Biology 1210, 1220 (1230 or Botany 1110, 1120). 8 or 12 hours in physical science. Recommended series are Physics 1410, 1420, 1430 or Geology 1510-20 or Astronomy 2110, 2120, 2130 or Chemistry 1110, 1120, 1130.

Social Studies (18-20 hours)

History 4 hours—it is recommended that the history core be taken at the sophomore level. Electives (14-16 hours) from anthropology, economics, geography, political science, and sociology. Minimum of 3 areas are required.

B. Nursery School through Grade 3.

GENERAL EDUCATION .......................... 83 hours

Communications (12 hours)

English 1510-20; Speech 2021 or 2311.

Humanities (12 hours)

Literature (4); Music 1210 or 1220 or Art 1815 or 1825; philosophy or religious studies (4).

Natural Sciences (16 hours)

Biological science (in series or combination) (8); physical science (in series or combination) (8).

Mathematics (9 hours)

Mathematics 2110-20-30.

Social Sciences (18 hours)

History (4); Child and Family Studies 4610; Economics 2110; Anthropology 2530 or 3410 or Human Services or Sociology 4320 or 4610; Elective (from anthropology, economics, geography, human services, political science, sociology).

Interdisciplinary Studies in Home Economics (16 hours)

H.E. 1510, 1520, 2510, 3510.

CORE PROFESSIONAL COURSES .................. 9 hours

Educ. C & I (Methods): 3260*, 3270*, 3280*, 3281*, 3350*, 3720*, (18 hours);

SPECIALIZED COURSES ....................... 21 hours

Educational Psychology 3430; Art Education 2100, 2110; Music Education 2100, 3110; Educ. C & I 3510; Special Education 3333.

AREAS OF CONCENTRATION .................... 15-16 hours

One or more areas of specialization are to be chosen from the following:

Art Requirements plus 15-16 hours from art, CED, art education.

Black Studies Courses from at least 3 different fields must be included. See Black Studies for specific course possibilities.

Child Studies Requirements plus 15-16 hours from child development, psychology, educational psychology.

Early Childhood Education (Kindergarten-Grade 3) To include Educ. C&I 4300, 4450, 4451; health elective (3); CFS 3120, 3210; student teaching in kindergarten and grades 1-3.

Foreign Language 16 hours.

Health and Physical Education Requirements plus 15-16 hours from health education, physical education, emotional health, nutrition, zoology.

Humanities Requirements plus 16 hours.

Language Arts Requirements plus 16 hours in English, speech, journalism.

Library and Information Science Requirements plus 15-16 hours. If certification is desired in library service, the student must complete 24 hours in Library and Information Science 3520-30, 4140, 4150, 4270, 4330, 4750.

Mathematics Requirements plus 15 hours.

Middle Schools 15-16 hours, to include Educ. C&I 3520, Ed.Psychology 3810; Educ. C&I 3520 or 4280; Educ. C&I 3562 or 3653, or 3654 or 3876 or 3958 (a second methods course); Educ. C&I 4350 or 4351 or 4352; lab experience in middle school.

Music Requirements plus 16 hours.

Science Requirements plus 16 hours.

Social Science Requirements plus 15-16 hours.

Special Education 15-16 hours. (If certification is desired in special education, additional hours are required, including one additional quarter of student teaching.) Special Education 4110, 4610, 4120 or 4620 and 6 hours of electives in special education. Recommended electives are 4130, 4250, 4350.

a) Cripping and Special Health Conditions (18 hours) Special Education and Rehabilitation 4150, 3333, 4840, 4921; Child Development 4610 or Human Services 2690; and 3 hours from Special Education 3520, 4130, 4140 or 4250.

b) Partially Seeing (21 hours) Special Education and Rehabilitation 4110, 3333, 4850, 4923; 6 hours from Special Education 3520, 4110, 4120, 4150, 4250, 4840; Office Administration 2110 (for those lacking high school credits in typewriting).

ELECTIVES ....................................... 18-22 hours

TOTAL MINIMUM REQUIRED .................. 191 hours

*Requires admission to Teaching Education Program.
**III. Curricula for Secondary Education (7-12)**

**GENERAL EDUCATION** 69 hours

<table>
<thead>
<tr>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Communications</td>
</tr>
<tr>
<td>12</td>
<td>English 1510-20 and Speech 2311</td>
</tr>
<tr>
<td>12</td>
<td>Health and Physical Education (300)</td>
</tr>
<tr>
<td>12</td>
<td>Humanities (16)</td>
</tr>
<tr>
<td>30</td>
<td>Mathematics (9)</td>
</tr>
<tr>
<td>30</td>
<td>Science (9)</td>
</tr>
<tr>
<td>30</td>
<td>Social Sciences (9)</td>
</tr>
<tr>
<td>12</td>
<td>Specialized Courses (9)</td>
</tr>
</tbody>
</table>

**COMBINATIONS** (12 hours)

- English 1510-20 and Speech 2311
- Health and Physical Education 300
- Humanities 16
- Mathematics 9
- Science 9
- Social Sciences 9
- Specialized Courses 9

**PROFESSIONAL EDUCATION** 69 hours

<table>
<thead>
<tr>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Education 3010</td>
</tr>
<tr>
<td>9</td>
<td>Education 3020</td>
</tr>
<tr>
<td>33</td>
<td>Educational Psychology 3810</td>
</tr>
<tr>
<td>6</td>
<td>Specialized methods courses</td>
</tr>
<tr>
<td>3</td>
<td>Social Studies 3</td>
</tr>
</tbody>
</table>

**PROGRAM AVAILABLE**

Program majors leading to graduation and certification for high school teaching range from the broad fields, comprehensive major to the subject major and minor combination programs.

**II. Joint Elementary- Mathematics Education Certification**

(Mathematics + B.S. Degree)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL EDUCATION</td>
<td>90 hours</td>
<td></td>
</tr>
<tr>
<td>Communications (12 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 1510-20 and Speech 2201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities (12 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 120-20 and four electives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health and Physical Education (19 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychology 2500</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Education 2430</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Education 3420</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Health 3610</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Studies (12 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English 120-20 and four electives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics (9 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 110-20, 30, taken in sequence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Sciences (18 hours)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four hours in history; 14 hours electives from a minimum of three areas of social science other than history</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**III. Curricula for Secondary Education (7-12)**

**GENERAL EDUCATION** 69 hours

<table>
<thead>
<tr>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Communications (12 hours)</td>
</tr>
<tr>
<td>12</td>
<td>English 1510-20 and Speech 2311</td>
</tr>
<tr>
<td>12</td>
<td>Health and Physical Education (300)</td>
</tr>
<tr>
<td>12</td>
<td>Humanities (16)</td>
</tr>
</tbody>
</table>

**SPECIALIZED PROFESSIONAL**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Educational Psychology 3810</td>
</tr>
<tr>
<td>6</td>
<td>Specialized methods courses</td>
</tr>
<tr>
<td>3</td>
<td>Social Studies 3</td>
</tr>
</tbody>
</table>

**TEACHING SUBJECT AREAS AND ELECTIVES** 72 hours

See outline of the programs below.

**TOTAL MINIMUM REQUIRED** 183 hours

**ENDORSEMENTS**

- Mathematics and Computer Science (7 hours)
- Mathematics and Physics, General Science (7 hours)
- Mathematics and Related Sciences (7 hours)
- Mathematics and Social Sciences (7 hours)

**A. English Education**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>English with a Minor</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Quarter hours in English, including three in English Language (330, 3340, 4440, 4445)</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Foreign Language Area</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Quarter hours in a language with no less than 18 quarter hours of upper-division courses</td>
<td></td>
</tr>
</tbody>
</table>

**B. Foreign Language Education**

- **A. English Education**
  - 12 hours in English, including three in English Language (330, 3340, 4440, 4445)
  - 12 hours in a language with no less than 18 quarter hours of upper-division courses

**C. Mathematics Education**

- **A. Mathematics and Physical Sciences (75 hours)**
  - 15 hours in Mathematics (27 quarter hours) must include at least one year-sequence in calculus or analytic geometry and calculus and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
  - Algebra: Mathematics 3000, 3720, 4060, 4120, 4150
  - Analysis: Mathematics 3100, 3110, 4610, 4610
  - Probability: Mathematics 3320, 3320, 3330
  - Probability: Mathematics 3050, 3060, 4650, 4750
  - Physical Sciences—12 quarter hours in each of the following: Chemistry 3, Geology 3, Physics 3
  - Electives—12 additional quarter hours in mathematics and/or mathematics

- **A. Mathematics and Physical Sciences (75 hours)**
  - 15 hours in Mathematics (27 quarter hours) must include at least one year-sequence in calculus or analytic geometry and calculus and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
  - Algebra: Mathematics 3000, 3720, 4060, 4120, 4150
  - Analysis: Mathematics 3100, 3110, 4610, 4610
  - Geometry: Mathematics 3320, 3320, 3330
  - Probability: Mathematics 3050, 3060, 4650, 4750
  - Physical Sciences—12 quarter hours in each of the following: Chemistry 3, Geology 3, Physics 3
  - Electives—12 additional quarter hours in mathematics and/or mathematics

- **A. Mathematics and Physical Sciences (75 hours)**
  - 15 hours in Mathematics (27 quarter hours) must include at least one year-sequence in calculus or analytic geometry and calculus and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
  - Algebra: Mathematics 3000, 3720, 4060, 4120, 4150
  - Analysis: Mathematics 3100, 3110, 4610, 4610
  - Geometry: Mathematics 3320, 3320, 3330
  - Probability: Mathematics 3050, 3060, 4650, 4750
  - Physical Sciences—12 quarter hours in each of the following: Chemistry 3, Geology 3, Physics 3
  - Electives—12 additional quarter hours in mathematics and/or mathematics

- **A. Mathematics and Physical Sciences (75 hours)**
  - 15 hours in Mathematics (27 quarter hours) must include at least one year-sequence in calculus or analytic geometry and calculus and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
  - Algebra: Mathematics 3000, 3720, 4060, 4120, 4150
  - Analysis: Mathematics 3100, 3110, 4610, 4610
  - Geometry: Mathematics 3320, 3320, 3330
  - Probability: Mathematics 3050, 3060, 4650, 4750
  - Physical Sciences—12 quarter hours in each of the following: Chemistry 3, Geology 3, Physics 3
  - Electives—12 additional quarter hours in mathematics and/or mathematics

- **A. Mathematics and Physical Sciences (75 hours)**
  - 15 hours in Mathematics (27 quarter hours) must include at least one year-sequence in calculus or analytic geometry and calculus and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
  - Algebra: Mathematics 3000, 3720, 4060, 4120, 4150
  - Analysis: Mathematics 3100, 3110, 4610, 4610
  - Geometry: Mathematics 3320, 3320, 3330
  - Probability: Mathematics 3050, 3060, 4650, 4750
  - Physical Sciences—12 quarter hours in each of the following: Chemistry 3, Geology 3, Physics 3
  - Electives—12 additional quarter hours in mathematics and/or mathematics
above at least one course selected from
the following categories:
(1) Algebra: Mathematics 1040, 1060, 2060, 4150, 4160, 4170.
(2) Geom: Mathematics 3110, 3110, 4510, 4520, 4630.
(3) Geometry: Mathematics 3130, 3230, 3240.
(4) Probability: Mathematics 3050, 3060, 4650, 4690, 4670.
(5) 125 hours in another subject used as a minor.
c. A student may not receive credit for both
Mathematics 1540 and Mathematics 1550. A
maximum of sixteen hours credit may be ob-
tained in mathematics from courses numbered
between 206-2000.
Endorsements: Mathematics

*DExcluding Math 2110, 2120, 2120, 2130.
*EConge Chemistry 1050, 1050, 1090.
*EIncluding Physics 1410, 1420, 1430.
*Plant and animal science courses required.

D. Psychology Education
1. A concentration and endorsement in
psychology shall require a minimum of 30
general psychology courses, 2 four-hour upper division courses and the following:
Core
Psychology 2530, 2530, 2540
Psychology 3120
Psychology 3150
Psychology 3210
Electives
Electives 14 hours selected from:
Psychology 2530, 2530, 2540, 3120, 3210, 3250, 3310, 3430, 3550, 3560, 4230, 4510, 4520, 4610, 4990; or Ed Psych. 3480; Ed Psych. 3110, 4110, 4300, 4490.

2. Two minors (18-27 hours for a total of 45
courses) each with a minimum of 6 hours
upper division.
At least one of the two minors must meet
Tennessee minimum endorsement requirements
for the subject area.

E. Science Education
1. Area Majors in Science
a. Biological science (72 hours minimum)
  Biology 2120-20-30 or Botany 1110-20-40 (12 hours).
  Biology 3110-20-30 (12 hours).
  Microbiology 2010 (four hours).
  Chemistry (excluding 1440 series) (12 hours).
  Science electives—32 hours minimum.
  Approved electives must be selected from one or
more of the following: biological sciences; bio-
chemistry, botany, microbiology, zoology;
physiological science, chemistry.
Minimum require-
ment in biological science consists of 56
hours (12 hours chemistry required, excluding
special program chemistry).
Endorsements: Biology (Life Science) and
General Science
b. Earth and Environmental Sciences (72 hours minimum)
  Includes 12 hours biological science required, and
  14 hours electives selected from astronomy,
chemistry (excluding 1440 series),
  geography, geology, and physics.
  Geology 1610.
  Chemistry (eight hours).
  Physics (excludes 1440 series) (4 hours).
  Astronomy (4 hours).
  Geography (physical) (4 hours).
  Geography (meteorology or climatology) (4 hours).
  Cartography, conservation, oceanography, or
  soil science (6 hours).
Endorsements: Earth Science, General Science, and
Physical Science

c. Natural Science (72 hours minimum)
  Basic requirement of 12 hours in each of four
of the following subjects:
  Biology 1210-20-30 or Botany 1110-20-40.
  Chemistry (excluding 1440 series).
  Geology series (excluding Geology 1000).
  Physics (excluding 1440 series).
  Mathematics (excluding 1020, 2020 and 2110-
20-30). Credit for only 12 hours math accepted in the program.

Approved science electives—24 hours
minimum, including a total of six or eight hours of course work in one subject other if
math. Biology is considered as one subject for
high school endorsement.
Endorsements: General Science (Possible endor-
sesments: Biology, Chemistry, and Physics)
2. Subject Majors in Science
The student majoring in science leading
to teacher certification are chemistry and
physics. Majors 45 hour minors; minors
27 hours.
Endorsements: Major Subject

*Only one freshman-level biological science series
is permitted.
*Plant and animal science courses required.
*Certification in any single area.

F. Social Science Education
Program
Broad fields Social Studies (Major 72 hours)
Certification includes economics, geography,
history, political science and sociology.
a. 28 quarter hours in history, including 1510-20 and
2510-20, and 12 hours in world and/or
American history.
b. 8 quarter hours in each of the following:
geography, political science, and sociology.
c. 4 quarter hours in anthropology.
d. 9 quarter hours in economics, including 2110-
20 and any electives.
e. 7-8 additional quarter hours in the above-listed or
related fields.
Program II
Specific subject major (45 hours plus 27 hours for a
minor).
Minors. A minor is defined as 27 quarter hours in a
single subject area, i.e., biology, history,
French, psychology, speech, etc. A minor does
not meet certification requirements in all cases.

IV. Art and Music Education
A. Art Education
GENERAL EDUCATION .......................... 67-69 hours
Communications (11-12 hours)
English 1510-20, 4 and 3 hours in speech.
Health and Physical Education (9 hours)
Activities courses in physical education plus
School Health 3510.
Humanities (15-16 hours)
Art History 1815 and 1825, one literature
course, and one elective from anthropology,
philosophy, foreign language above 1000 level,
upper division history, library service, religion or music.
Mathematics (4 hours)
Natural Science (6 hours)
Any twelve hours from the biological and/or
physical sciences.
Psychology (4 hours)
Psychology 2500.
Social Studies (12 hours)
Any twelve hours from at least two areas.

CORE PROFESSIONAL EDUCATION ............... 9 hours
Ed. C & I 3010*, 3020, 3030

SPECIALIZED PROFESSIONAL EDUCATION .......... 21 hours
Student teaching: Ed. C & I 4710*, 4720*; Ed.
Psych. 2430 or 3810; and an elective in the
College of Education.

TEACHING AREAS AND ELECTIVES .......... 52-54 hours
Art Education 27-28 hours
Art Educ. 2100, 2120, 3920, 4310, 4120, 4130,
4150, 4160.
Art 1110, 1125, 1125. Plus twelve quarter hours in a single studio area and twelve
additional hours distributed over three other study areas.
B. Minor (24 hours)
May be taken in any area offering a minor.
TOTAL MINIMUM REQUIRED ............... 181 hours

*Rqirement admission to Teacher Education Program.

B. Music Education
GENERAL EDUCATION .......................... 65-67 hours
Communications (11-12 hours)
English 1510-20 and 3-4 hours in speech.
Health and Physical Education (9 hours)
Activities courses in physical education plus
School Health 3510.
Humanities (14 hours)
Music 2230-30, literature course, and one elec-
tive from art, anthropology, foreign language
beyond introductory level, upper di-
vision history, philosophy, or religious studies.
Mathematics (4 hours)
Natural Science (11-12 hours)
Three courses from the biological and/or
physical sciences, to include Physics 1810.
Psychology (4 hours)
Psychology 2500.
Social Studies (12 hours)
Any 12 hours, to include at least two areas.

CORE PROFESSIONAL EDUCATION .......... 9 hours
Ed. C & I 3101*, 3020, 3030

SPECIALIZED PROFESSIONAL EDUCATION .... 21 hours
2430 or 3810; and a senior elective in the
College of Education.

TEACHING AREAS AND ELECTIVES .......... 68-108 hours
Concentration in Vocal Music (Voice Principal)
a. 45 quarter hours in Music Education: 1010-20;
2110; 2411; 2421; 2431; 3130; 3150; 4420;
4510.
b. 49 quarter hours in Music: 1111-21-31; 1123-23-
33; 2111-21-31; 2113-23-33; 2430; voice 22
hours; plus piano proficiency and required
ensembles.
Concentration in Vocal Music (Piano or Organ
Principal)
a. 25 quarter hours in Music Education: 1010-20;
2110; 2411; 2421; 2431; 3130; 3150; 4420;
b. 50 quarter hours in Music: 1111-21-31; 1123-23-
33; 2111-21-31; 2113-23-33; 2430; piano or
organ 22 hours; voice 6 hours; plus required
ensembles.
Concentration in Elementary Music Education (Voice
Principal)
a. 31 quarter hours in Music Education: 1010-20;
2110; 2411; 2421; 2431; 3141-42; 3150;
4420; 4431-42-43; 4450.
b. 49 quarter hours in Music: 1111-21-31; 1123-23-
33; 2111-21-31; 2113-23-33; 2430; voice 22
hours; piano proficiency; required ensemble
terminations.
Concentration in Elementary Music Education (Piano or Organ
Principal)
a. 31 quarter hours in Music Education: 1010-20;
2110; 2411; 2421; 2431; 3141-42; 3150;
4420; 4431-42-43; 4450.
b. 50 quarter hours in Music: 1111-21-31; 1123-23-
33; 2111-21-31; 2113-23-33; 2430; piano or
organ 22 hours; voice 6 hours; required
ensembles.
expected to enroll in Marching Band unless officially excused.
Instrumental Major: Concert Band; University Marching Band; or University Orchestra.
Vocal Major: Concert Choir; University Glee Clubs.
Elementary Music Education Major. Same as Vocal Major.
B. Transfer students must take proficiency examination in an applied music, music theory, sight singing and dictation prior to registration in music education curricula.

*Requires admission to Teacher Education Program.

V. Health, Physical Education, Recreation, and Safety

A. Concentration in Elementary Physical Education (1-9)

GENERAL EDUCATION .......................... 88 hours
Communications (12 hours)
English 1510-20 and Speech 2021 or 2311.
Humanities (16 hours)
English 2510 or 2520 plus 12 hours of electives.
Social Studies (16 hours)
Sociology 1510 plus 12 hours of electives.
Natural Sciences (24 hours)
Chemistry 1510-20, Physics 1450, and Zoology 2260-30 and 4940.
Mathematics (4 hours)
Psychology (4 hours)
Psychology 2500.
Health and Physical Education (12 hours)
School Health 3000 and 3420; physical education activities (6 hours): including P.E. 2012, 2022, 2023, 3180.

CORE PROFESSIONAL EDUCATION 9 hours
Ed. C & I 3101*, 3020, 3030*

SPECIALIZED PROFESSIONAL EDUCATION
27 hours

TEACHING AREAS AND ELECTIVES 72 hours

Elementary Physical Education (48 hours)
P.E. 1000; 3510; 3540; 3550; 3560; 3570; 3660; 3670; 3680; 3320; 4110; 4150; 4330; 4440; 4520; and 6 hours of P.E. activity electives.

Cognate Course and Electives (24 hours)
CFS 3210 and 21 hours to be used for endorsement, minor, or free electives.

TOTAL MINIMUM REQUIRED 196 hours

*Requires admission to Teacher Education Program.

B. Minor in Elementary Physical Education

(Open only to students with a concentration in secondary physical education.)
P.E. 3540; 3550; 3560; 3570; 3650; 3660; 3670; 3680; 4150; 3260.

C. Concentration in Secondary Physical Education (7-12)

GENERAL EDUCATION .......................... 88 hours
English 1510-20; speech elective (4); chemistry (1510-20 suggested); Physics 1450; Zoology 2260-30 and 4940; mathematics elective (3); School Health 3210.
Humanities electives (16 hours) selected from: English literature; anthropology; art; foreign language; music; philosophy; religion; dance appreciation; or other minor design and hours.
Social studies electives (20 hours) selected from: history; anthropology; economics; geography; psychology; science; sociology; psychology; 2500. Physical education activities (6 hours); P.E. 1020, 1021 or 1022, 1032, 2012, 2022, 2032.

PROFESSIONAL EDUCATION 32 hours
Ed. C & I 3101*—20*—30*; Educ. Psych. 3810; Ed. C & I 4710-20; education elective (3 hours); Physical Education 3260 (practicum, field experience—2 hours).

SPECIALIZED PROFESSIONAL EDUCATION
48 hours
P.E. 1000; 3210; 4110; 3320; 4110; 4120; 4230; 3220 or 3170; 4310; 4440 or 4450; 3320; 4410 or 3010; 3180; 3240, and 13 hours electives from any upper-division P.E. course.

ELECTIVES ........................................ 27 hours
Hours to be used for minor, endorsement, or electives (None of the 27 hours may be taken in lower-division physical education.)

TOTAL MINIMUM REQUIRED 196 hours

*Requires admission to Teacher Education Program.

D. Minor in Secondary Physical Education
(27 hours)
(Open only to students with a concentration in elementary physical education.)
P.E. 4110; 4230; 3210; 3170 or 3220; 4310; 4410; 3010; 3260; 1032; 2032; P.E. electives (4 hours).

E. Minor in Dance
(27 hours)
P.E. 2040-50-60; 3010; 3020 or 3320; 3050; 3060; 3070; 3090; 3150; 4010; 4060; 4330 or 4340-50-54; 4550.

F. Minor in Coaching (28-31 hours)
Zoology 2260-30 or 13900; 12900, 4940; Physical Education 3210, 3220, 3900, 4160, 4160. Two courses in the area of coaching to be chosen from the following: Physical Education 3110, 3120, 3130, 3200, 4160.

G. Concentration in Recreation

SPECIALIZED PROFESSIONAL EDUCATION
27 hours
Chemistry 2430; Educ. C & I 4810*-20*, 3150, 4750.

Teaching Areas and Electives 72 hours

Elementary Physical Education (48 hours)
P.E. 1000; 3510; 3540; 3550; 3560; 3570; 3660; 3670; 3680; 3320; 4110; 4150; 4330; 4440; 4520; and 6 hours of P.E. activity electives.

Cognate Course and Electives (24 hours)
CFS 3210 and 21 hours to be used for endorsement, minor, or free electives.

TOTAL MINIMUM REQUIRED 196 hours

*Requires admission to Teacher Education Program.

H. Concentration in Public Health

SPECIALIZED PROFESSIONAL EDUCATION
68 hours
Communications (12 hours)
English 1510-20 and Speech 2311.
Health and Physical Education (11 hours)
Public Health 3000
Public Health 3210
Physical education electives.

Humanities (16 hours)
English—any 4 hours from literature
Anthropology—any 4 hours
Philosophy or religious studies elective (4)
Art or music elective (4).

Mathematics (4 hours)
Natural Science (20 hours)
Chemistry or physics sequence (4, 4, 4
Biology 2120-30 and 2620-30.
Psychology (4 hours)
Psychology 2500.
Social Sciences (5 hours)
Economics 2110
Geography 2110 or 2120 or Political Science 1503
History 1510-20 or 2510-20 Sociology 1510.

CORE PROFESSIONAL EDUCATION 9 hours

SPECIALIZED PROFESSIONAL EDUCATION
24 hours
Education 21470
Education C & I 4720
Public Health 4700, 4710, 4720
School Health 3560-3580 Educational Psychology 3810.

TEACHING AREAS AND ELECTIVES ....... 71 hours
Public health required courses (12): 3130, 3320, 3330, and 4250.
Public health electives (6)
School health required courses (9): 3410, 3420, 3620.
Safety required courses: 3520
Biology 1230
Microbiology 2010
Psychology 3150
Sociology 1520
Sociology 3150
Nutrition 1230
Electives (18)
Special Note: If some of the specific courses cited above are dropped or changed, they may be substituted with an equivalent course.

TOTAL MINIMUM REQUIRED 190 hours

*Requires admission to Teacher Education Program.

College of Education 111

ELECTED ELEMENTARY EDUCATION
COURSES ................................................ 18 hours

SPECIALIZED COURSES .................................. 12 hours
Educational Psychology 2430, Art Education 2100, Music Education 2100, Educ. C &I 3510.

AREA OF CONCENTRATION ............................. 67 hours
Choose five courses: (American Sign Language, Speech Pathology, English, Mathematics Education, Science, Social Science) 12 hours (3050 recommended), Audiology and Speech Pathology 3010, 4700, 4930 (or 5950); Special Education 3333, 4190, 4200, 4210, 4250, 4290, 4351, 4361, 4371 (or Educ. C&I 3511-12, 4870, 4871; and Pre-Student Teaching Seminar).

TOTAL MINIMUM REQUIRED .......................... 190 hours

C. Specialization in Secondary Education

GENERAL EDUCATION .................................. 82-83 hours
Communications (12 hours)
English 1510, 1520; Speech 1211 or 2311 or Communications 1110.

Health and Physical Education (9 hours)
School Health 3510 and physical education electives.

Humanities (15-16 hours)
English literature: 11-12 hours electives (choose from two areas: anthropology, art, history, philosophy, foreign language (above introductory level), religious studies, music, library and information science).

Mathematics (4 hours)
Mathematics 2012.

Natural Sciences (20 hours)
(If major in science education, student must take 12 hours in the biological sciences.)
8-12 hours in biological science;
8-12 hours in physical science;
10-12 hours in social science.

Psychology (4 hours)
Psychology 2500.

Social Studies (18 hours)
History 1510-20 or 2510-20.

TOTAL MINIMUM REQUIRED .......................... 188 hours

D. Concentration in Speech and Hearing

GENERAL EDUCATION .................................. 84 hours
Communications (12 hours)
English 1510-20, Speech 2311.

Health and Physical Education (6 hours)
Activities recommended plus health and physical education electives (both areas must be represented).

Humanities (16 hours)
English (4 hours from 2000-level literature).
Electives representing two areas from the following: anthropology, art, English (literature), foreign language (above introductory level), history (upper division), Library and Information Science 3510-20-30, music, philosophy, and religious studies.

Mathematics elective (4 hours).

Natural Sciences (16 hours)
8 hours biological science; 8 hours physical science.

Psychology (4 hours)
Psychology 2500.

Social Studies (20 hours)
History electives (8 hours) plus 12 hours representing three areas from anthropology, economics, geography, political science, sociology.

TOTAL MINIMUM REQUIRED .......................... 85 hours

E. Concentration in Partially Seeing

a. Completion of requirements of Elementary (K-9) or Secondary Education Curriculum.
b. Special Education and Rehabilitation 3333, 4190, 4200, 4210, 4250.
c. Six quarter hours selected from the following: Special Education and Rehabilitation 3520, 4110, 4120, 4150, 4250, 4840.
d. Office Administration 2110 (for those lacking high school credits in typing).
### Departments of Instruction

#### Art and Music Education

**Art Education (141)**

1511 Field Experiences in Teaching Art (1) Field experiences in which students perform tasks related to teaching and to teacher roles. S/NC. May be repeated for credit.

2100 Introduction to Art Education in the Schools (3) Art grades 1 through 12; growth and development, objectives, motivation, evaluation. Experiences with school media. 1 hr and 2 labs.

2110 Drawing, Painting, and Design Activities in Elementary School (3) Prereq: 2100. 1 hr and 2 labs.

2120 Drawing, Painting, and Design Activities in Junior and Senior High School (3) Prereq: 2100. 1 hr and 2 labs.

3110 Crafts in the Elementary School (3) Prereq: 2110. 1 hr and 2 labs.

3210 Art in Secondary School Program (3) Program planning, selection of materials and equipment; relation to other school experiences. Classroom observation. Prereq: 9 hrs in art education. 1 hr and 2 labs.

3511 Field Experiences in Teaching Art (1) Field experiences in which students perform tasks related to teaching and to teacher roles. S/NC. May be repeated for credit.

3820 Clay in School Program (3) Exploring methods of hand-built forms, glazing and firing procedures. Prereq: 2100. 1 hr and 2 labs.

3930 Textiles in School Program (3) Exploration of processes of weaving, stitching, batik, and silk screen. Prereq: 2100. 1 hr and 2 labs.

4120 Designing Teaching Aids for Art in School Program (3) Design and preparation of charts, exhibitions, slides, films, and other teaching aids for art grades one through twelve. Prereq: 2100 or consent of instructor. 1 hr and 2 labs.

4130 Three-Dimensional Design in School Program (3) Exploration of wood, wire, metal, plastics, and other sculptural materials. Prereq: 2100 or consent of instructor. 1 hr and 2 labs.

4150 Lettering, Posters, and Displays in the School Program (3) Design and layout; techniques and procedures. Prereq: 2100 or consent of instructor. 1 hr and 2 labs.

4160 Appreciation of the Arts in School Program (3) Prereq: 2100 or consent of instructor. 1 hr and 2 labs.

#### Music Education (707)

The curricula in music education provide for five areas of concentrations: vocal music (voice principal); vocal music (piano or organ principal); elementary music education (voice principal); elementary music education (piano or organ principal); and instrumental music.

1010-20 Choral Laboratory (1, 1) Choral conducting: methods and materials, required of all music education majors. Prereq: approval of instructor.

1511 Field Experience in Teaching Music (1) Field experiences in which students perform tasks related to teaching and to teacher roles. S/NC. May be repeated for credit.

2100 Basic Experiences in Classroom Music (3) Vocal, keyboard, instrumentation, rhythm, listening, music reading, and creative activities. Prereq: major in elementary or special education. Five hrs.

2110 Experiences in Classroom Music (3) Vocal, instrumental, rhythmic, listening, music reading, and creative activities. Prereq: major in elementary education. Five hrs.

2411-12-13 Methods, Materials, and Techniques of String Class Instruction (2, 2, 2) Structure, use, techniques of playing, care, and repair of principal instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. 2 hrs per week.

2421-22-23 Methods, Materials, and Techniques of Woodwind Class Instruction (2, 2, 2) Structure, use, techniques of playing and repair of principal instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. 2 hrs per week.

2431-32 Methods, Materials, and Techniques of Brass Class Instruction (2, 2) Structure, use, techniques of playing, care and repair of principal instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. 2 hrs per week.

343 Methods, Materials, and Techniques of Percussion Class Instruction (2) Structure, use, techniques of playing, care and repair of principal instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. 2 hrs per week.

3110 Teaching Music in the Primary Grades (3) Singing, rhythmic, instrument, listening, creative, and music reading activities; evaluation; materials appropriate for Grades K-3. For elementary education majors only. Prereq: 2100 or 2110; Educational Psychology 2430, Prereq: Consent of Instructor.

4110 The Administration and Organization of Recreational Arts and Crafts Programs (3) Purpose of art activity in recreation; scope of activities, organizational procedures, resources, and coordination required in community arts and crafts programs.
3130 Teaching Music in the Elementary School (3)
Singing, rhythmic, instrument, listening, creative, and musical activities; evaluation; materials appropriate for grades K-6. For music education majors only. Prereq: 2110, ED Psych 2430 or 3380 and two years of music theory.

3141 Guiding Musical Learning Experience in the Primary Years (3) Course designed primarily for music education student majoring in elementary music education in which emphasis is given to musical skills and learnings appropriate for children, ages five through eight. Prereq: 2110 and Educational Psychology 2430.

3142 Guiding Musical Learning Experiences in the Intermediate Years (3) Course designed primarily for music education student majoring in elementary music education in which emphasis is given to musical skills and learnings appropriate for children, ages nine through eleven. Prereq: 3141.

3150 Teaching Music in Junior and Senior High Schools (3) Procedures, techniques, curriculum, scheduling, administration, evaluation, materials and equipment, community relations. Prereq: Two years of music theory; coreq: 3511.


3511 Field Experiences in Teaching Music (1) Field experiences in which students perform tasks related to teaching and to teacher roles. S/NC. May be repeated for credit.

3450-60-70 Problems in Music Teaching (3, 3, 3)

4410 The Administration and Organization of Recreational Music Programs (3) Purpose of music in recreation; scope of activities, organizational procedures, resources, and coordination required in community music programs.

4420-30 Choral and Instrumental Conducting (3, 3)
Reading, conducting, and interpretation of vocal and instrumental scores suitable for church and community groups. 4420 deals with vocal music. 4430 with instrumental music. Prereq: 1010-20 and three hours credit from 2411-21-31 series and two years of music theory. Must be taken in sequence. 2 hrs and 1 lab.

4441-42-43 Teaching Class Piano (1, 1, 1) For majors in music, music education, or elementary education. Prereq: Approval of instructor.


4460 Marching Band Techniques (3) Functions, organization, and direction of a school marching band. Prereq: Senior standing and approval of instructor; coreq: 3511.

4510 Choral Methods and Materials (3) Organization and administration, teaching techniques, choral literature, and interpretation. Prereq: 1010-20, 4420, one year of voice instruction, two years of music theory. 2 lecture hrs and 2 one-hr labs; labs meet with 1010-20.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5150 Studies in Secondary School Music (3)

5210 Psychological Foundations in Music (3)

5220 Administration and Supervision of School Music (3)

5230 Comparative Teaching Procedures in Music Education (3)

5240 Evaluation Procedures in Music Education (3)

5250 Role of Music in Education (3)

5260 Music for Early Childhood (3)

5270 Studies of Music for Children in Primary Grades (3)

5320 Advanced Choral Literature and Conducting (3)

5350-60-70 Special Problems in Music Education (3, 3, 3)

5410 Advanced Band Literature and Conducting (3)

5510-20-30 The Talent Education Program of Shinichiki Suzuki (2, 2, 2)

5710 Research in Music Education (3)

5810-20-30-40 Seminar (3, 3, 3, 3)

Continuing and Higher Education (287)


Associate Professor: K.O. McCullough, Ph.D. Florida State.

Assistant Professor: W.D. Barton, Ed.D. Tennessee.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5060 Adult Education: A General Survey (3)

5110 Seminar in College Teaching (3)

5330 Theory and Research in Human Learning (3)

5360-70 Problems in Continuing and Higher Education (3, 3)

5440 American Higher Education (3)

5450 Instruction in Higher Education (3)

5460 Adult Development (3)

5510 Governance of Colleges and Universities (3)

5550 Fiscal Problems in Higher Education (3)

5660 Program Planning in Continuing and Higher Education (3)

5860 The Community-Junior College (3)

5955-65-75 Practicum in Continuing and Higher Education (3, 3, 3)

5960-70 Seminar in Continuing and Higher Education (3, 3)

6450 Community Education for Adults (3)

See also course listings under the Departments of Curriculum and Instruction, Educational Administration and Supervision, and Educational Psychology and Guidance.

Curriculum and Instruction


Undergraduate programs in the Department of Curriculum and Instruction provide the general professional courses for the preservice education of teachers in elementary and secondary schools.

Educational Curriculum and Instruction (301)

1410 Efficient Reading and Study Skills (1) Improvemenment of reading and study skills. S/F.

1500 Introduction to Early Education (3) (Same as Child and Family Studies 1500).

2010-20-30 Field Study in Education (3, 3, 3) Problems of teachers in active service in the fields of methods of teaching, curriculum materials, school-community relationships, and school organizations.

3010 History and Philosophy of Education (3) Role of philosophy in education; realism, Neo-Thomism, pragmatism, and other contemporary movements; major ideas, historical roots, and modern applications. Prereq: Admission to Teacher Education. Undergraduate credit only.

3020 Principles and Organization of Education (3) Relational, current educational problems and practices; organizational patterns; financing of public education; professionalization of teaching. Undergraduate credit only.

3030 Social Foundations and Curriculum (3) Culture and society and their influences on curriculum; principles, problems, and procedures of subject matter selection, sequence, grading, placement, and time allotment; curriculum issues; state curriculum policies and practices. Prereq: Admission to Teacher Education. Undergraduate credit only.


3110 Curriculum II (3) Prereq: Ed. Psych. 1000, Psychology 2110, Ed. Psych. 2510, Ed. C&I 3100 or consent of instructor.

3150 Analysis of Teaching (3) Use of instruction analysis in design and classification of verbal interaction between teacher and student; related nonverbal behavior techniques. Prereq: Consent of instructor.

3180 Microteaching (3) Emphasis upon the development of instructional skills. Students teach a series of lessons to small groups of students in elementary or secondary schools. Lessons are videotaped, and the students and instructor evaluate the teaching behaviors recorded on the tape. Prereq: Consent of instructor.
3250 Teaching Language Arts in the Elementary School (3) Methods and materials in teaching writing, spelling, and language. Undergraduate credit only. Prereq: must be taken prior to or concurrently with C/J 3280. Prereq: Educational Psychology 2430 or equivalent, admission to Teacher Education.

3270 Teaching Social Studies in the Elementary School (3) Goals, methods, materials, and evaluation. Undergraduate credit only. Prereq: Educational Psychology 2430 or equivalent, admission to Teacher Education.

3280 Teaching Developmental Reading in the Elementary School (3) Beginning course in sequence designed to teach teachers to develop skills and understandings necessary for operation of successful developmental reading program in the elementary school. Prereq: Ed. Psych 2430 or equivalent and admission to Teacher Education.

3281 Teaching Developmental Reading in the Elementary School (3) Second course in sequence designed to teach content and skills of teaching reading in the elementary school. Prereq: 3280.

3310 History of Education (3)

3320 History of Education in the United States (3)

3350 Teaching Arithmetic in the Elementary School (3) Goals, methods, materials, and evaluation. Undergraduate credit only. Prereq: Educational Psychology 2430 or equivalent; Mathematics 2110-20-30; admission to Teacher Education.

3510 Books and Related Materials for Children (3) (Same as Library and Information Science 3510.)

3511-12-13 Field Experiences in Teaching: Elementary (1, 1, 1) Field experiences in which students perform tasks related to teaching and to teacher roles. May be taken separately or concurrently by consent of instructor. Must be taken before student teaching. Prereq: 3511—Educ. Psych 2430 or equivalent; 3512-13—admission to Teacher Education. S/NC.

3520 Books and Related Materials for Young People (3) (Same as Library and Information Science 3520.)

3521-22-23 Field Experiences in Teaching: Secondary (1, 1, 1) Field experiences in which students perform tasks related to teaching and to teacher roles. May be taken separately or concurrently by consent of instructor. S/NC.

3531-32-33 Field Experiences in Teaching: Social Foundations (1, 1, 1) For description, see 3521-22-23. S/NC.

3561 Teaching of Speech and Drama, Grades 7-12 (3) For description, see 3563.

3562 Teaching of Modern Foreign Languages: Oral Communication Skills, Grades 7-12 (3) For description, see Library and Information Science 3562. This course and Educ. C & I 3563 are required for certification in foreign languages. Must be taken concurrently with 3563.

3563 Teaching of Modern Foreign Languages: Reading, Literature, Grammar and Composition, Grades 7-12 (3) For description see Educ. C & I 3563. This course and Educ. C & I 3562 are required for certification in foreign languages. Must be taken concurrently with 3562.

3565 Teaching of Science, Grades 7-12 (3) For description, see 3563.

3566 The Teaching of Latin, Grades 7-12 (3) For description, see 3563. (Same as Classics 4210.)

3567 Teaching Language, Composition and Speaking, Grades 7-12 (3) For description, see 3563. Both this course and Educ. C & I 3566 are required for certification in English.

3568 Teaching Reading, Literature, and Listening, Grades 7-12 (3) For description, see 3563. Both this course and Educ. C & I 3567 are required for certification in English.

3720 Teaching Science in the Elementary School (3) Methods and materials, undergraduate credit only. Prereq: Educ. Psych 2430 or equivalent, admission to Teacher Education.


3752 Teaching of Mathematics: Geometry and Analysis, Grades 7-12 (3) For description, see Educ. C & I 3563. Both this course and Educ. C & I 3571 are required for certification in mathematics.

4010 International Education: Europe and the Americas (3) (Same as Historical, philosophical and sociological foundations; special reference to England, USSR, France and Germany.)

4110 Philosophies of Education in Cultural Perspective (3) Education in relation to liberal, conservative, reactionary, and radical currents of thought in American culture.

4150 School Library Administration (3) (Same as Library and Information Science 4150.)

4210 Curriculum in Elementary School Social Studies (3) Survey of current curriculum approaches and trends in elementary school social studies. Prereq: Teaching experience or student teaching.

4215 Teaching Elementary School Science (3) Methods and materials used in teaching of science in elementary school. Developmental and diagnostic/corrective programs. Not open to students with recent course or background in teaching of elementary school science.

4216 Teaching Elementary School Mathematics (3) Methods and materials used in teaching of mathematics in elementary school. Developmental and diagnostic/corrective programs. Not open to students with recent course or background in teaching of elementary school mathematics.

4217 Teaching Elementary School Language Arts (3) Methods and materials used in teaching of elementary school language arts. Development of functional relationships with other curriculum areas, diagnostic procedures, and corrective work. Not open to students with recent course or background in teaching of elementary school language arts.

4250 Initiating the Activities Program (3) Prereq: Educational Psychology 2430, six quarter hours of methods of teaching in the elementary school, and junior or senior standing.

4260 Philosophy of Education: Introductory Studies (3) Truth, knowledge, and valuation in relation to work of the schools. Prereq: 3010, Educational Psychology 2430 or 3410, or equivalents.

4261 Educational Classics (3) Discussion of selected writings on education from Plato to Dewey.

4280 Diagnosis and Correction of Classroom Reading Problems (3) Prereq: 3280 or equivalent.

4300 Developmental Reading in the Secondary School (3)

4301 Teaching Developmental Reading (3) Methods and materials used in teaching of reading in the elementary school. Course includes development of functional relationships with other curriculum areas, diagnostic procedures and remedial work. Not open to students with recent course work or background in the teaching of reading.

4303 Language Development of Children: Birth-Preadolescence (3) In-depth view of language development through preadolescence; application of process of language development to instructional programs for early and middle childhood.

4340 The Junior High School and Middle School (3) To identify and analyze distinguishing characteristics of the Junior High and Middle School curriculums.

4350-60-70 Problems in Teaching English (3, 3, 3)

4351-61-71 Problems in Teaching Mathematics (3, 3, 3)

4352-62-72 Problems in Teaching Social Studies (3, 3, 3)

4353-63-73 Problems in Teaching Science (3, 3, 3)

4354-64-74 Problems in Teaching Language Arts (3, 3, 3)

4355-65-75 Problems in General Curriculum (3, 3, 3)

4356-66-76 Problems in Instructional Materials (3, 3, 3)

4357-67-77 Problems in Teaching Foreign Languages (3, 3, 3)

4359-69-79 Problems in Teaching Conservation (3, 3, 3)

4380-90-4400 Problems in the Improvement of Instruction (2, 2, 2) Registration in special conferences, workshops, or inservice programs.

4381 Problems in Early Childhood Education (3) May be repeated for a total of 9 hrs. Six hrs can be taken concurrently.

4410 Educational Sociology (3) (Same as Sociology 4410.)

4430 Practicum in Teaching in the Elementary School (3) Practicum experience in elementary school classroom teaching designed for students seeking elementary certification who have obtained degrees in areas other than elementary education, and who have obtained degrees and certification in areas other than this. Application must be filed with student teaching office at least one quarter prior to registration for practicum. Prereq: 3260-70-80, 3350, 3720 or equivalents and admission to Teacher Education.

4450 Teaching in Kindergarten: Overview (3) Relationship of kindergarten to total elementary program; goals; historical settings and current developments.

4451 Teaching in Kindergarten: Program Development (3) Curriculum planning and organization; classroom management. Prereq: Education C & I 4450 or consent of instructor.

4452 Elementary School Teaching: Minicourse (1) Minicourse focused on a major area of teaching in elementary school. Topics vary. Prereq: Student teaching. May be repeated. S/NC.

4530 Home and School Relations (3) Study of need and techniques which can develop closer relationship between home and school at both elementary and secondary levels. Prereq: Senior standing.

4630 Current Educational Problems (3)

4654 Programs, Methods and Materials in Environmental and Science Education (3) Instructional materials, teaching methods, curricular programs and issues in environmental and science education.

4710 Student Teaching, Grades 7-12 (8) Application for student teaching must be filed not later than final quarter of junior year. Students should hold themselves available to do this work in off-campus center. Must be taken with 4720. Prereq: 3010-20-30, Educational Psychology 3810, appropriate special methods course(s), minimum grade point average of 2.0 Undergraduate credit only. S/NC.

4720 Student Teaching, Grades 7-12 (6) Cooperative planning with other students and teachers; analyses of teaching practices; evaluation of teaching competencies as a result of student teaching. Must be taken with 4710. Undergraduate credit only. S/NC.
4750 Utilization of Instructional Media (3) introduces the basic communications process, need for instructional media, instructional development, selection and utilization of media and basic software production techniques. (Same as Library and Information Science 4750 and Vocational-Technical Education 4750.)

4810 Student Teaching in the Elementary School (9) Application for student teaching must be filed not later than final quarter of junior year. Students should hold themselves available to do this work in off-campus centers. Must be taken with 4820. Prereq: 3010-20-30, 3260-70-80, 3350, 3720; Educational Psychology 2430; Library Service 3510; minimum grade point average of 2.0. Undergraduate credit only. S/NC.

4820 Student Teaching in the Elementary School (6) Must be taken with 4810. Undergraduate credit only. S/NC.

4840 Introduction to Data Processing in Education (3) Analysis of current activities in field of educational data processing. Emphasis on curricular, administrative, and research opportunities in education, using modern electronic data processing methods and machines.

4850 Student Teaching in Early Elementary School (K-3) (6) Application filed no later than second quarter of junior year with placement one quarter prior to quarter of graduation. Prereq: Ed 241 A & I 3260, 3270 or 3720, 3280, 3350, 4450; CFS 3120, 3210. S/NC.

4851 Student Teaching in Early Elementary School (K-3) (9) Application filed no later than second quarter of junior year with placement at least one quarter prior to quarter of graduation. Prereq: Educ. C & I 3260, 3270 or 3720, 3280, 3350, 4450; CFS 3120, 3210.

4860 Programmed Learning (3) Theories of learning as related to technology of programmed instruction; techniques and applications of programming; 2 lectures and 1 lab. Prereq: Psychology 3210; Educational Psychology 3730; consent of instructor. (Same as Psychology 4860.)

GRADUATE

Graduate instruction in the Department of Curriculum and Instruction provides opportunities to improve the effectiveness of educational service in a number of areas.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5040 Seminar in Elementary School Language Arts (3)

5100 History of European Education (3)

5110 History of Education (3)

5120 Principles of Education (3)

5140 Comparative Philosophies of Education (3)

5141 Pragmatism in Education (3)

5142 Existentialism in Education (3)

5143 Supervised Readings in Philosophy of Education (3)

5150-40-70 Seminar (1-3, 1-3, 1-3)

5180-90-5200 Educational Specialist Research and Thesis (3, 3, 3)

5210 Seminar in International Education: Asia and Africa (3)

5211 Instructional Strategies in Elementary School Social Studies (3)

5220 Supervised Readings in International Education (3)

5230 Diagnosis and Remediation of Arithmetic Difficulties (3)

5240 Creative Thinking and Expression in Elementary School (3)

5250 Secondary School Instruction (3)

5270 The Elementary School Curriculum (3)

5280 Teaching Language Arts in the Elementary School (3)

5281 Teaching Social Studies in the Elementary School (3)

5282 Teaching Science in the Elementary School (3)

5283 Programs and Materials in Teaching Elementary Science (3)

5284 Seminar in Teaching Elementary Science (3)

5285 The Teaching of Mathematics in the Elementary School (3)

5289 Programs and Materials in Elementary Language Arts (3)

5292 Seminar in Research and Theory in Teaching Mathematics in the Elementary School (3)

5302 Psychology of Reading (3)

5304 Programs and Materials for Reading Instruction (3)

5305 Trends and Issues in Teaching Reading (3)

5306 Teaching Reading to the Linguistically Different Learner (3)

5360 Curriculum Development and Evaluation (3)

5380-70 Curriculum Development in the Local School (3, 3)

5385 Mathematics Laboratories in Elementary School (K-9) (3)

5388 Diagnosis of Remedial Reading Problems (3)

5389 Remediation of Remedial Reading Problems (3)

5389 Developmental Reading Practice (3)

5390 Organization and Administration of Reading Programs (3)

5410 The High School Curriculum (3)

5430 Curriculum Laboratory for High Schools (3)

5580 Curriculum Planning and Development (3)

5610 Educational Statistics (3)

5620 Problems in Direction and Supervision of Student Teaching (3)

5630 Practicum in the Individualization of Instruction (3)

5640 Newer Trends in Elementary Education (3)

5650-60 Curriculum Laboratory for Elementary Schools (3, 3)

5670 Curriculum Laboratory for Early Childhood Education (3)

5690 Teacher-Parent-Community Relations (3)

5690 Design of Instructional Media (3)

5691 Advanced Production of Audiovisual Software (3)

5692 Evaluation of Instructional Media (3)

5693 Administering Instructional Media Programs (3)

5694 Utilization of Educational Television and Radio (3)

5695 Research in Instructional Media (3)

5696 Practicum Experience in Instructional Media (3)

5710 Techniques of Research in Education (3)

5720 Classroom Observation and Analysis (3)

5800 Seminar in Cooperative Curriculum Research (3)

5820 Seminar in the Teaching of Mathematics (3)

5825 Teaching Mathematics in the Middle and Junior High School (3)

5830 Seminar in Mathematics Education (3)

5835 Teaching Mathematics in the Senior High School and Community/Junior College (3)

5841 Trends and Issues in Early Childhood (3)

5842 Problems in Education: Early Childhood (3)

5843 Seminar in Early Childhood Education (3)

5844 Mathematics in Early Childhood Education (3)

5845 Social Studies and Science in Early Childhood Education (3)

5846 Language Arts in Early Childhood Education (3)

5850-60-70 Problems in Education: English (3, 3, 3)

5861-61-71 Problems in Education: Mathematics (3, 3, 3)

5852-62-72 Problems in Education: Social Studies (3, 3, 3)

5853-83-73 Problems in Education: Science (3, 3, 3)

5854-64-74 Problems in Education: Language Arts (3, 3, 3)

5865-65-75 Problems in Education: General Curriculum (3, 3, 3)

5866 Problems in Education: Instructional Materials (3)

5866-76 Problems in Education: Instructional Materials (3, 3, 3)

5857-67-77 Problems in Education: Foreign Languages (3, 3, 3)

5859-69-79 Problems in Education: Conservation (3, 3, 3)

5899 Field Experience (1-6)

5900 Seminar in the Teaching of English in the Secondary School (3)

5901 Linguistics and the Teacher of English (3)

5902 Teaching Composition in the High School (3)

5903 Teaching Fiction in the Secondary School (3)

5904 Teaching the Mass Media in the English Classroom (3)

5905 Teaching English in the Community/Junior College (3)

5906 Teaching Poetry in Grades 7-12 (3)

5907 Teaching Drama in Grades 7-12 (3)

5908 Developing Speaking and Listening Skills in Grades 7-12 (3)

5909 Instructional Theory and Design (3)

5910-20-30 Problems in Lieu of Thesis (3, 3, 3)

5911 Directing the Forensic Program (4)

5912 Play Production in Secondary Schools (4)

5950 Reflective Thinking: The Method of Education (3)

5960 Teaching Natural Science (3)

5961 Seminar in Science and Environmental Education (3)

5970 Teaching the Social Studies (3)
8630 Studies in Mathematics Education (3)
6850 Principles of Educational Leadership (3)
6899 Internship (1-6)

Educational Administration and Supervision (292)

Professors:
D.H. Stollar (Head), Ph.D. Ohio State;
C.M. Achilles, Ed.D. Rochester; J.W. Gilliland
Emeritus), Ed.D. New York; O.B. Graff
Emeritus), Ph.D. Ohio State; J.F. Lovell, Ed.D.
Florida; O.K. O’Fallon, Ed.D. Colorado;
C.M. Peccolo, Ph.D. Iowa; R.K. Hone, Ed.D.
Tennessee; C.K. Tanner, Ed.D. Florida State;
C.E. Trotter, Jr., Ed.D. Tennessee; F.M. Trusty,
Ed.D. Stanford; G.C. Ubben, Ph.D. Minnesota;

Associate Professors:
H.F. Aldmon, Ed.D. Tennessee (Vice Chancellor
for Student Affairs); G.W. Harris, Jr., Ph.D.
Michigan; P.M. Husen, Ed.D. Stanford.

GRADUATE
5002 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5100 Internship in Educational Administration (3)
5120 Introduction to Educational Administration
(3)
5180-90-5200 Educational Specialist Research and
Thesis (3, 3, 3)
5220 Philosophy and Theory in Educational Admin-
istration (3)
5230 Seminar in the Behavioral Sciences for Educa-
tional Administration (3)
5290 The Politics of Education (3)
5310 School Administration in a Multi-Ethnic So-
ciety (3)
5420 District Level Administration (3)
5430 Building Level Administration (3)
5440 Introduction to Law, Finance, and Business
Management at the Building Level (3)
5450 Organization of the School Program (3)
5470 Introduction to School Facility Planning (3)
5480 Introduction to Supervision and Personnel
Administration (3)
5490 Administration of Community Education (3)
5530 Introduction to Educational Planning (3)
5560 Analysis and Interpretation of Research for
Educational Administrators (3)
5580 Seminar in Communication Skills for Educa-
tional Administrators (3)
5711-21-31 Problems in Educational Administra-
tion and Supervision: School Operation (3, 3, 3)
5712-22-32 Problems in Educational Administra-
tion and Supervision: Higher Education (3, 3, 3)
5713-23-33 Problems in Educational Administra-
tion and Supervision: State School Administration
(3, 3, 3)
5714-24-34 Problems in Educational Administra-
tion and Supervision: Preparation Programs
(3, 3, 3)
5715-25-35 Problems in Educational Administra-
tion and Supervision: Community Education
(3, 3, 3)
5720 Seminar in Urban School Administration (3)
5730 School Business Management (3)
5740 School Law (3)
5751-61-71 Problems in Educational Administra-
tion and Supervision: Theory (3, 3, 3)
5752-62-72 Problems in Educational Administra-
tion and Supervision: Finance (3, 3, 3)
5753-63-73 Problems in Educational Administra-
tion and Supervision: Transportation (3, 3, 3)
5754-64-74 Problems in Educational Administra-
tion and Supervision: Business Management
(3, 3, 3)
5755-65-75 Problems in Educational Administra-
tion and Supervision: Personnel (3, 3, 3)
5756-66-76 Problems in Educational Administra-
tion and Supervision: School Plant (3, 3, 3)
5757-67-77 Problems in Educational Administra-
tion and Supervision: Organization and Structure
(3, 3, 3)
5758-68-78 Problems in Educational Administra-
tion and Supervision: School Law (3, 3, 3)
5759-69-79 Problems in Educational Administra-
tion and Supervision: Supervision (3, 3, 3)
5770 Maintenance of School Plants (3)
5780 Supervision (3)
5790 School Board-Superintendent Relationships
(3)
5810 Survey Research Methods (3)
5830 Contemporary Economics and Educational
Finance (3)
5890 Decision Making and Decision Theory in Edu-
cational Organizations (3)
5910-20-30 Problems in Lieu of Thesis (3, 3, 3)
5980 Administration in Higher Education (3)
5981 Specialized Seminar in Education Adminis-
tration and Supervision: School Operation (3)
5982 Specialized Seminar in Education Adminis-
tration and Supervision: Higher Education (3)
5983 Specialized Seminar in Education Adminis-
tration and Supervision: State School Administra-
tion (3)
5984 Specialized Seminar in Education Adminis-
tration and Supervision: Preparation Programs (3)
5991 Specialized Seminar in Education Administra-
tion and Supervision: Theory (3)
5992 Specialized Seminar in Education Adminis-
tration and Supervision: Finance (3)
5994 Specialized Seminar in Education Adminis-
tration and Supervision: Business Management (3)
5995 Specialized Seminar in Education Adminis-
tration and Supervision: Personnel (3)
5996 Specialized Seminar in Education Adminis-
tration and Supervision: School Law (3)
6000 Doctoral Research and Dissertation
6040 Seminar in Educational Administration and
Supervision (1, 1, 1)
6100 Internship in Educational Administration
(3)
6210 Modern Trends in the Theory and Practice of
Educational Administrators and Supervisors (3)
6220 Programs for the Professional Preparation of
Educational Administration and Supervision (3)
6480 School Personnel Administration (3)
6480 Special Topics in School Personnel Adminis-
tration (3)
6530 Futuristic Educational Planning Methods (3)
6550 State-Federal Relations in Education (3)
Educational Psychology and Guidance (311)

Professors:

Associate Professors:

Assistant Professors:

1000 Career Development: Exploration and Experience (3) Exploration of occupations based upon analysis of self and occupational requirements; development of commitment to teaching and understanding of teaching-learning problems in the classroom. Prereq: Consent of instructor. S/NC.

2000 Field Experience (1) Field experiences in working with children and youth and their teachers. Students will perform various teaching tasks and be given opportunity to act in teaching roles. May be repeated a total of six credit hrs.

2430 Child Study (3) Child learning and development; study of individual children, ages 5-12. Prereq: Psychology 2500 or equivalent; coreq: either Educational Psychology and Guidance 2000 or a 2 hr/week field experience.

2510 Child and Adolescent Study (4) Encompasses study of principles of behavior, intervention techniques, principles of child and adolescent development, special categories of children, child in relation to family and community, and methods of studying children. Prereq: Educational Psychology 1000 and Psychology 2110 or consent of instructor.

2520 Study of Self and Self-Concept (4) Study of self-understanding of how the self develops so that prospective teacher can better understand pupils and student’s increased understanding of himself. Prereq: Educational Psychology 1000, Psychology 2110, and Educational Psychology 2510 or consent of instructor.

3000 Field Experience (1) Field experiences in working with children and youth and their teachers. Students will perform various teaching tasks and be given opportunity to act in teaching roles. May be repeated a total of six credit hrs.

3110 Classroom Behavior Management (4) Student will develop understanding of behavior management procedures and skill in utilizing behavior management procedures in shaping pupil classroom behaviors. Prereq: Psychology 2110.
School of Health, Physical Education, and Recreation

Madge M. Phillips, Director

At the undergraduate level professional preparation programs are offered for teachers of health, physical education, dance, and/or recreation and for administrators of public health or recreation programs. For information on graduate programs leading to the Master of Science, the Master of Public Health, Educational Specialist, the Doctor of Education, or the Doctor of Philosophy degrees, see the Graduate Catalog.

The School of Health, Physical Education, and Recreation also provides activities programs for all students in physical education and service courses in health and safety.

Health and Safety Education


Associate Professors: I.A. Ahmad, Ph.D. Oregon, M.D. Punjab (India); A.J. Brandy, Ed.D. Tennessee; J.D. Gorski, Dr. P.H. UCLA; C.B. Hamilton, Dr. P.H. Oklahoma.

Assistant Professors: A.I. Pickett, M.S. Columbia; A.F. Thompson, Ph.D. Michigan.


Public Health (839)

1110 Principles in Personal Health (3) To develop ability to approach health scientifically and to develop realistic confidence in judgments affecting personal health.

2040 Seminar in Human Sexuality (2) Problems and responsibilities of being male and female. S/N/C.

2050 Seminar in Drug Use and Abuse (2) Intensive look at problems related to use and abuse of drugs. S/N/C.

3000 Foundations of Health Science (3) In-depth study of content areas relating to personal health and contemporary health problems, i.e., mood modifying products, consumer health, international health, personal health practices, reciprocal relationships involving man, disease and environment. (Same as School Health 3000.)

3210 First Aid and Emergency Care (4) Theory and practice of first aid and emergency care. Instruction in medical self-help. Course leads to Red Cross Certification in Advanced First Aid and Emergency Care. (Applicant must be at least 16 years of age for certification.) (Same as School Health 3210.)

3310 Communicable and Noncommunicable Diseases (3) Modern concepts of diseases; etiology of common communicable and chronic disease problems including prevention and control. Prereq: One year of biological science and one course in bacteriology.

3320 Sanitation (3) History of sanitary awakening; disease-producing relationships and controls of water, sewage, refuse, milk, meat and other foods, air, insects, and soil; sanitation of homes, swimming pools, industrial plants, markets, restaurants, camps, and public bathing places. Healthful school facilities and buildings and grounds, lighting, acoustics, thermal control, and safety provisions. Prerequisite: One year biological science, one course in microbiology. 2 hours and 1 lab.

3330 Introduction to Public Health (3) Philosophy, organization, and functions of federal, state, and local official and voluntary public health agencies. Includes periodic field trips.

4120 Community Health Problems—Alcoholism (3) Explores problems of alcoholism regarding overall health of community. Emphasis placed on factors making alcoholism a serious public health problem. Various types of educational programs to control the disease covered.

4130 Community Health Problems—Suicide (3) Explores problems of suicide regarding overall health of community.

4140 Community Health Problems—Death Education (3) Exploration of ramifications of death and dying as related to personal and community health.

4210 Urban and Industrial Health (3) Health problems created by a burgeoning population and the megalopolis; industrial health problems of concern to management, supervisor, and industrial worker, control of occupational diseases, poisons, accidents, and other conditions incidental to industry.

4220 Communications for Better Health (3) Selective study of communications in health enterprise. Consideration in logical progression the problems of transmitting current and new information to practitioners; communications among members of modern health teams, among health agencies, and use of mass media for transmitting health information.

4410 Consumer Health and Safety Education (3) Survey of major consumer and health safety problems; selecting, purchasing, and financing of safety and medical services.

4411 Instructor’s Advanced First Aid and Emergency Care (3) Designed to teach First Aid. Satisfactory completion qualifies one for American National Red Cross Certification as an Advanced First Aid and Emergency Care Instructor. (A requirement for this certification is that an applicant must be at least 21 years of age.) Prerequisite: 3210 or valid Advanced First Aid and Emergency Care Certificate.

4420 Drug Abuse Education (3) Drug abuse problem and suspected causes; pharmacy care of drugs and effects on society and methods of drug abuse education.

4700-10-20 Field Practice in Public Health (3, 3, 3) Field practice in public health under supervision of public health profession. S/N/C.

4730 Workshop in Public Health Education (3-4) For teachers, nurses, case workers, sanitarians, and other voluntary and public health agency personnel; emphasizes the problem-solving approach through small group interaction, case method, and critical incident technique. May be repeated for credit.

4840-50-60 Problems in Public Health Education (1, 1, 1) Individual identification and study of current problems in public health education. Extensive reading of literature required.

GRADUATE

5002 Non-Thesis Graduation Completion (3-15)

5010-20-30 Workshop in Public Health (3-4, 3-4, 3-4)

5070-80-90 Field Practice and Seminar in Public Health (3-5, 3-5, 3-5)

5110 Environmental Health (3-5)

5120-30 Occupational Health and Safety (5, 5)

5150 Industrial Toxicology (3)

5220 Health and Sickness in the Focus of Public Health Education (2)

5410 Epidemiology (3)

5420 Administration of Public Health (3)

5430 Vital and Medical Statistics (4)

5440 Methods and Materials in Public Health Education (4)

5540 Factors in Problem Solving for Community Health (5)

5550 The Public Health Educator in Community Organization and Development (4)

5560 Functions and Roles of the Public Health Educator (5)

5580 Physical Activity and Health (5)

5705 Advanced Professional Health Education: Health Planning (3-5)

5710 Advanced Professional Health Education: Health Planning II (3-5)

5715 Advanced Professional Health Education: Health Planning III (3-5)

5730 Dental Health Education (3-5)

5735 Emergency Medical Services (3-5)

5745 Family Health Unit (3-5)

5750 Health and Medical Care Legislation and Law (3-5)

5755 Health Facilities Administration (3-5)

5760 Health Services Administration (3-5)

5785 Occupational Health Unit (3-5)

5790 Self-Care Unit (3-5)

5795 The Training of Paramedical Personnel (3-5)

5840-50-60 Problems in Public Health Education (1-3, 1-3, 1-3)

6000 Doctoral Research and Dissertation

6020 Critical Analysis of Writing and Research in Health Education (3)

6050-60 Seminar in Health Education (3, 3)

6210 Health Aspects of Gerontology (3)

6220 Seminar on the Nation’s Health (3)

6230 International Health (3)

Safety (890)

3520 Principles of General Safety (3) Deals with principles, practices and procedures in general safety. Covers safety problems in school traffic, recreation, industry, home, and other public areas.

4810-20-30 Problems in School Health Education (1, 1, 1) Individual identification and study of current problems in school health education. Extensive reading of literature required.

GRADUATE
5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5100 Problems and Practices in School Health (3)
5200 Teaching of Sex Education and Human Sexuality (3)
5510 Curriculum Construction in School Health Instruction (3)
5520 Evaluation in School Health Instruction (3)
5530 School Health Program Surveys (3)
5620 School Health Administration and Supervision (3)
5630-40 Workshop in School Health Education (3, 3)
5720-30-40 Graduate Workshop in Safety (3-4, 3-4, 3-4)
5810-20-30 Problems in Safety (1-3, 1-3, 1-3)
5870-80-90 Current Issues in Safety Education (1, 1, 1)
6010-20-30 Internship and Research in Safety Education (3, 3, 3)

School Health (898)
3000 Foundations of Health Science (3) (Same as Public Health 3000.)
3210 First Aid and Emergency Care (4) (Same as Public Health 3210.)
3410 School Health Instruction (3) Selection of health content in school curriculum.
3420 School Health Services (3) Development, maintenance, and protection of health of students including examination, screening, special services, communicable disease control, emergency care, and school health records.
3510 The School in Community Health (3) Role of teacher in community health education; school’s responsibility in promoting healthful living and the place of existing media and agencies in program. Not open to health and physical education majors.
3610 Methods in Elementary Health Instruction (3) Preparation and presentation of health topics. Teaching method is emphasized and student participation stressed. Required for elementary teachers. Prereq: 3510 or Public Health 1110 or Nutrition 1230.
3620 The Teaching of Sex Education (3) Trends, content, methods, and materials.
3650 Methods in Secondary Health Instruction (3) Preparation and presentation of health topics. Teaching method is emphasized and student participation is stressed. Prereq: 3610.
4710 Workshop in School Health Education (3-6) For advanced students, teachers, school administrators, nurses and other paramedical school personnel. Lectures, demonstrations, films, field trips, and supervised research in special health problems. May be repeated for credit.

4820 Orientation in Dance—Appreciation (3) History, aesthetic principles, and current trends in dance.
3000 Administration of Athletics (2) Conduct of problem of athletic sports in high schools and colleges.
3010 Beginning Dance Techniques (2) Analytical and practical study of modern dance movements.
3020 Intermediate Dance Techniques (2, 2) Emphasis on analysis and discipline. Prereq: 3010.
3040 Beginning Jazz Techniques (2) Instruction and practice in styles and techniques of jazz dance.
3050 Rhythmic Analysis (2) Emphasis on analysis of organic movement. Prereq: Junior standing, consent of instructor.
3060 Beginning Dance Composition (2) Experience in creative forms of dance. Prereq: 3010.
3070 Beginning Ballet Techniques (2) Introductory course designed to acquaint students with discipline of classical ballet, cultural, and educational values, and relationship to other dance forms.
3080 Officiating Women’s Volleyball (3) Officiating based on rules of National Association for Girls and Women in Sport. National tests and ratings will be given. Both men and women are encouraged to take the course.
3090 History of Dance and the Related Arts I (2) Dance history and the arts related to it from beginning in primitive societies through the nineteenth century.
3100 Social Dance (2) Instruction, practice, and teaching in basic social dance steps.
3110 Athletic Coaching of Football (2) Fundamentals and coaching techniques. Prereq: approval of instructor.
3120 Coaching of Basketball (2) Individual and team fundamentals for the high school coach; attention given to conditioning, schedule making, and other business arrangements. Prereq: Approval of instructor.
3130 Athletic Coaching of Track and Field Events (2) Techniques and training procedures. Prereq: Approval of instructor.
3151 History of Dance and the Related Arts II (2) Survey of dance and the arts related to it tracing their development in the twentieth century.
3160 Officiating Women’s Basketball (3) Officiating based on rules of National Association for Girls and Women in Sport. National tests and ratings will be given. Both men and women are encouraged to take the course.
3170 Weight Control and Physical Activity (3) Theoretical knowledge and practical experience in principles and methods of weight control and related physical activity.
3180 Track and Field (2) Methods and practical experience in various events of track and field. Special emphasis on teaching techniques, demonstration, progression, and analysis.
3200 Athletic Coaching of Baseball (2) Individual and team fundamentals for high school and college coach. Prereq: Consent of instructor.
3210 History and Principles of Physical Education (3) Principles from basic sciences of anatomy, bacteriology, biology, chemistry, physiology, psychology, and sociology applied to health, physical education and athletic coaching.
3220 Physical Fitness Activities (3) Teaching of calisthenics, conditioning activities, and weight training with emphasis on physical fitness concepts including muscular development of the body.
3240 Team Sports (2) Instruction, practice, and student teaching in selected team sports.
3250 Athletic Training Techniques (3) Theory and practice in the prevention and care of basic athletic injuries.
3260 Practicum for Physical Education Majors (0-1) Observation and limited teaching, coaching, and leadership experiences in physical education programs. Experiences intended to cover the last three years of professional preparation. May be repeated. Maximum of 10 hrs credit. S/JNC.

3320 Applied Anatomy and Kinesiology (3) Bones, joints, ligaments, and muscles involved in movements, reaction of joints and muscular mechanism to training development and efficiency.

3330 Stunts and Tumbling (2) Instruction and practice; student teaching and lesson planning stressed with focus upon safety techniques.

3430 Adapted Physical Education Laboratory (1) Practical work, including student teaching, supplementing 4110.

3450 Physical Education in the Elementary School (3) Movement experiences appropriate for elementary school children: planning and teaching a developmental program.

3510 Conceptual Bases for Study of Human Movement Behavior (2) Biophysical, perceptooognitive, and psycho-social forces causing humans to move as they do. Prereq: 1011 or 1012.

3530 The Teaching of Swimming and Lifesaving (2) Certification in ARC Water Safety Instructor Training or Senior Lifesaving with additional practice in teaching of swimming.


3560 Human Growth and Motor Development (3) Structural and functional changes in man from birth to old age, and relationship of changes to physical performance and skill development.

3570 Developmental Trends in Movement Performance of Children (2) Motion characteristic of basic movement patterns evolving in children with an emphasis upon understanding movement performance as a result of interaction of biophysical, perceptooognitive and psycho-social variables. Prereq: 3540-50-60.

3610-20 Individual and Dual Sports (1, 1) Instruction, student teaching, and practice in organizing and directing competitive and recreational activities suitable for schools, churches, or community recreation centers.

3650 Teaching Strategies and Program Implementation in Elementary Physical Education (3) Understanding and employing teaching strategies appropriate to elementary physical education, and study of program content and implementation. Prereq: 3570.

3660 Basic Movement Sequences for Children (3) Movement patterns and skills which are fundamental to movement activity, with emphasis upon designing and presenting sequential learning tasks and creative activity experiences. Prereq or coreq: 3650.

3870 Practicum in Developmental Movement for Early Childhood (3) Experiences in designing and presenting developmental movement tasks to preschool children. Prereq or coreq: 3660.

3880 Structured Movement Activities in Elementary Physical Education (4) Self-testing, games and sport, and dance activities included in elementary school physical education program, with emphasis upon designing and presenting sequential learning experiences. Prereq: 3870.

3880 Social Recreation (3) Theory and practice in social recreation for camps, community centers, clubs, and schools. Course includes folk and square dance, quiet and active games, skills, stunts, other recreational activities, and program planning. (Same as Recreation 3880.)

3910 Principles and Problems of Coaching (3) Examination of practical problems and situations which prepare students to make judgments and decisions in a coaching environment. Prereq: At least sophomore standing.

4010 Advanced Dance Technique (2) Development, integration, and synthesis of previous dance vocabulary; emphasis on analysis and practice of dance principles; solo and group work. Prereq: 3320.

4020 Practicum in Dance Production (2) Prereq: Consent of instructor.

4060 Advanced Dance Composition (2) Creation and development of ideas, themes, and dance forms; solo and group work. Prereq: 3360.

4070 Stagecraft for Dance Production (2) Equipment, light design, properties, sets, and stage management.

4110 Adapted Physical Education (3) Classification of atypical students who require modified programs in physical education; activities and class organization suitable for required or special physical education classes.

4120 Administration of Physical Education (3) Selected topics in organization and administration problems related to physical education programs in schools. Emphasis placed on human relations approach to solving problems in administration.

4140 Tests and Measurements in Physical Education (3) Study of elementary statistics related to measurement. Critical examination of tests used to evaluate strength, sports skills, and physical fitness. Prereq or coreq: 3320 and Zoology 4940.

4150 Creative Rhythms for Children (3) Methods and materials for grades 1-6. 3 hrs and 1 lab.

4160 Athletic Coaching Field Experience (2) Practical experience in coaching and related responsibilities. Must be repeated. Maximum credit 4 hrs. Prereq: Approval of instructor.

4230 Program Planning in Physical Education (3) Curriculum building, course construction, and lesson planning for public schools and colleges.

4310 Folk and Square Dance (2) Materials and methods for public schools, colleges, and recreation centers.

4320 Tap Dance (2) Instruction, practice, and student teaching.

4340-40-50 (1, 1, 1) Specialization study in selected area of physical education.

4410 Wrestling (2) Theoretical and practical work for prospective teacher; emphasis on safety procedures.

4430 Women's Gymnastics (2) Development of skills on balance beam, uneven parallel bars, and side horse vaulting; special emphasis on progression, safety, and teaching techniques. Open to men and women. Prereq: 3330.

4440 Men's Gymnastics (2) Development of skills on pommel horse, parallel bars, and long horse vaulting. Special emphasis placed on safety, progression, and teaching techniques. Open to men and women.

4450 Men's Gymnastics II (2) Development of skills on still rings, horizontal bar, trampoline, and exhibition gymnastics; special emphasis placed on safety, progression, and teaching techniques. Open to men and women. Prereq: 4440.

4460 The Coaching and Judging of Women's Gymnastics (2) An introduction to the techniques used in the coaching and judging of women's gymnastics according to the rules of the United States Gymnastics Federation. National tests and ratings will be given. Both men and women are encouraged to take this course. Prereq: 2734 or 4440.

4550 Methods of Teaching Dance (2) Individual work with analysis and criticism. Prereq: senior standing and approval of instructor.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110 Administrative Problems in Physical Education (3)

5120 Problems of the Curriculum in Physical Education (3)

5130 Methods in Physical Education (3)

5210 Principles and Philosophy of Physical Education (3)

5220 Readings in Physical Education (3)

5230 Supervisory Problems in Physical Education (3)

5310 Analysis of Basic Motor Skills (3)

5320 Seminar in Research Techniques in Physical Education (3)

5410-20-30 Specialization Study in a Selected Physical Education Area (1-3, 1-3, 3)

5500 Advanced Kinesiology (3)

5510 Selected Topics in Anatomy (3)

5550 Physical Rehabilitation (3)

5580 Physical Activity and Health (5)

5600 Applied Physiology (6)

5610 Advanced Exercise Physiology (4)

5820 Experimental Techniques in Applied Physiology (3)

5850 Scientific Bases for Physical Education (3)

5810-20-30 Seminar in Physical Education (1, 1, 1)

5910-20-30 Problems and Projects in Physical Education (1-3, 1-3, 3)

6000 Doctoral Research and Dissertation

6010 Seminar in Physical Education (1)

6220 Independent Research (3)

6410 Practicum in Kinesiology (3)

6510-20 Issues and Problems in Physical Education (3, 3)

6610 Seminar in Exercise Physiology (2)

6640 Research Participation in Applied Physiology (1-6)

6810-20 Practicum (2, 2)

Service Program in Physical Education

The service program in physical education provides all students a program of physical education planned in accordance with their present and future needs and interests.

2701 ARC Advanced Life Saving (2)

2702 ARC Water Safety Instructor Training (2)

2703 ARC Water Safety Instructor for Handicapped (2)

2705 Archery (2)

2707 Badminton Elementary (2)

2708 Badminton Intermediate (2)

2711 Ballet Elementary (2)

2712 Ballet Intermediate (2)

2713 Ballet Advanced (2)
2714 Basketball (2)
2715 Bowling Elementary (2)
2716 Bowling Intermediate (2)
2717 Bowling Advanced (2)
2719 Equitation Elementary (2)
2725 Field Hockey (2)
2727 Flag Football (2)
2728 Folk and Square Dance (2)
2730 Foundations of Physical Fitness (Lecture, Lab, Activity) (2)
2731 Golf Elementary (2)
2732 Golf Intermediate (2)
2734 Women’s Elementary Gymnastics (Coed) (2)
2735 Women’s Intermediate Gymnastics (Coed) (2)
2736 Women’s Advanced Gymnastics (Coed) (2)
2737 Handball Elementary (2)
2738 Handball Intermediate (2)
2739 Handball Advanced (2)
2741 Ice Skating Elementary (2)
2742 Ice Skating Intermediate (2)
2743 Ice Skating Advanced (2)
2745 Lacrosse Elementary (2)
2747 Modern Dance Elementary (2)
2748 Modern Dance Intermediate (2)
2749 Modern Dance Advanced (2)
2750 Modern Jazz (2)
2752 Paddleball Elementary (2)
2753 Paddleball Intermediate (2)
2755 Racquetball Elementary (2)
2756 Physical Fitness (Conditioning Program) (2)
2757 Men’s Elementary Gymnastics (Coed) (2)
2758 Personal Safety and Defense for Women (2)
2759 Men’s Intermediate Gymnastics (Coed) (2)
2760 Soccer (2)
2761 Men’s Advanced Gymnastics (Coed) (2)
2762 Social Dance (2)
2764 Softball (2)
2765 Sport in Society (2)
2766 Racquetball Intermediate (2)
2767 Squash Elementary (2)
2770 Racquetball Advanced (2)
2771 Swimming Elementary (2)
2772 Swimming Elementary II (2)
2773 Swimming Intermediate (2)
2774 Swimming Advanced (2)
2775 Synchronized Swimming Elementary (2)
2776 Synchronized Swimming Intermediate (2)
2778 Tap Dance Elementary (2)
2779 Tap Dance Intermediate (2)
2781 Tennis Elementary (2)
2782 Tennis Intermediate (2)
2783 Tennis Advanced (2)
2784 Track and Field (2)
2785 Tumbling Elementary (2)
2786 Tumbling Intermediate (2)
2787 Tumbling Advanced (2)
2788 Volleyball Elementary (2)
2790 Volleyball Intermediate (2)
2791 Volleyball Advanced (2)
2792 Weight Control and Figure Improvement (2)
2794 Weight Training Elementary (2)
2795 Weight Training Intermediate (2)
2797 Wrestling Elementary (2)
2798 Wrestling Intermediate (2)

Recreation (853)

Associate Professor:
M.L. Peters (Chairman), Ph.D. Illinois.

Assistant Professors:
P. Borovik, M.S. Tennessee; C.J. Johnson, M.S. Tennessee; K.L. Krick, Dr. Rec. Indiana.

Instructor:
P. Margolis, California State.

1000 Field Practice (1-6) Supervised practice in an approved agency offering leisure services. May be taken for variable credit up to 6 hours. Each one-credit requires a credit of 25 contact hrs in the field agency. For recreation students only. Prereq: Recreation 1000.

1100 Orientation to the Recreation Profession (3) Overview of types, functions, and relationships of delivery systems for recreation and park services.

2000 Field Practice (1-6) Supervised practice in an approved agency offering leisure services. May be taken for variable credit up to 6 hours. Each one-credit requires 25 contact hrs in the field agency. For recreation students only. Prereq: Recreation 1000.

3000 Field Practice (1-6) Supervised practice in an approved agency offering leisure services. May be taken for variable credit up to 6 hours. Each one-credit requires 25 contact hrs in the field agency. For recreation students only. Prereq: Recreation 1000 & 2000.

3100 Recreation Leadership Procedures (3) Principles and practice of recreation leadership; techniques and methods of working with individuals and groups in leisure activity.

3140 Philosophical Foundations of Recreation (3) Examination of recreation as personal experience; theories of play; philosopies of leisure and relationship to economy, ecology, health, government, culture, and self-realization; history of recreation movement.

3200 Planning Leisure Programs (3) Principles and methods employed in planning effective and well-balanced leisure time programs for varied groups in various settings.

3301 Outdoor Recreation Skills and Techniques I (3) Fundamentals necessary for safe participation in outdoor recreation activities such as snowshoeing, hunting, casting and angling, power boating, rappelling and backpacking. Emphasis on enjoyment of natural environment without disturbance or destruction of plant and animal habitats.

3302 Outdoor Recreation Skills and Techniques II (3) Instruction in safe conduct of outdoor recreational activities such as sailing, skin diving, caving, orienteering, and nature interpretation without disturbance of environment. Provision of outdoor recreation experiences for the handicapped. Prereq: Consent of Instructor.

3800 Social Recreation (3) (Same as Physical Education 3880.)


4130 Recreation Administration (3) Introduction to recreation administration, including planning, personnel, areas and facilities, program services, finances, and public relations. Prereq: 1100, 3100, 3140.

4200 Survey of Recreation for Special Populations (3) Responsibility of recreation profession to minority groups whose leisure opportunities and needs may require special services.

4500 Specialized Study in a Selected Area of Recreation (1-6) Comprehensive study in a selected specialized area within the broad field of recreation. For recreation students only. May be taken for variable credit up to 9 hrs. May be repeated for a maximum of 9 hrs credit with consent of the division. Prereq: Consent of Instructor.

Graduate Programs

5000 Thesis (9)

5002 Non-Thesis Graduation Completion (3-18)

5130 Interpretation of Leisure (3)

5140 Leisure Service Delivery Systems (3)

5150 Current Issues in Recreation (3)

5240 Therapeutic Recreation (3)

5250 Implementations of Recreation Services for the Ill or Disabled (3)

5290 Leisure and Mental Health (3)

5300 Seminar in Recreation (1)

5340 Administration of Recreation Funds (3)

5350 Organizational Policies for Recreation (3)

5360 Management and Operation of Recreation Facilities (3)

5440 Problems and Projects in Recreation (1-9)

5460 Specialized Study in Recreation (1-9)

Special Education and Rehabilitation (993)

Professors:

Associate Professors:

Assistant Professors:

Instructor:
R.F. Bynum, M.S. Florida State.

The undergraduate programs in the Department of Special Education and Rehabilitation provide the general professional courses for the preservice education of candidates for certification in meeting the needs of exceptional children. Facilities are available for continuous observation and participation in direct relationships with exceptional children who are hospitalized, homebound, in residential schools, special classes, or regular classes.
Course sequences may be planned in the areas of (1) General Special Education; (2) the Hearing Impaired; (3) Speech and Hearing; (4) Rehabilitation Counselor Education.

It is possible to plan a program which will lead to certification in more than one area. For planning a program, the student must consult with an advisor in the chosen areas.

General Special Education:
3333, 3520, 4110, 4120, 4130, 4150, 4351, 4361, 4440, 4610, 4740, 4861, 4862, 5290, 5620

The Hearing Impaired:
2110, 2120, 2130, 3210, 3220, 3333, 3410, 3420, 4120, 4220, 4230, 4250, 4280, 4290, 4351, 4361, 4371, 4710, 4740, 4870, 4871, 4930, 5220, 5240, 5280, 5310, 5320, 5330, 5620

Speech and Hearing:
3310, 3333, 3710, 4030, 4040, 4310, 4320, 4330, 4340, 4341, 4342, 4400, 4720, 4900. Other courses from Audiology and Speech Pathology: 3010, 3050, 3065, 3200, 4610, 4650.

Rehabilitation Counselor Education:
5100, 5110, 5115, 5120, 5130, 5140, 5145, 5146, 5147, 5150, 5150, 5160, 5160, 5200, 5710, 5720, 5720, 5730, 5740, 5750, 5760, 5770, 5771.

Field Experience I (1, 1, 1) Students observe, tutor, and perform teacher related tasks in special education programs. S/NC.

Field Experience II (1, 1, 1) Students observe, tutor, and perform teacher related tasks in special education programs. S/NC.

Articulation Disorders (4) (Same as Audiology and Speech Pathology 3310.)

Education of the Exceptional Child (3) Prerequisites: characteristics, and special needs; local and state programs for diagnosis and care; educational provisions in regular or special classes; home teaching; social and vocational guidance.

Language-Speech Handicapped Child in the Classroom (3) Recognizing and understanding speech problems; observing normal and defective speech development in children; incorporating speech improvement activities into the curriculum. For students not majoring in speech and hearing.

Audiology I (4) (Same as Audiology and Speech Pathology 3710.)

Rehabilitation Practice (3) Evaluation of client data in predicting rehabilitation prognosis. Prereq: 4230.

The Public School Speech and Hearing Program (3) Organization, administration, and procedure.

Appraisal of Speech and Language Disorders (4) (Same as Audiology and Speech Pathology 4040.)

The Nature and Concept of Mental Retardation (3) Identification, description, and study.

Education of the Mentally Retarded Child (3) Philosophy and rationale underlying the teaching and guidance of mentally retarded; methods and materials in special and regular classes. Prereq or parallel.

Education of the Brain-Injured Child (3) Nature of brain-injured child; skills for identifying educational, physical, and emotional characteristics; special educational techniques.

Education of Hospitalized and Homebound Children (3) School and home responsibility for physical care and social relationships, educational adjustment, vocational needs, and cooperation with related service resources.

Education of Partially Sighted Children (3) Curricular adjustments and materials; home visits for parents' cooperation in medical care and special needs.

Speech Development of the Hearing Impaired (3) Anatomy and physiology of speech system. Relationship of hearing to speech development. Theories and techniques of speech development and improvement; for hearing impaired children. Prereq: Speech 3050. (Same as Audiology and Speech Pathology 4190.)

Practicum in Speech Development of Hearing Impaired (3) Application of theories and techniques of speech development and improvement with hearing impaired children. Prereq: 4190 and consent of instructor. (Same as Audiology and Speech Pathology 4200.)

Language Development of Hearing Impaired (3) Systems by which formal language is presented. (Same as Audiology and Speech Pathology 4210.)

Language Development for the Hearing Impaired II (3) Techniques; various systems by which formal language is presented. Prereq: 4210 or consent of instructor. (Same as Audiology and Speech Pathology 4220.)

Communication Processes for the Hearing Impaired (3) Various communicative skills required by hearing impaired children in language development; auditory training, speech reading, manual language and its relation to other forms of communication. Prerequisite: 4210. Student must acquire a degree of proficiency in use of manual language. Prereq: Consent of instructor.

Nature of Hearing Impairments (3) Basic principles of anatomy and physiology of hearing; nature and causes of hearing loss; methods and instrumentation for assessment of hearing levels; interpretation of audiograms; selection and use of hearing aids; rotation of audiological services to medical and other rehabilitative disciplines. Observations and practicum.

Introduction to the Psychology and Education of the Hearing Impaired (3) Offered for those planning to enter field of teaching the deaf and hard-of-hearing. Review of history of education of the deaf. Research studies relating to psychology, social adjustment, and learning of the deaf. Survey of professional literature in area of deaf child and adult. (Same as Audiology and Speech Pathology 4250.)

Curriculum Development in Elementary and Secondary Schools for the Hearing Impaired (3) Adaptation of curriculum development and methods in public school education to meet needs of deaf and hard-of-hearing students in residential and integrated settings.

The Teaching of Reading to Hearing Impaired Children (3) Readiness activities, developmental approaches, theories, and specialized materials for curricula in teaching reading.

Stuttering (4) (Same as Audiology and Speech Pathology 4310.)

Clinical Practice in Speech Pathology (1-6) (Same as Audiology and Speech Pathology 4320.)

Clinical Practice in Speech Pathology (1-6) (Same as Audiology and Speech Pathology 4330.)

Clinical Practice in Speech Pathology (1-6) (Same as Audiology and Speech Pathology 4340.)

Clinical Practice in Speech Correction in the Public Schools (3) Prereq: Audiology and Speech Pathology 4320-30-40, Special Ed. 4030 and consent of instructor. S/NC.

Seminar in Speech Correction in Public Schools (3) Prereq: Audiology and Speech Pathology 4320-40, Special Ed. 4030 and consent of instructor.

Problems in the Education of Exceptional Children (3, 3, 3) Prereq: Consent of instructor.

Practicum in Special Education (3, 3, 3) Students prepare and deliver units of instruction in special education programs. S/NC.

Voice Disorders (4) (Same as Audiology and Speech Pathology 4400.)

High School Program for the Mentally Retarded (3) Trends, issues and research relating to classification and work study programs.

Clinical Practice in Audiology I (1-6) (Same as Audiology and Speech Pathology 4430.)

Clinical Practice in Audiology I (1-6) (Same as Audiology and Speech Pathology 4460.)

Clinical Practice in Audiology I (1-6) (Same as Audiology and Speech Pathology 4470.)

Nature and Characteristics of Learning and Behavior Disorders (3) Forms of academic and socially disturbing behavior; degrees of severity; possible causes, and relationships to each other. Relationships with respect to personality characteristics and developmental factors interpreted through behavioral and psychodynamic theory as well as practical situations in which learning and behavior disorders may occur.

Education of the Emotionally Disturbed Child (3) Managing behaviors, models for instruction, teaching techniques and materials, and teacher-pupil family interpersonal relationships as basic to academic achievement for the pupil. Prereq: 4610.

Practicum in Residential Settings Serving Children with Disturbing Behavior (3) Practice in scientifically identifying, observing, and recording disturbing behaviors. Initiating behavior changes regarding academic and social behaviors. To perform in a tutorial capacity within a residential classroom; and to take part in discussion and evaluation of relevant academic curriculum and reinforcement schedules. Prereq: 4610 and 4620 or consent of instructor.

Practicum in Public School Systems Serving Children with Learning and Behavior Problems (6) Academic tutoring in a teacher/aide capacity within regular classrooms. Practical emphasis and practice in individualizing instruction for learning and behavior problem children within the regular classroom setting. Discussion and evaluation of relevant methods and mental state unique to each teaching situation. Prereq: 4610 and 4620 or consent of instructor.

Audiology for Educators of the Deaf (4) (Same as Audiology and Speech Pathology 4700.)

Audiometry Laboratory (1) (Same as Audiology and Speech Pathology 4720.)

Audiology II (4) (Same as Audiology and Speech Pathology 4720.)

Diagnostic and Remedial Approaches in Special Education and Rehabilitation (3) Critical examination of specialized tests and methods employed in measurement of the hearing and speech of children and adults who are mentally retarded, learning disabled, physically handicapped, or deaf.

Student Teaching Mental Retardation (3) Prereq: Major in education of mental retardation. S/NC.

Student Teaching Mental Retardation (9) Prereq: Major in education of mental retardation. S/NC.

Educational Problems of the Cerebral Palsied Child at Home (3) (3) Physical, social, and educational needs of cerebral palsied; educational techniques; related services.

Eye Problems Encountered by the Teacher (3) (3) Eye anatomy and hygiene; common diseases and defects; techniques and educational adjustments for specific eye conditions; related service resources.

Student Teaching with Hearing Impaired Children (6) Supervised preceptorship with preschool, day school, and residential pupils. S/NC.

Practicum with Hearing Impaired Children (6) S/NC.
4880 Student Teaching in Special Education (1-6)
Application for student teaching must be filed not later than January 1 of the academic year preceding the actual experience. Prereq: 4110, 4120, 4130, 4150, 4351, 4361, 4740. S/NC.

4881 Student Teaching in Special Education (1-6)
Application for student teaching must be filed not later than January 1 of the academic year preceding the actual experience. Prereq: 4110, 4120, 4130, 4150, 4351, 4361, 4740. S/NC.

4882 Student Teaching in Special Education (1-6)
Application for student teaching must be filed not later than January 1 of the academic year preceding the actual experience. Prereq: 4110, 4120, 4130, 4150, 4351, 4361, 4740. S/NC.

4921 Student Teaching in Crippling and Special Health Conditions (3-15) Observation and supervised practicum in home, hospital, and classroom. S/NC.

4922 Student Teaching of the Edcuable Mentally Retarded (3) Observation and supervised practicum. S/NC.

4923 Student Teaching of the Partially Seeing (3) Observation and supervised practicum in special and regular classes. S/NC.

4924 Student Teaching of the Emotionally Disturbed (8) Individual tutoring and classroom observation and teaching. Prereq or parallel: Educational Curriculum and Instruction 4720 or 4820. S/NC.

4930 Aural Rehabilitation: Speechreading and Auditory Training (4) (Same as Audiology and Speech Pathology 4930.)

4931 Laboratory in Aural Rehabilitation (1) (Same as Audiology and Speech Pathology 4931.)

4940 Advanced Aural Rehabilitation (4) (Same as Audiology and Speech Pathology 4940.)

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5040 Advanced Clinical Practice in Audiology (1-6)

5100 Orientation to Rehabilitation (3)

5110 Medical Aspects of Rehabilitation Counseling (3)

5111 Psychology of Mental Retardation (3)

5112 Psychology of the Severely Mentally Retarded (3)

5113 Advanced Curriculum for the Mentally Retarded (3)

5115 Caseload Management in Rehabilitation (3)

5120 Psycho-Social Aspects of Disability (3)

5130-40 Seminar in Rehabilitation (3, 3)

5145-46-47 Practicum in Rehabilitation (3, 3, 3)

5150-60 Internship in Rehabilitation (9, 9)

5170 Systematic Human Relations Training (3)

5180 Approaches to Rehabilitation Counseling (3)

5220 Linguistics in the Education of the Hearing Impaired (3)

5240 Seminar in Language Remediation for the Hearing Impaired (3)

5260 Education of Gifted Children (3)

5280 Seminar on Educational Implications of Language Deficiency (3)

5310-20-30 Manual Communication (2, 2, 2)

5380 Cerebral Palsy (3)

5390 Cleft Palate (3)

5400 Assessment and Remediation of Learning Disabilities (3)

5401 Prescriptive Teaching for Children with Learning Disabilities (3)

5402 The Exceptional Child in the Regular Classroom (3)

5403 Resource Teachers for the Handicapped (3)

5410 Instructor Media for the Handicapped: Design, Production, and Evaluation of Typographical Curriculum Materials for the Deaf (3)

5450-60-70 Experience in Teaching and Supervision of Exceptional Children (1-8, 1-6)

5490 Educational and Vocational Guidance of the Deaf and the Hard-of-Hearing (3)

5510-20-30 Administrative Practicum or Problems in Institutional Care of Children (3, 3)

5540 Seminar in Language Pathology (3)

5550-60-70 Problems in the Education of Exceptional Children (3, 3, 3)

5620 Counseling Parents of Exceptional Children (3)

5630 Psychology of the Exceptional Child (3)

5700 Evaluation and Mobilization of Community Resources (3)

5710 Medical Aspects of Disability I (3)

5720 Medical Aspects of Disability II (3)

5730 Vocational Assessment in Disability Evaluation (3)

5740 Disability and Work in Society (3)

5750 Principles and Problems of Disability Evaluation (3)

5760 Seminar: Functional Capability Assessment (3)

5770-71 Current Problems in Disability Claims Evaluation (1-3, 1-3)

5820 Curriculum Development Applied to Programs for the Hearing Impaired (3)

5830 Seminar: Issues and Theories in the Education of the Exceptional Child (3)

5910-20-30 Problems in Lieu of Thesis (3, 3, 3)

5970 Juvenile Delinquency and the School (3)

Vocational-Technical Education (988)

Professor:
R.J. Woodin (Emeritus), Ph.D. Ohio State.

Associate Professors:
W.A. Cameron (Acting Head), Ph.D. Ohio State; M.D. Miller, Ed.D. Oregon State; E.R. Smith, Ph.D. Ohio.

3000 Introduction to Vocational Education (1) Introductory and exploratory experiences concerned with teaching careers in all areas of vocational education. Includes visitation within a vocational setting.

4750 Utilization of Instructional Media (3) (Same as Curriculum and Instruction 4750 and Library and Information Science 4750.)

GRADUATE

5002 Non-Thesis Graduation Completion (3-15)

5011-21-31 Problems in Lieu of Thesis (3, 3, 3)

5110-20-30 Current Literature (1, 1, 1)

5320-30 Agricultural Education in Off-Farm Agricultural Occupation (3, 3)

5340 Agricultural Education for First-Year Teachers (3)

5470 Adult Education in Agriculture (3)

5480 Supervision of Student Teaching in Agricultural Education (3)

5490 Supervised Occupational Experience in Agriculture (3)

5620 Teaching Agricultural Mechanization in Vocational Agriculture (3)

5750-60-70 Special Problems in Agricultural Education (3, 3, 3)

5250 Issues and Trends in Vocational-Technical Education (3)

5260 Continuing Education in Vocational-Technical Education (3)

5270 Placement, Follow-up, and Evaluation Procedures in Occupational Education (3)

5300 Occupational Program Development for Disadvantaged Persons (3)

5310 Supervision of Vocational-Technical Education (3)

5580-60-70 Problems in Vocational-Technical Education (1-6, 1-6)

6000 Doctoral Research and Dissertation

6040 Seminar in Vocational-Technical Education (1, 1, 1)

6210 Curriculum Planning in Vocational-Technical Education (3)

6220 Program Planning and Development in Vocational-Technical Education (3)

6230 Evaluation of Vocational-Technical Education Programs (3)

6310 Administration of Vocational-Technical Education (3)

6411-12-13 Internship in Vocational-Technical Education (3, 3, 3)

Agricultural Education (056)

Professors:
G.W. Wiegert, Jr., Ed.D. Missouri; N.E. Fitzgerald (Emeritus), M.S. Cornell; A.J. Paulus (Emeritus), Ph.D. Cornell.

Associate Professors:
D.G. Craig, Ed.D. Cornell; J.D. Todd (Chairman), Ed.D. Illinois.

3450 Agricultural Experience and Future Farmers of America Programs (3) Prereq: Consent of instructor.

3460 Methods in Teaching Agriculture (3) Prereq: Consent of instructor.

3470 Program Development and Adult Education in Agriculture (3) Prereq: Consent of instructor.

3450-60 Student Teaching in Agricultural Education (8-6) Offered in off-campus centers. Application must be filed not later than final quarter of junior year. Courses must be taken concurrently. Prereq: 3450, 3460, 3470, consent of instructor. Undergraduate credit only. S/NC.

4510-20-30 Problems in Agribusiness Education (1-6, 1-6, 1-6) Total not more than 8 hrs.

4710-20-30 Seminar in Agricultural Education (1, 1, 1) Prereq: 4350 or consent of department head.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011-21-31 Problems in Lieu of Thesis (3, 3, 3)

5110-20-30 Current Literature (1, 1, 1)

5320-30 Agricultural Education in Off-Farm Agricultural Occupation (3, 3)

5340 Agricultural Education for First-Year Teachers (3)

5470 Adult Education in Agriculture (3)

5480 Supervision of Student Teaching in Agricultural Education (3)

5490 Supervised Occupational Experience in Agriculture (3)

5620 Teaching Agricultural Mechanization in Vocational Agriculture (3)

5750-60-70 Special Problems in Agricultural Education (3, 3, 3)
Business Education (207)

Professors: G.A. Wagoner (Chairman), M.S. Indiana; E.W. Davis (Emeritus), M.A. New York.

Associate Professors: A. Porreca, Ed.D. Boston; B.J. Radcliff, M.A. West Virginia; E.B. Smith, Ph.D. Ohio State; J.J. Stallard, Ph.D. Ohio State.


4110 Principles of Business Education (3) Historical background and present status; principles of vocational education applied to business education; guidance activities of business teachers.

4120 Teaching General Business Subjects (2) Materials, evaluation procedures and recent research in subject fields.

4130 Teaching Typewriting (2) Materials, methods, evaluation procedures and recent research in subject fields.

4140 Teaching Shorthand (2) Materials, methods, evaluation procedures and recent research in subject fields.

4150 Teaching Bookkeeping (2) Materials, methods, evaluation procedures and recent research in subject fields.

4230 Curriculum Construction in Business Education (3)

4610-20-30 Problems in Business Education (3, 3, 3)

4611 Problems in Business Education (115)

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011 Problems in Lieu of Thesis (3)

5110 Graduate Seminar: Current Problems (3)

5111-12-13 Graduate Seminar: Current Problems in Business Education (1, 1, 1)

5120 Graduate Seminar: Tests and Measurements (3)

5130 Graduate Seminar: Guidance (3)

5140 Organization and Operation of Area Vocational-Technical Schools (3)

5410-20-30 Practicum in Business Education (2, 2, 2)

5510 Evaluation of Research in Business Education (3)

5611-21-31 Problems in Business Education: Typing (3, 3, 3)

5612-22-32 Problems in Business Education: Shorthand (3, 3, 3)

5613-23-33 Problems in Business Education: Bookkeeping and Accounting (3, 3, 3)

5614-24 Problems in Business Education: Clerical Practice (3, 3, 3)

5615-25-35 Problems in Business Education: General Business (3, 3, 3)

5617 Problems in Business Education: Business Law (3)

5618-28-38 Problems in Business Education: Administration (3, 3, 3)

5619 Problems in Business Education: Psychology of Skill-Building (3)

6110-20-30 Current Issues in Business Education (3, 3, 3)

6210-20-30 Advanced Studies in Business Education (3, 3, 3)

6410 Higher Education for Business (3)

Distributive Education (273)

Professor: C.B. Coakley (Chairman), Ph.D. Wisconsin.

Assistant Professor: D.E. McNelly, Ed.D Missouri.

4110 Student Teaching in Distributive Education (9) Full-time, supervised experience in classroom teaching, coordination, club work, and adult education. Prereq: 4310, 4320; Education 3030; Educational Psychology 3610; 4140 or equivalent. Undergraduate credit only. S/NC.

4120 School and Community Relationships for the Teacher Coordinator (6) Content dependent upon teaching assignment; human relations evolving from school, parent, business, and other community contacts. Must be taken with 4110. Undergraduate credit only. S/NC.

4130 Areas of Distribution (3) Marketing, product or service technology, social skills, basis skills, and distribution as these areas affect the distributive education curriculum in secondary and post-secondary programs.

4140 Supervised Distributive Experience (3) Minimum 200 hours experience in approved distributive business; concurrent analytic project.

4310 Organization and Operation of Distributive Education Programs (3) Background and development needs, federal and state legislation, curriculum implications; establishing, evaluating, reporting, and improving the programs.

4320 Methods and Materials in Distributive Education (3) Prereq: 4310 or consent of instructor.

4330 Coordination Techniques in Distributive Education (3) Selecting training agencies; job analysis; selecting and briefing the training supervisors; advisory committees; adult education and other community services. Prereq: 4310 and 4320.

4510-20-30 Problems in Distributive Education (3, 3, 3) Selected research problems in teaching and coordinating distributive education programs.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110 Administration and Supervision of Distributive Education (3)

5120 Organizing and Teaching Adult Distributive Education (3)

5210-20-30 Special Problems in Distributive Education (3, 3, 3)

5616-26-36 Problems in Distributive Education: Retailing (3, 3, 3)

Home Economics Education (490)

Professors: N.P. Logan (Chairman), Ed. D. Tennessee; I. Brown (Emeritus), Ph.D. Ohio State.

Associate Professors: J.H. McNinch, Ph.D. Florida State; S.W. Miller, Ph.D. Ohio State.

2240 Introduction to Teaching Vocational Home Economics (3) Introductory and exploratory experiences concerned with a teaching career in vocational home economics. Includes observation and participation in various educational and vocational settings.

3240 Strategies of Teaching Home Economics (4) Teaching strategies, methods, techniques and uses of media. Field experience included. Prereq: 2240.

4240 Curriculum Development in Vocational Home Economics (4) Planning of curriculum and design of instruction for the classroom. Prereq: 2240, 3240. To be scheduled one of the two quarters immediately preceding student teaching.

4310 Student Teaching (6) Underlying philosophy, techniques, and materials: relation to school program and community. S/NC.

4509 Field Experience in Home Economics Related Occupations (4) Supervised field experience and seminar in teaching of occupations which utilize home economics skills and knowledge. Prereq: Consent of instructor. S/NC. May be repeated.

4610 Student Teaching (9) Open to seniors or graduate students who have successfully completed one year's study at The University of Tennessee. Off-campus teaching centers (minimum of eight weeks). Prereq: 2240, 3240; 4240; coreq: 4310, S/NC.

4715-28-38 Honors: Home Economics Education (3, 3, 3) For juniors and seniors showing special ability and interest in home economics education. Prereq: Consent of department head.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5130 Furthering Good Human Relationships in the Classroom (3)

5220 Evaluation in Home Economics (3)

5310 The Problem Method of Teaching (3)

5440 Curriculum Development and Implementation in Family Relationships Instruction (3)

5520 The Teaching of Home Economics in College (3)

5530 Organization of the Homemaking Curriculum in Secondary Schools (3)

5610 Supervision of Home Economics in the Public Schools (3)

5620 Wage Earning Programs in Home Economics (3)

5710-20-30 Special Problems for Non-Thesis Students (3, 3, 3)

5810-20-30 Problems in Home Economics Education (1-3, 1-3, 1-3)

5910-20 Seminar in Home Economics Education (3, 3)

Industrial Education (547)

Professors: J.L. Reed (Chairman), M.S. Oklahoma; R.W. Haskell, Ph.D. Purdue.

Associate Professors: J.D. Bies, Ph.D. Missouri; G.D. Cheek, Ph.D. Kansas; D.V. Brown, P.E., Ed.D. Utah State; R.R. Hanson, Ph.D. Purdue.


1610 Welding and Cutting Practices (3) Prereq: 1624.

1610 Engine Analysis (3) Designed to give experimental laboratory experience in automotive technology. Engine tune-up and engine overhaul techniques and procedures are studied and practiced.

1620 Graphic Communications (3) Drafting as a means of communication in technology, Orthographic and multi-view drawing, conventional practices, pictorial techniques and applications of photography.

1630 Basic and Applied Electricity (3) Operation and characteristics of electrical systems and devices. Construction of demonstration apparatus and various electrical projects involving function of different types of circuits.
1642 General Metals (3) Basic course dealing with processes, equipment, materials, products, and organization of metal-working industries. Involves processes in machining, foundry, sheetmetal, and fabrication.

1661 General Woodworking (3) Basic course dealing with processes, tools, equipment, products, organization of woodworking industry. Stress on importance of safety and using hand tools and basic machinery.

2010-20-30 Basic Experiences in Trade and Industrial Education (3, 3, 3) Methods and materials of instruction. 3 periods.

2611 Power Mechanics (3) Includes various prime movers, methods of utilization, distribution and transmission of power with internal combustion engines. Maintenance and repair of small engines is stressed.

2621 Architectural Graphics (3) Introduction to fundamentals of graphic representation and residential architecture. Light construction principles are stressed and working drawings for a residential building are developed. Prereq: 1620.

2631 Fundamentals of Applied Electronics (3) Semi-conductors, electrical circuits, including amplifiers, oscillators, switching and timing circuits, applications including sounds in video systems, relays, control and industrial devices. Prereq: 1630.

2641 Machine Tool Processes (3) Introductory course on the function, care, set-up, operation and theory of basic machine tools. Prereq: 1642.

2852 General Plastics (3) Characteristics of thermoplastics and thermal setting materials, methods of determination and resin conversion to finished product.

2860 Furniture and Cabinet Construction (3) Comprehensive study of cases and carcase construction with emphasis placed upon furniture and building. Prereq: 1661.

3010 Related Science, Mathematics, and Technology in Occupations (15) Credit may be earned only through examination. Applicants must show evidence of bonafide occupational experience compatible with State Plan requirements. Occupational experience must be in a recognized trade area. S/NC.

3020 Manipulative Skills in Occupations (15) Credit may be earned only through examination. Applicants must show evidence of bonafide occupational experience compatible with State Plan requirements. Occupational experience must be in a recognized trade area. S/NC.

3030 Knowledge of Related Subjects in Occupations and Personal Qualifications (15) Credit may be earned only through examination. Applicants must show evidence of bonafide occupational experience compatible with State Plan requirements. Occupational experience must be in a recognized trade area. S/NC.

3040-41-42 Physical Testing Technology (3, 3, 3) Skills and techniques involved in radiography, metallography, tensile and compression testing, and other destructive and nondestructive testing methods. Undergraduate credit only.

3050-51-52 Welding, Brazing, Cutting, and Related Processes (3, 3, 3) Various types of welding equipment and fundamental techniques of welding. Undergraduate credit only.

3060-61-62 Electronic Technology (3, 3, 3) Basic principles and application of electronics. Undergraduate credit only.

3080-81-82 Machining of Metals (3, 3, 3) Introduction to machine shop theory and procedures which provides information and practice in using basic machine tools. Undergraduate credit only.

3110 History and Philosophy of Industrial Education (3)

3210-20-30 Part-time Programs in Co-operative Industrial Training (3, 3, 3) Principles of organization, methods, and materials.

3310 Shop Organization and Management (3)

3320-30-30 Materials and Methods for Teachers of Shop and Related Subjects (3, 3)

3340 School Shop Safety (3)

3610 Development and Utilization of Advisory Committees (3) Philosophy and rationale for use of craft advisory committees. Their selection, organization, implementation and utilization.

3612 Automotive Mechanics (3) Advanced laboratory experience in tune-up, overhaul, transmission, and the suspension system. Prereq: 1610.

3621 Industrial Graphics (3) Auxiliary views, sections, conventional practices, fasteners, dimensioning, working drawings and machine drafting. Prereq: 1620.

3632 Industrial Electricity and Equipment Control (3) Involves construction and application of industrial electrical equipment both single and polyphase: production, use and control of electric current. Emphasis placed on circuit tracing, installation, maintenance, and trouble connecting industrial equipment. Prereq: 1630.

3640 Advanced General Metals (3) Provides experiences in areas of hot and cold forming of metals, melting and metal finishing, tool grinding, heat treatment, fabrication and precision measurement. Prereq: 2641.

3651 Plastic Processing (3) Plastics production equipment and related product design and processing of plastics. Prereq: 2652 and 1661.

3662 Construction Methods and Materials (3) Materials, methods, and equipment used in residential construction, including location and excavation, foundations, framing, roofs, interior and exterior finishes, installation and acceptable practices in assembly. Prereq: 1651.

3672 Graphic Arts Reproduction Processes (3) Graphic arts skills in printing and duplicating techniques and other modes of graphic communication.

4073-74-75 Tool and Machine Design (3, 3, 3) Tool and machine design, calculations, design systems, and designing procedures. Undergraduate credit only.

4090-91 Numerical Control (3, 3) Tooling, manual programming, automatic programming, automatic programming equipment and use of automatic programs as a computer. Undergraduate credit only.

4110 Foremanship Training by the Conference Method (3)

4120-30 Job Analysis (3, 3) Principles, practice, instructional methods.

4210 Methods of Teaching Shop and Related Subjects (3) Undergraduate credit only.

4220 Vocational Technical Laboratory Equipment Maintenance (3) Understanding of preventive maintenance, maintenance and calibration of instruments and power equipment used in industrial education shops.

4310-20 Curricular Building in Trade and Industrial Subjects (3, 3) Arranging course material in trade subjects, following up results of job analyses, preparing checking sheets and individual job sheets in both trade and related subjects. Prereq or coreq: 4120.

4350-60-70 Problems in Industrial Education (3, 3, 3)

4410 Directed Teaching (6) Observation of all types of trade and industrial classes; preparation of lesson plans and supervised teaching in at least two types. Prereq: Senior standing in industrial education. Prereq or parallel: 4210. 1 hr and 5 periods. Undergraduate credit only. S/NC.

4420 Directed Teaching (9) Guided observation and teaching in trade, industrial, and/or technical programs in secondary, area, adult, post secondary, and junior college industrial vocational and technical curricula. Undergraduate credit only. S/NC.

4510-11-12 Seminar in Industrial Education (3, 3, 3) Educational innovations, current events, problems, and other topics associated with the field of industrial education.

4520-21-22 New Developments in Industrial Education (3, 3, 3) Developments, pressing problems, and recent trends in field of industrial education as presented by a coordinating instructor in conjunction with knowledgeable resource personnel.

4621 Special Topics in Drafting (3) Industrial practices in specialized areas of drafting selected for the individual student. Prereq: 6 hrs drafting.


4670 Manufacturing Processes (3) The manufacturing processes of industry and their relationship to careers. Prereq: 2621, 2641, 2660, 3651, or consent of instructor.

4671 Materials and Processes (3) Organic and inorganic materials and processes used to produce finished products. Content, curriculum and techniques of laboratory operation. Prereq: Consent of Instructor.

4682 Power and Energy (3) Development, control, transmission, conversion, interrelationship of power sources; content, curriculum, and techniques of laboratory operation. Prereq: Consent of Instructor.

4690 Visual Communications in Industrial Arts (3) Methods of developing and transmitting ideas and information as related to industry and society. Content, curriculum and techniques of laboratory operation. Prereq: Consent of instructor.

4691 Course Construction in Industrial Arts (3) Advanced work in the selection and arrangement of course content. Emphasis upon instructional objectives, project selection and informational assignments and evaluation. Prereq: Consent of instructor.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20-30 Administration and Supervision of Industrial Education (3, 3, 3)

5140 Organization and Operation of Area Vocational-Technical Schools (3)

5210-20-30 Special Problems in Industrial Education (3, 3, 3)

5310 Method of Research in Industrial Education (3)

5410 Improving Teachers in Service (3)

5420 Advisory Committees and Apprentice Training (3)

5430 Vocational School Administration and Management (3)

5440 Advanced Methods of Teaching Skills and Technical Information (3)

5510-20-30 Seminar in Industrial Technical Education (3, 3, 3)

5540 New Developments in Industrial Technical Education (3)
Physics and Electrical Engineering was appointed. Although metallurgy was
announced in the catalog as early as 1888, it was dormant until it was revived in the
Department of Chemical Engineering shortly after 1940. A separate degree in
metallurgical engineering was authorized in 1957. Although the rudiments of
chemical engineering appeared in the form of industrial chemistry shortly after
1900, a full chemical engineering program and a department were not established
until 1936. Industrial engineering was introduced in 1940, was dropped for a time
during the war years, and was reinstated in 1947.

Nuclear engineering was established as a separate curriculum in 1967 in
response to the rapidly increasing demand for engineers with a knowledge of nuclear
phenomena. Engineering physics, a
program operated jointly with the physics
department, first appeared as an
engineering curriculum in about 1942. Curricula in aerospace engineering and
engineering mechanics were added in 1966, and a curriculum in engineering
science was added in 1967.

The first dean of the College of
Engineering, Professor Charles E. Ferris,
was appointed in 1912. Prior to that time
the engineering programs were organized
as a school, with a chairman of the faculty.
Other former deans are Nathan W.
Dougherty, who served from 1940 to 1956,
Armour T. Granger, who served from 1956
to 1965, and Charles H. Weaver, who
served from 1965 to 1968.

The Cooperative Engineering Program
was established at The University of
Tennessee in 1926. This institution was
one of the early pioneers in this valuable
type of education, which originated at the
University of Cincinnati in 1905. A
Cooperative Engineering Scholarship
Program was formally established in 1957,
with emphasis on participation by students
of superior ability. A conventional
cooperative program, open essentially to
all students in good standing in the
College of Engineering, was re-
established in 1967.

The Engineering Experiment Station
was established in 1922.

The College of Engineering has ten
major undergraduate curricula in which a
student may specialize: aerospace,
chemical, civil, electrical, industrial,
mechanical, metallurgical, nuclear
engineering, engineering physics and
engineering science.

Agricultural engineering is taught in the
College of Agriculture with facilities
located on the Agricultural Campus. The
agricultural engineering curriculum is
offered cooperatively by the College of
Agriculture and the College of
Engineering. Details of the curriculum may
be found in the College of Agriculture
section of this catalog.

Facilities

The College of Engineering is housed
in Ferris, Estabrook, Perkins, Dougherty
and Berry Halls, and the Nuclear
Engineering Building, located on the
southeastern end of the campus.

Ferris Hall. This building houses the
offices, laboratories, and shops of the
electrical engineering department and the
Water Resources Laboratory. There is also
an auditorium with a seating capacity of
about 300 persons, and a remote
input/output terminal connecting with The
University of Tennessee Computing
Center.

Estabrook Hall. Some operations of the
Departments of Civil Engineering and
Engineering Science and Mechanics, and
of the Engineering Experiment Station are
 carried on in Estabrook Hall.

Perkins Hall. This building houses the
Departments of Civil Engineering,
Engineering Science and Mechanics,
Industrial Engineering, and the Office of
the Dean of the College of Engineering.
The building contains laboratories, drafting
rooms, and a small auditorium with a
capacity of about 80 persons.

Nuclear Engineering Building. This
building houses operations of the nuclear
engineering department and it contains
laboratories and equipment for monitoring,
counting, and investigating various nuclear
phenomena; it also houses subspecialized reactors.

Nathan W. Dougherty Engineering Building. This building, the most recent and largest of the engineering buildings, houses the Departments of Chemical, Metallurgical and Polymer Engineering, Mechanical and Aerospace Engineering. In addition to classrooms and instructional laboratories, it provides modern facilities for various types of research.

Berry Hall. This building is used by the Department of Civil Engineering and the Engineering Experiment Station.

Tau Beta Pi National Headquarters

The College of Engineering of The University of Tennessee is honored to have the National Headquarters of Tau Beta Pi, the National Engineering Honor Society, housed on its campus. This honor was offered through the untiring efforts of R.C. "Red" Matthews, who served as secretary-treasurer for the organization from 1906 to 1947. The suite of offices, located in Dougherty Hall, is occupied by Mr. R.H. Nagel, secretary-treasurer, and his staff.

Chi Epsilon National Headquarters

The College of Engineering of The University of Tennessee is also honored to have the National Headquarters of Chi Epsilon, the National Civil Engineering Honor Society, located in Perkins Hall. Chi Epsilon was founded in 1922. Dexter C. Jameson, Jr., associate professor of civil engineering, was elected to serve as the first executive secretary of Chi Epsilon in 1972.

Cooperative Engineering Program

The five-year Cooperative Engineering Program is offered to students in the College of Engineering in order to provide a superior engineering education that includes the opportunity to combine significant experience in industry with academic preparation.

Cooperative work assignments differ from part-time or summer employment in that they involve regularly scheduled cycles of full-time academic quarters alternated with full-time work quarters—usually seven, a minimum of five—in career-related, planned assignments of progressive complexity and responsibility. In exposing the student in this manner to the world of work, the College of Engineering and the facilities of industry join together to offer a broader and richer preparation for postgraduate employment and for life in general than can be provided by a conventional academic program alone. This experience in an industrial and professional environment contributes to the student's maturity, increases the scope of acquaintances and concepts, and enables the student to define more clearly educational and career interests and objectives. One of the experiences received is at a subprofessional level not available to an engineer after graduation, yet is of great significance in total education and effectiveness.

Admission to the Cooperative Engineering Program is open to any student in the College of Engineering (or majoring in agricultural engineering in the College of Agriculture) who is in good standing, whose record at the University indicates capability and dependability, and who is acceptable to a co-op employer. In general work periods begin at the end of the second or third quarter of the freshman year and continue for seven alternating work and school cycles. Applicants must be able to schedule a minimum of five such cycles before the beginning of their senior work in order to qualify for co-op placement.

Academic schedules for co-op students are determined elsewhere in this section. A brochure with further details may be obtained from the Office of the Coordinator, Cooperative Engineering Program, College of Engineering.

Binary Program

A binary program in engineering education is available at The University of Tennessee. The College of Engineering has agreements with a number of liberal arts colleges to conduct a five-year program, three years of which will be given at the liberal arts college and the last two years at The University of Tennessee in engineering. At the end of the fifth year, the College of Engineering will give the degree of Bachelor of Science in one of the branches of engineering.

Institutions cooperating with The University of Tennessee in offering this Liberal Arts-Engineering 3-2 Binary Program include:

- Belmont College, Nashville, Tennessee
- Bethel College, McKenzie, Tennessee
- Carson-Newman College, Jefferson City, Tennessee
- David Lipscomb College, Nashville, Tennessee
- East Tennessee State University, Johnson City, Tennessee
- King College, Bristol, Tennessee
- Knoxville College, Knoxville, Tennessee
- Maryville College, Maryville, Tennessee
- Middle Tennessee State University, Murfreesboro, Tennessee
- Tennessee Wesleyan College, Athens, Tennessee
- Union University, Jackson, Tennessee
- Questions about courses to be taken in preparation for transfer to The University of Tennessee may be directed to the Dean of Engineering.

Graduate Program

General

Graduate programs leading to the degree of Master of Science are offered in all areas of study, and the degree of Doctor of Philosophy is offered in eight major subjects: aerospace engineering, chemical engineering, electrical engineering, engineering science, mechanical engineering, metallurgical engineering, nuclear engineering, and polymer engineering. A Master of Engineering degree focusing on engineering design and professional practice is offered in aerospace, civil, electrical, environmental, industrial, mechanical, and nuclear engineering. Information concerning graduate programs is given in the Graduate Catalog.

Master of Science Program in Engineering Administration

A program leading to the degree of Master of Science with a major in engineering administration is offered in cooperation with the University for graduate engineers in the organization and direction of work in engineering functions, at a level which requires understanding of such areas as marketing, finance, and industrial relations. It must be emphasized that this is an engineering program, directed toward preparing individuals for line management positions in construction, design, development, manufacturing, where both technical and non-technical factors exert significant influence on the success of a given activity. The program does not provide the opportunity for in-depth study of any of the traditional areas of business administration, and students with such interests are advised to consider graduate programs available in the College of Business Administration. Policy direction and administration of the program are provided by an Engineering Administration Committee, consisting of representatives from participating departments in the College of Engineering and Business Administration, and a chairman appointed by the Dean of Engineering. Further information is provided in the Graduate Catalog.

Graduate Program at the UT Space Institute

At The University of Tennessee Space Institute near Tullahoma, graduate-level courses are offered in engineering fields such as aerospace, electrical, and mechanical engineering, and in mathematics and physics. Current programs lead to the M.S. and Ph.D. degrees. Many members of the faculty of the Space Institute are also members of the faculty of the College of Engineering.

Engineering Experiment Station

F.N. Peeples, Director
William K. Stair, Associate Director

The management of the Engineering Experiment Station is vested in the President of the University, the Dean of Engineering, the Director, and the Associate Director.

An advisory committee consisting of the heads of the departments of the College of Engineering and the heads of departments in allied scientific fields may assist in determining policy and procedures. Members of the faculty of the College of Engineering are available for consultation and advice in technical matters.

The Station is organized to conduct research underlying engineering practice and to aid in the development of the state's resources and industries insofar as
funds available will permit. Inquiries from industries concerning technical questions which interest them are welcomed.

The Station may also make special arrangements with any person or company to study any technical question within the capacity of its resources, and to report the results exclusively to the company requesting the study. In such case, the whole expense will be carried by the parties requesting the investigation. Bulletins are published from time to time giving the results of various investigations.

Upon request, unpublished results of current studies are made available to interested parties.

Curricula in Engineering

NATIONAL ACCREDITATION

Since 1938 engineering programs at institutions of higher learning have been accredited by the Engineers Council for Professional Development, an organization formed by many engineering societies. Currently accredited engineering curricula at UTK include aerospace, agricultural, chemical, civil, electrical, engineering science, industrial, mechanical, metallurgical, and nuclear. The advanced professional programs are also accredited in civil, electrical, environmental, mechanical, and nuclear engineering.

COURSE LOAD

The maximum number of hours which can be taken by an undergraduate without special permission is 19 hours. The Dean of Engineering must give permission to take 20 hours or more.

GENERAL REQUIREMENTS

NOTE: Students are advised to consult the University’s degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

Inspection Trip. Each candidate for graduation majoring in aerospace, mechanical, chemical, or metallurgical engineering must participate in inspection trips scheduled by the major department.

Transfer Credit. Every attempt will be made to give maximum credit for courses taken elsewhere and transferred to the College of Engineering. Discussions concerning the evaluation of transfer credits should be conducted with the head of the department into which the student proposes to transfer following the evaluation of transfer credits by the Admissions Office.

Program for Second B.S. Degree. Upon approval by the Dean of Engineering and the Committee on Degrees of a program of study recommended by the major engineering department, a student who already holds a bachelor’s degree may obtain the appropriate first degree in engineering upon completion of a minimum of 45 quarter hours credit. The prevailing University regulations on residence and quality point averages shall apply.

Satisfactory/No Credit Courses. An undergraduate engineering student may count toward a degree up to 12 quarter hours obtained by Satisfactory/No Credit (S/N/C) grading. Such courses must be suitable for humanistic-social (non-technical) elective credit in engineering.

Humanities and Social Studies Electives. The College of Engineering assumes an obligation to include in each of the engineering curricula a means by which students gain greater insight into their interaction with society, both personally and professionally. For this purpose, a part of each engineering curriculum is devoted to humanities and social studies electives. Broadly stated, these electives serve a three-fold need: to provide an expanded view of the human aspects of the practice of engineering; to enrich the student’s knowledge of the world in which he or she lives—its culture, behavior patterns, history and governance; and to provide a basis for the appreciation of and the ability to deal with complex interactions between technology and society in the contemporary world. Awareness of this interaction is becoming progressively more significant. Future engineers are now working with new constraints that demand a consciousness of the social and political implications of their work. They are interacting more with the public in explaining their work as the public demands greater participation in the decision-making process concerning the utilization of technology. Because of the significance of this technology-society interaction, engineering students are encouraged to seriously consider their selection of required electives in this area.

Students and non-technical electives program which will enhance their own interests and objectives. It is recognized that, just as engineers show individual preference for concentration in one of the areas of engineering, they differ in their interests in the many areas of the humanities and social sciences. However, considerable personal satisfaction results if subject areas outside the field of engineering are pursued with sufficient depth to terms of courses to permit a reasonable level of confidence in the comprehension of the selected areas. In order to increase the effectiveness of this interest and to meet accreditation guidelines, the Humanities and Social Studies Electives Committee of the College of Engineering provides a list of approved courses in the form of thirteen coherent groups of courses identified in three broad areas as follows:

Area I. Human, Economic, and Political Relationships to Engineering

A. Governance and Political Science
B. Economics
C. Sociology and Psychology

Area II. Society—Its Culture, History and Literature

A. Fine Arts
B. American Culture
C. History
D. Literature
E. Anthropology

Area III. Technology and Society

A. Human Habitat
B. Technology Assessment
C. Communication
D. Resources

Courses in the list which follows are selected by the Committee with revisions as course offerings and needs change. They are recommended as satisfying the non-technical (humanistic-social) electives requirement in the various curricula of the College. However, the structure and permissible courses of the non-technical electives content of each engineering curriculum is established by the respective departments. Therefore, individual departments may delete courses from this list, require certain courses, or require selection of courses from specific subgroups. Students should consult their departments for any restrictions.

It is recognized that individual students may desire to take courses not on the approved list. Those students should discuss their interests and desires with their academic advisor prior to registering for elective courses if such courses are to be used to satisfy degree requirements. Also, the catalog may state prerequisites for upper-division courses in the list. In such cases, students are encouraged to consult the instructor in the particular course, since prerequisites might be waived. With exceptions, deviations from this list are handled by means of a substitution sheet which originates with the advisor.

ELECTIVE OPTIONS IN HUMANITIES AND SOCIAL STUDIES

Area I. Human, Economic, and Political Relationships to Engineering

A. Governance and Political Science
Business Law 4110
Economics 3340
Geography 3610
History 3795, 4311-21, 4370, 4380
Political Science 2510-20, 3545-46, 3710-20, 3750-60, 3801-02-03-04, 4535-36, 4540-50, 4665-66, 4940
Sociology 3030, 3420, 4330, 4530
B. Economics
Economics 2110-20-30, 2118-28-38, 3120, 3220, 3240
Economics 2110-20-30, 3410, 4610
Geology 2310
Industrial Management 4320
C. Sociology and Psychology
Geography 3000, 3600, 3660
Journalism 4410
Psychology 2500, 3120, 3220, 4460, 4610, 4900
Sociology 1510, 1520, 3030, 3150, 3410, 3610, 3620, 4330, 4560
D. Human Values
Geography 3000
History 4640-50-60
Philosophy 2310, 2410, 3111-21-31-41, 3311-12, 3440, 3690, 3910
Religious Studies 2610, 3550

Area II. Society—Its Culture, History and Literature

IIA. Fine Arts (Note: No more than 8 quarter hours may be taken in the performing arts—voice, instrumentation, band, chorus, etc.)
Art 1815-25, 3735, 3736, 3745, 3746, 3765, 3874
English 2660, 3411-12-20-30
Music 1xxx (applied music, ensemble, etc.)
Music 1210-20, 1340, 2310-20-30-40, 3350

Area III. Technology and Society

A. Human Habitat
B. Technology Assessment
C. Communication
D. Resources
Theatre 1510, 3252-53-54

IIB. American Culture
American Studies 3010
Art 3735, 3736, 3745, 3746
Black Studies 4830
English 2530, 2540, 2640-50, 3010-20-30, 3080, 3160, 3310, 3430, 4050-60, 4620, 4651-52
Geography 3430, 3450, 3660, 3910, 3920, 3940, 4240
History 1950-60, 2350, 2510-20, 3610-20, 3670, 3680, 4290, 4290, 4640-50-60
Music 1210-20, 1340, 2310-20-30-40, 3350
Philosophy 1510-20, 3311-12, 3315, 3440, 3690, 3720
Political Science 3801-02-03-04
Religious Studies 3510-20
Speech 4911-21
Theatre 3262-63
University Studies 3010

IIC. History
Geography 4240
Religious Studies 2611

IID. Literature
Classics 3210-20-30
Comparative Literature 2010
English 2530, 2540, 2560-70-80, 3010-20-30, 3070, 3080, 3160, 3940, 4010-20, 4050-60, 4310-20-30-40, 4620, 4651-52, 4720, 4730
German 3210-20-30
German Studies 3710
Russian 3210-20-21-30

IIIE. Anthropology
American Studies 3010
Anthropology 2510-29-30, 3410, 4420
Asian Studies 2510-20
Geography 3690
History 1950-60, 4250-60-70, 4640-50-60

Area III. Technology and Society

III A. Human Habitat
Agricultural Economics 4330
Anthropology 4430
Botany 3090
Geography 3490, 3520, 3530, 3600, 3910
Journalism 4410
Nutrition 2000
Political Science 4940
Psychology 4900
Public Health 3320
Sociology 1510-20, 3130, 3410, 3420, 3610, 4030, 4110, 4320, 4330, 4510, 4610

III B. Technology Assessment
Biology 3130
Botany 3090
Economics 3240, 4260
Geography 2110-20-30, 3430, 3490, 3940, 4240
Geology 2310, 3510
Nuclear Engineering 3040
Physics 3720, 3770
Political Science 3801-02-03-04, 4940
Psychology 4900
Sociology 4450
Sociology 3610, 4110, 4330, 4610
University Studies 3010, 4100

III C. Communication
Broadcasting 3650 or Journalism 2210
Civilization 3110, 3170, 3720, 4410
Philosophy 2510-20
Sociology 3010
Speech 2311, 2331, 3011, 3021

IIID. Resources
Economics 4260
Forestry 3730
Geography 2110-20-30, 3490
Geology 2510
Nuclear Engineering 3040
University Studies 3010, 4110

American History Requirement
Engineering students, regardless of national origin, graduating in August 1978 or thereafter, must fulfill the American history requirement described on page 24 of this catalog. Those students who have not had the required year of American history in high school may choose the required nine quarter hours from History 2510, 2520, 2511, and 2521, or other courses deemed suitable by the Department of History. These hours can be counted as part of the required block of humanities and social studies electives.

Technical Electives. Technical electives are to be selected with the advice and approval of the student's major department. In some of the curricula tabulations a choice of such electives is indicated, and regulations in regard to their selection are stated.

The Voluntary ROTC Program.
Engineering students may participate in the ROTC Program. Advanced ROTC courses (3000 and 4000 series) may be counted as technical elective credit toward an engineering degree up to a total of nine (9) quarter hours. No ROTC course can be used as a humanistic-social elective. Individual departments determine the appropriate substitutions. Although every effort is made to accommodate engineering students in the ROTC Program, only the 9 hours described above may count towards the degree.

Approval of Electives and Substitutions. Not later than the beginning of the third quarter prior to anticipated graduation, each student shall discuss with an adviser the status of the program of study. Any necessary additions to or substitutions in the program, or electives requiring special approval, shall be cleared in written form at that time, and it is each student's responsibility to see that all necessary approvals are secured.

CURRICULA, TABULAR VIEW
In the following pages are given the course requirements for the various engineering curricula. With no deficiencies in entrance requirements and with careful scheduling of courses, students should complete the regular curricula in four academic years, or the cooperative curricula in five years.

In the following tabulations, the numbers immediately following the names of the courses refer to the description of the courses under "Departments of Instruction." The numbers in the columns indicate the number of quarter hours of credit applicable to each course. Non-technical electives are normally the same as humanities-social studies electives.

Aerospace Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1840-50-60</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Basic Eng. 1310-20-30</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Eng. 1410-20-30</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aero. Eng. 2040</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Physics 2310-20-30</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Engr. Sci. &amp; Mech. 3311, 3700</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Met. Engr. 2110</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Computer Science 3150</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Humanities/social studies electives...
Before entering the third quarter of the junior year, the student, with the aid and approval of the adviser, must select a program of technical electives.

Senior
Aero. Engr. 4210-50-60 3 3 3
Aero. Engr. 4220, 4510, 4520 3 3 3
Aero. Engr. 4471-91 3 3 3
Aero. Engr. 4491-20 1 1
Aero. Engr. 4591-20 1 1
*Technical electives 3 3 6
*Humanities/social studies electives 4 4 4
TOTAL: 202 hours

*A Humans/social studies electives: minimum of 20 hours required.
*Technical electives: upper-division courses in engineering, mathematics or physical science as approved by the department.

Agricultural Engineering
(See College of Agriculture Section.)

Biomedical Engineering
Available in Engineering Science Degree Program

Chemical Engineering

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>Math 1840-50-60</td>
<td>4 4 4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4 4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Basic Engr. 1310-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Basic Engr. 1410</td>
<td>4</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
</tr>
<tr>
<td>Chemet. Engr. 2100-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Chemet. Engr. 2111</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Chem. Engr. 3410</td>
<td>4 4</td>
</tr>
<tr>
<td>Chemistry 3140-49</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Engr. Sci. &amp; Mech. 2720</td>
<td>4 4 4</td>
</tr>
<tr>
<td>*Non-technical electives</td>
<td>3</td>
</tr>
<tr>
<td>Physics 2310-20</td>
<td>3 3</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Chem. Engr. 3420-40</td>
<td>4</td>
</tr>
<tr>
<td>Chem. Engr. 3410</td>
<td>4 3</td>
</tr>
<tr>
<td>Chem. Engr. 4110, 3610</td>
<td>4 3</td>
</tr>
<tr>
<td>Chemet. Engr. 3040-50</td>
<td>4 3</td>
</tr>
<tr>
<td>Chemistry 3211-19, 3221-29</td>
<td>4 4</td>
</tr>
<tr>
<td>Math 3150</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 3110 and either 3120 or 3130</td>
<td>3 3</td>
</tr>
<tr>
<td>Met. Engr. 3150</td>
<td>4 4</td>
</tr>
<tr>
<td>*Non-technical electives</td>
<td>3 3</td>
</tr>
<tr>
<td>Senior</td>
<td></td>
</tr>
<tr>
<td>Chem. Engr. 3620, 4220</td>
<td>3</td>
</tr>
<tr>
<td>Chem. Engr. 4410-20</td>
<td>3 3</td>
</tr>
<tr>
<td>Chem. Engr. 3450, 4630</td>
<td>3 3</td>
</tr>
<tr>
<td>Chemet. Engr. 4210-20</td>
<td>3 3</td>
</tr>
<tr>
<td>Met. Engr. 3520</td>
<td>3 3</td>
</tr>
<tr>
<td>Chemistry 3430, 3410</td>
<td>3 3</td>
</tr>
<tr>
<td>Major electives</td>
<td>3 3 4</td>
</tr>
<tr>
<td>Technical electives</td>
<td>3 3 4</td>
</tr>
<tr>
<td>*Non-technical electives</td>
<td>3 3 4</td>
</tr>
<tr>
<td>TOTAL: 200 hours</td>
<td></td>
</tr>
</tbody>
</table>

Civil Engineering

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>Math 1840-50-60</td>
<td>4 4 4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4 4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Basic Engr. 1310-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Basic Engr. 1410</td>
<td>4</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
</tr>
<tr>
<td>Civil Engr. 2200, 2360</td>
<td>3 3</td>
</tr>
<tr>
<td>Civil Engr. 3210</td>
<td>3 3</td>
</tr>
<tr>
<td>Civil Engr. 3211</td>
<td>3 3</td>
</tr>
<tr>
<td>Engr. Sci. &amp; Mech. 3311, 2720, 3110</td>
<td>3 3 4</td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td>4 4 4</td>
</tr>
<tr>
<td>*Non-technical electives</td>
<td>3 3 4</td>
</tr>
<tr>
<td>Physics 2310-20</td>
<td>3 3</td>
</tr>
<tr>
<td>Geology 2610</td>
<td>3 3</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Civil Engr. 3310, 4220</td>
<td>3</td>
</tr>
<tr>
<td>Civil Engr. 3800, 3610</td>
<td>3 3</td>
</tr>
<tr>
<td>Civil Engr. 3710, 4110</td>
<td>3 3</td>
</tr>
<tr>
<td>Civil Engr. 3320, 4410</td>
<td>3 3</td>
</tr>
<tr>
<td>Computer Science 3150</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 3110</td>
<td>3 3</td>
</tr>
<tr>
<td>Engr. Engr. 3000, 4020</td>
<td>3 3</td>
</tr>
<tr>
<td>Engr. Engr. 3120, 3330</td>
<td>3 3</td>
</tr>
<tr>
<td>*Mech. Engr. 3110</td>
<td>3 3</td>
</tr>
<tr>
<td>Civil Engr. 4430, 4800</td>
<td>3 3</td>
</tr>
</tbody>
</table>

Electrical Engineering

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>Math 1840-50-60</td>
<td>4 4 4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4 4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Basic Engr. 1310-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Basic Engr. 1410</td>
<td>4</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Physics 2310-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Elect. Engr. 2010-20-30</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Met. Engr. 2110</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Engr. Sci. &amp; Mech. 3710</td>
<td>4 4 4</td>
</tr>
<tr>
<td>*Non-technical electives</td>
<td>3 3 4</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
</tr>
<tr>
<td>Civil Engr. 3810-20-30</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Elect. Engr. 3040-50-60</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Civil Engr. 3010, 3720, 3100</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Civil Engr. 3190, 3180</td>
<td>3 3</td>
</tr>
<tr>
<td>Mech. Engr. 3520-30-40</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Civil Engr. 3080-90</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Math 3150</td>
<td>3 3 3</td>
</tr>
</tbody>
</table>

During the third quarter of the junior year, the student, in consultation with the adviser, should choose one of the following areas of interest. Courses marked with footnote 1 may be replaced by other courses approved by the student’s area adviser.

SENIOR YEAR—AREAS OF INTEREST

Electromagnetic Fields and Energy Conversion

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications</td>
<td></td>
</tr>
<tr>
<td>Elect. Engr. 4540</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4680-90</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4100</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4570</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4080</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. engr. electives</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3 3</td>
</tr>
<tr>
<td>*Non-technical electives</td>
<td>3 3 3</td>
</tr>
<tr>
<td>TOTAL: 202 hours</td>
<td></td>
</tr>
</tbody>
</table>

Power Systems

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elect. Engr. 4410-20-30</td>
<td>3 3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4370</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4790</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4810</td>
<td>3 3</td>
</tr>
<tr>
<td>Elect. Engr. 4780</td>
<td>3 3</td>
</tr>
<tr>
<td>* Nuclear Engr. 4610</td>
<td>3 3</td>
</tr>
<tr>
<td>* Elec. Engr. 4020</td>
<td>3 3</td>
</tr>
<tr>
<td>* Elec. Engr. 4810</td>
<td>3 3</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3 3</td>
</tr>
<tr>
<td>*Non-technical electives</td>
<td>3 3 3</td>
</tr>
<tr>
<td>TOTAL: 202 hours</td>
<td></td>
</tr>
</tbody>
</table>
### Plasma and Electro-Optics Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elec. Engr. 4460, 4470, 4480</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. Engr. 4020, 4490, 4500</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. engr. tech. electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Electr. engr. tech. electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Tech. electives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Non-technical electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 202 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Systems and Networks

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elec. Engr. 4810</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4820</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4350</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. engr. tech. electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. engr. tech. electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. engr. tech. electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Non-technical electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 202 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Computer Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elec. Engr. 4630</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4630</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4700</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4810</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4820</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4350</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Math 4710 or 4510</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4090</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4830</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Non-technical electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 202 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Electronics and Instrumentation

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elec. Engr. 4680-90, 4700</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. Engr. 4740</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4860</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4100</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4370</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4260</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4480</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4080</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elec. Engr. 4600</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Non-technical electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 202 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Bioelectric Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology 1210-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 3060-3098</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Zoology 3080-3089</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Elec. Engr. 4690</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. Engr. 4600</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. Engr. 4980</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. Engr. 4370</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Elec. Engr. 4820</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Non-technical electives</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 205 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Engineering Physics

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>*Physics 210-20-30 (or 1318-28-38)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 205 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Engineering Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Physics 3210-20-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Physics 4210-20</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>*Physics lab electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>*Technical electives</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Senior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physics 4240 (or 4250)</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>*Physics 4110-20-30</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>*Physics electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>*Technical electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>*Engineering electives</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 198 or 199 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*To be taken from Liberal Arts tracts of Language, Literature and Arts, or History and Society, with a total of 16 hours from courses approved for Language, Literature and Arts.

*The honors sequence (Physics 1318-28-38) is recommended for qualified majors.

*To be taken in College of Engineering.


*From engineering, mathematics, computer science, physics, chemistry, or astronomy.

*Students not planning to pursue graduate studies may substitute Physics 3230-20-30.


### Industrial Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Engr. 1310-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Engr. 1410</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 205 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Mechanical Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Engr. 1310-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Engr. 1410</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL:</strong> 205 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Before entering the third quarter of the junior year the student, with the aid and approval of an adviser, must select a program of mechanical engineering and technical electives. The following areas of specialization are available in the senior year: Energy, Environmental, Manufacturing, Machine Design, Propulsion and Aerospace. See page 154.
### Metallurgical Engineering

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics 1840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Engr. 1210-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Engr. 1410</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemet. Engr. 2010-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemet. Engr. 2011</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Chem. Engr. 3410</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 2140-40</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Engr. Sci. &amp; Mech. 3220</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><em>Non-technical electives</em></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Physics 2310-20</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Junior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Met. Engr. 3210-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Met. Engr. 4710, 3010</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Met. Engr. 3150</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Chemet. Engr. 3040</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Chem. Engr. 3420, 4110</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Electro. Engr. 3110 and either 3120 or 3130</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><em>Non-technical electives</em></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 3150</td>
<td>3</td>
<td>-</td>
</tr>
</tbody>
</table>

### Nuclear Engineering

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics 1840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Graphics 1310-20-30</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Basic Engr. 1310-20-30</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Basic Engr. 1410</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Sophomore</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math 2840-50-60</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Physics 2310-20</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Physics 3710</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Met. Engr. 3110</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Engr. Sci. &amp; Mech. 3700</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Engr. Sci. &amp; Mech. 3311</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Nuc. Engr. 2310-20-30</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Non-technical electives</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

*Not required in the cooperative program.
*A minimum of one-quarter (12 quarter hours) of the non-technical electives must be taken from a single group under one of the three areas of the humanities and social studies electives.*
### Cooperative Curriculum in Aerospace Engineering

#### Students Working Spring and Fall Quarters—Group A

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td>Math 1840</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>English 1510</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Chem. 1110</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310</td>
<td>4</td>
</tr>
<tr>
<td><strong>YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Math 1850</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>English 1520</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Chem. 1120</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Graphics 1320</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1320</td>
<td>4</td>
</tr>
<tr>
<td><strong>SECOND</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero. Engr. 2040</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Physics 2310</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Econ. 2110</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Math 2860</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Physics 2330</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Comp. Sci. 3150</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>THIRD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 3620</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 3630</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elec. Engr. 3120</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 3410</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 3430</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>FOURTH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4210</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4220</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4411</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4310</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 4510</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><em>Tech. Elect.</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Aero Engr. 4510</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4520</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4620</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4430</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4320</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><em>Tech. Elect.</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>FIFTH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4210</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4220</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4411</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4310</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 4510</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><em>Tech. Elect.</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL: 202 hours</td>
<td></td>
</tr>
</tbody>
</table>

#### Students Working Summer and Winter Quarters—Group B

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td>Math 1840</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>English 1510</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Chem. 1110</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310</td>
<td>4</td>
</tr>
<tr>
<td><strong>YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Math 1850</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>English 1520</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Chem. 1120</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Graphics 1320</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1320</td>
<td>4</td>
</tr>
<tr>
<td><strong>SECOND</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero. Engr. 2040</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Math 2860</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Physics 2330</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Comp. Sci. 3150</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Math 2860</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Physics 2330</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ES &amp; M 3311</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>THIRD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 3620</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 3630</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elec. Engr. 3120</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 3410</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 3430</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>FOURTH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4210</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4220</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4411</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4310</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 4510</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><em>Tech. Elect.</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>YEAR</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winter</td>
<td>Aero Engr. 4510</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4520</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4620</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4430</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4320</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><em>Tech. Elect.</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td><strong>FIFTH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4210</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4220</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4411</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Aero Engr. 4310</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 4510</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><em>Tech. Elect.</em></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Humanities/Social Studies Elect.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL: 202 hours</td>
<td></td>
</tr>
</tbody>
</table>

*Humanities/social studies electives; minimum of 20 hours required.
*Technical electives; upper division courses in engineering, mathematics or physical science as approved by the department.
Cooperative Curriculum in Agricultural Engineering
(See College of Agriculture Section)

Cooperative Curriculum in Chemical Engineering
Students Working Spring and Fall Quarters—Group A

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics 1840 . 4</td>
<td>Mathematics 1850 . 4</td>
<td></td>
<td>Mathematics 1860 . 4</td>
</tr>
<tr>
<td></td>
<td>English 1510 ....... 4</td>
<td>English 1520 ....... 4</td>
<td></td>
<td>Chemistry 1130 ....... 4</td>
</tr>
<tr>
<td></td>
<td>Chemistry 1110 ....... 4</td>
<td>Chemistry 1120 ....... 4</td>
<td></td>
<td>Graphics 1330 ....... 2</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310 ....... 2</td>
<td>Graphics 1320 ....... 2</td>
<td></td>
<td>Basic Engr. 1330 ....... 4</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310 ....... 4</td>
<td>Basic Engr. 1320 ....... 4</td>
<td></td>
<td>Basic Engr. 1410 ....... 2</td>
</tr>
<tr>
<td>SECOND YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 2010 . 4</td>
<td>Chemet. Engr. 2140-49 . 4</td>
<td></td>
<td>Chemet. Engr. 2030 . 4</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2840 ....... 4</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1Non-Tech. Elect. ....... 4</td>
<td>1Non-Tech. Elect. ....... 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>THIRD YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 2020 . 4</td>
<td>Chemet. Engr. 3410 . 4</td>
<td></td>
<td>Chemet. Engr. 3040 . 4</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2860 ....... 4</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physics 2320 ....... 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOURTH YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 3420 . 4</td>
<td>Chemet. Engr. 3050 . 4</td>
<td></td>
<td>Chemet. Engr. 3440 . 3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 4110 . 3</td>
<td>Chemet. Engr. 4120 . 3</td>
<td></td>
<td>Chemet. Engr. 3610 . 3</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemistry 3221-29 . 4</td>
<td>Technical Elective . 3</td>
<td></td>
<td>Elec. Engr. 3120 or 3130</td>
</tr>
<tr>
<td></td>
<td>Elec. Engr. 3110 ....... 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIFTH YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 2011 . 0</td>
<td>Chemet. Engr. 4410 . 3</td>
<td></td>
<td>Chemet. Engr. 4220 . 3</td>
</tr>
<tr>
<td></td>
<td>Chem. Engr. 3620 ....... 3</td>
<td>Chemet. Engr. 4530 . 3</td>
<td></td>
<td>Chemet. Engr. 4420 . 3</td>
</tr>
<tr>
<td></td>
<td>Chem. Engr. 3450 ....... 3</td>
<td>Chemet. Engr. 4320 . 1</td>
<td></td>
<td>Major Electives ....... 3</td>
</tr>
<tr>
<td></td>
<td>Met. Engr. 4310 ....... 3</td>
<td>Met. Engr. 3520 ....... 3</td>
<td></td>
<td>Technical Elective . 3</td>
</tr>
<tr>
<td></td>
<td>Chemistry 3430 ....... 3</td>
<td>Chemistry 4110 ....... 3</td>
<td></td>
<td>1Non-Tech. Elect. ....... 4</td>
</tr>
<tr>
<td></td>
<td>Technical Elective . 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1Non-Tech. Elect. ....... 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| TOTAL: 199 hours

Students Working Summer and Winter Quarters—Group B

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematics 1840 . 4</td>
<td>Mathematics 1850 . 4</td>
<td></td>
<td>Mathematics 1860 . 4</td>
</tr>
<tr>
<td></td>
<td>English 1510 ....... 4</td>
<td>English 1520 ....... 4</td>
<td></td>
<td>Chemistry 1130 ....... 4</td>
</tr>
<tr>
<td></td>
<td>Chemistry 1110 ....... 4</td>
<td>Chemistry 1120 ....... 4</td>
<td></td>
<td>Graphics 1330 ....... 2</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310 ....... 2</td>
<td>Graphics 1320 ....... 2</td>
<td></td>
<td>Basic Engr. 1330 ....... 4</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310 ....... 4</td>
<td>Basic Engr. 1320 ....... 4</td>
<td></td>
<td>Basic Engr. 1410 ....... 2</td>
</tr>
<tr>
<td>SECOND YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 2140-49 . 4</td>
<td>Chemet. Engr. 3420 . 4</td>
<td></td>
<td>Chemet. Engr. 2030 . 4</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2840 ....... 4</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1Non-Tech. Elect. ....... 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THIRD YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ES &amp; M 2720 ....... 3</td>
<td>Physic 2320 ....... 3</td>
<td></td>
<td>Elec. Engr. 3110 ....... 3</td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 3400 . 4</td>
<td>Chemistry 3211-19 ....... 4</td>
<td></td>
<td>Physics 2320 ....... 3</td>
</tr>
<tr>
<td></td>
<td>Chem. Engr. 3420 ....... 4</td>
<td>Basic Engr. 3130 ....... 4</td>
<td></td>
<td>Chemistry 3211-19 ....... 4</td>
</tr>
<tr>
<td></td>
<td>Math 2860 ....... 4</td>
<td>WORK</td>
<td></td>
<td>Math 3150 ....... 3</td>
</tr>
<tr>
<td></td>
<td>Physics 2310 ....... 3</td>
<td>1Non-Tech. Elect. ....... 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOURTH YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 4110 ....... 3</td>
<td>Chemet. Engr. 3440 ....... 3</td>
<td></td>
<td>Chemet. Engr. 3440 ....... 3</td>
</tr>
<tr>
<td></td>
<td>Chemistry 3221-29 ....... 4</td>
<td>WORK</td>
<td></td>
<td>Chemet. Engr. 3050 ....... 4</td>
</tr>
<tr>
<td></td>
<td>Elec. Engr. 3120 or 3130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-Tech. Elect. ....... 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIFTH YEAR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chem. Engr. 3620 ....... 3</td>
<td>Chem. Engr. 4410 ....... 3</td>
<td></td>
<td>Chemet. Engr. 4220 ....... 3</td>
</tr>
<tr>
<td></td>
<td>Chem. Engr. 3450 ....... 3</td>
<td>Chem. Engr. 4530 ....... 3</td>
<td></td>
<td>Chemet. Engr. 4420 ....... 3</td>
</tr>
<tr>
<td></td>
<td>Chemet. Engr. 4310 ....... 3</td>
<td>Chemet. Engr. 4320 ....... 4</td>
<td></td>
<td>Major Elective ....... 3</td>
</tr>
<tr>
<td></td>
<td>Met. Engr. 3520 ....... 3</td>
<td>Met. Engr. 3520 ....... 3</td>
<td></td>
<td>Technical Elective ....... 3</td>
</tr>
<tr>
<td></td>
<td>Chemistry 3440 ....... 3</td>
<td>Chemistry 4110 ....... 3</td>
<td></td>
<td>1Non-Tech. Elect. ....... 4</td>
</tr>
<tr>
<td></td>
<td>Technical Elective ....... 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1Non-Tech. Elect. ....... 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| TOTAL: 199 hours

1A minimum of one-half (12 quarter hours) of the non-technical electives must be taken from a single group under one of the three areas of the humanities and social studies electives.
### Cooperative Curriculum in Civil Engineering

**Students Working Spring and Fall Quarters—Group A**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Math 1840…4</td>
<td>Math 1950…4</td>
<td>Math 1950…4</td>
<td>Math 1860…4</td>
</tr>
<tr>
<td>FIRST</td>
<td>English 1510…4</td>
<td>English 1520…4</td>
<td>English 1520…4</td>
<td>Chem. 1130…4</td>
</tr>
<tr>
<td></td>
<td>Chem. 1110…4</td>
<td>Chem. 1120…4</td>
<td>Graphics 1320…2</td>
<td>Graphics 1330…2</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310…2</td>
<td>Basic Engr. 1320…4</td>
<td>Basic Engr. 1320…4</td>
<td>Basic Engr. 1410…2</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310…4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECOND</td>
<td>WORK</td>
<td>Physics 2310…3</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 2310…1</td>
<td>Civil Engr. 2310…1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2650…4</td>
</tr>
<tr>
<td></td>
<td>Geology 2610…3</td>
<td>Geology 2610…3</td>
<td>Geology 2610…3</td>
<td>Geology 2610…3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THIRD</td>
<td>WORK</td>
<td>Civil Engr. 3210…3</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3210…3</td>
<td>Civil Engr. 3210…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 2360…3</td>
<td>Civil Engr. 2360…3</td>
<td>Civil Engr. 2360…3</td>
<td>Civil Engr. 2360…3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOURTH</td>
<td>WORK</td>
<td>Civil Engr. 3310…3</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3310…3</td>
<td>Civil Engr. 3310…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3310…3</td>
<td>Civil Engr. 3310…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3320…3</td>
<td>Civil Engr. 3320…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIFTH</td>
<td>Economics 2110…3</td>
<td>Civil Engr. 4320…1</td>
<td>Civil Engr. 4320…1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tech. Elect. 9</td>
<td>Tech. Elect. 9</td>
<td>Tech. Elect. 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Tech. Elect. 9</td>
<td>*Tech. Elect. 9</td>
<td>*Tech. Elect. 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Students Working Summer and Winter Quarters—Group B**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Math 1840…4</td>
<td>Math 1850…4</td>
<td>Math 1860…4</td>
<td></td>
</tr>
<tr>
<td>FIRST</td>
<td>English 1510…4</td>
<td>English 1520…4</td>
<td>English 1520…4</td>
<td>English 1520…4</td>
</tr>
<tr>
<td></td>
<td>Chemistry 1110…4</td>
<td>Chemistry 1120…4</td>
<td>Chemistry 1120…4</td>
<td>Chemistry 1120…4</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310…4</td>
<td>Basic Engr. 1320…4</td>
<td>Basic Engr. 1320…4</td>
<td>Basic Engr. 1330…4</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310…4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECOND</td>
<td>WORK</td>
<td>Physics 2310…3</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 2260…3</td>
<td>Civil Engr. 2260…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
</tr>
<tr>
<td></td>
<td>Geology 2610…3</td>
<td>Geology 2610…3</td>
<td>Geology 2610…3</td>
<td>Geology 2610…3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THIRD</td>
<td>WORK</td>
<td>Civil Engr. 2310…1</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 2310…1</td>
<td>Civil Engr. 2310…1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3210…3</td>
<td>Civil Engr. 3210…3</td>
<td>Civil Engr. 3210…3</td>
<td>Civil Engr. 3210…3</td>
</tr>
<tr>
<td></td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOURTH</td>
<td>WORK</td>
<td>Civil Engr. 3310…3</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3310…3</td>
<td>Civil Engr. 3310…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3310…3</td>
<td>Civil Engr. 3310…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 3320…3</td>
<td>Civil Engr. 3320…3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
<td>Math 2860…4</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
</tr>
<tr>
<td></td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
<td>Civil Engr. 4430…3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIFTH</td>
<td>Economics 2110…3</td>
<td>Civil Engr. 4320…1</td>
<td>Civil Engr. 4320…1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tech. Elect. 9</td>
<td>Tech. Elect. 9</td>
<td>Tech. Elect. 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Tech. Elect. 9</td>
<td>*Tech. Elect. 9</td>
<td>*Tech. Elect. 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL: 200 hours

---

1. Humanities/social studies courses approved by the department.
2. Math/science courses approved by the department.
3. Technical electives must be approved by the student’s advisor and the primary and one secondary area must come from the departmental list of approved courses for 15 credits and 6 credits respectively.
4. Mechanical Engineering 3520 or 3311 may be substituted.
Cooperative Curriculum in Electrical Engineering

Students Working Spring and Fall Quarters—Group A

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Math 1840 . . . . . . 4</td>
<td>Math 1850 . . . . . . 4</td>
<td>WORK</td>
<td>Math 1860 . . . . . . 4</td>
</tr>
<tr>
<td>FIRST</td>
<td>Chemistry 1110 . . . . 4</td>
<td>Chemistry 1120 . . . . 4</td>
<td></td>
<td>Chemistry 1130 . . . . 4</td>
</tr>
<tr>
<td>YEAR</td>
<td>English 1510 . . . . . 4</td>
<td>English 1520 . . . . . 4</td>
<td></td>
<td>Graphics 1330 . . . . 2</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310 . . . . 2</td>
<td>Graphics 1320 . . . . . 2</td>
<td></td>
<td>Basic Engr. 1330 . . . 4</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310 . . . 4</td>
<td>Basic Engr. 1320 . . . . 4</td>
<td></td>
<td>Basic Engr. 1410 . . . . 1</td>
</tr>
<tr>
<td></td>
<td>WORK</td>
<td>WORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECOND</td>
<td>Math 2640 . . . . . . 4</td>
<td>WORK</td>
<td>Math 2650 . . . . . . 4</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>Physics 2310 . . . . . 3</td>
<td></td>
<td>Physics 2320 . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 2010 . . . . . . 3</td>
<td>WORK</td>
<td>EE 2020 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Met. Engr. 2110 . . . 4</td>
<td></td>
<td>Non-Tech. Elective . 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-Tech. Elective . 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THIRD</td>
<td>Math 2660 . . . . . . 4</td>
<td>WORK</td>
<td>EE 3810 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>EE 2030 . . . . . . 3</td>
<td>WORK</td>
<td>EE 3040 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EM 3710 or Met Engr. 3130 . . . . 3</td>
<td>WORK</td>
<td>EE 3010 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-Tech. Elective . 4</td>
<td></td>
<td>EE 3190 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mech. Engr. 3520 . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Math 3150 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td>FOURTH</td>
<td>EE 3820 . . . . . . 3</td>
<td>WORK</td>
<td>EE 3830 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>EE 3050 . . . . . . 3</td>
<td>WORK</td>
<td>EE 3060 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 3720 . . . . . . 3</td>
<td>WORK</td>
<td>EE 3100 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 3180 . . . . . . 3</td>
<td>WORK</td>
<td>Mech. Engr. 3540 . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mech. Engr. 3530 . . . 3</td>
<td></td>
<td>EE 3090 . . . . . . 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EE 3080 . . . . . . 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIFTH</td>
<td>See Senior Year Areas of Interest, page 130.</td>
<td></td>
<td>TOTAL: 202-205 hours</td>
<td></td>
</tr>
</tbody>
</table>
### Cooperative Curriculum in Engineering Physics

**Students Working Spring and Fall Quarters—Group A**

| FIRST YEAR | Math 1840 ....... 4 | Math 1850 ....... 4 | Math 1860 ....... 4 |
| YEAR       | English 1510 ....... 4 | English 1520 ....... 4 | Chemistry 1130 ....... 4 |
|           | Chemistry 1110 ....... 4 | Chemistry 1120 ....... 4 | Physics 1330 ....... 4 |
|           | Graphics 1310 ....... 2 | Graphics 1320 ....... 2 | Physics Lab ....... 3 |
|           | Physics 1310 ....... 3 | Physics 1320 ....... 3 | *Non-Tech. Elect. ....... 3 |
|           | (or 1318) ....... 4 | (or 1328) ....... 4 | *Engr. Elective ....... 3 |

**SECOND YEAR**

| WORK |
| Math 2840 ....... 4 | Physics 2310 ....... 3 |
| *Engr. Elective ....... 3 | *Non-Tech. Elect. ....... 8 |

**THIRD YEAR**

| WORK |
| Math 2860 ....... 4 | Physics 2330 ....... 3 |
| Physics Lab ....... 3 | *Non-Tech. Elect. ....... 4 |

**FOURTH YEAR**

| WORK |
| Math Elective ....... 3 | Physics 3220 ....... 3 |
| Physics 4210 ....... 3 | Electives ....... 6 |

**FIFTH YEAR**

| *Physics 4110 ....... 3 | *Physics 4120 ....... 3 | *Physics 4130 ....... 3 |
| Physics 4240 ....... 3 | Physics Elective ....... 3 | Physics Elective ....... 3 |
| (or 4250) ....... 4(3) | *Tech. Elective ....... 3 | *Tech. Elective ....... 3 |

*To be taken from Liberal Arts triads of Language, Literature and Arts, or History and Society, with at least 16 hours from courses approved for Language, Literature and Arts.

*The honors sequence (Physics 1318-28-38) is recommended for qualified majors.

*To be taken in College of Engineering.


*From engineering, mathematics, computer science, physics, chemistry, or astronomy.

*Students not planning to pursue graduate studies may substitute 3710-30.


**TOTAL: 198 (199) hours**

---

### Students Working Summer and Winter Quarters—Group B

| FIRST YEAR | Math 1840 ....... 4 | Math 1850 ....... 4 | Math 1860 ....... 4 |
| YEAR       | English 1510 ....... 4 | English 1520 ....... 4 | Chemistry 1130 ....... 4 |
|           | Chemistry 1110 ....... 4 | Chemistry 1120 ....... 4 | Physics 1330 ....... 4 |
|           | Graphics 1310 ....... 2 | Graphics 1320 ....... 2 | Physics Lab ....... 3 |
|           | Physics 1310 ....... 3 | Physics 1320 ....... 3 | *Non-Tech. Elect. ....... 3 |
|           | (1318) ....... 4 | (1328) ....... 4 | *Engr. Elective ....... 3 |

**SECOND YEAR**

| WORK |
| Math 2840 ....... 4 | Non-Tech. Elect. ....... 8 |
| Physics 2310 ....... 3 | Engr. Elective ....... 3 |

**THIRD YEAR**

| WORK |
| Math 2860 ....... 4 | Physics 2330 ....... 3 |
| Physics 3210 ....... 3 | Physics 4210 ....... 3 |

**FOURTH YEAR**

| WORK |
| Math Elective ....... 3 | Physics 3220 ....... 3 |
| Physics 4210 ....... 3 | Electives ....... 6 |

**FIFTH YEAR**

| *Physics 4110 ....... 3 | *Physics 4120 ....... 3 | *Physics 4130 ....... 3 |
| Physics 4240 ....... 3 | Physics Elective ....... 3 | Physics Elective ....... 3 |
| (or 4250) ....... 4(3) | *Tech. Elective ....... 3 | *Tech. Elective ....... 3 |

*To be taken from Liberal Arts triads of Language, Literature and Arts, or History and Society, with at least 16 hours from courses approved for Language, Literature and Arts.

*The honors sequence (Physics 1318-28-38) is recommended for qualified majors.

*To be taken in College of Engineering.


*From engineering, mathematics, computer science, physics, chemistry, or astronomy.

*Students not planning to pursue graduate studies may substitute 3710-30.


**TOTAL: 198 (199) hours**
## Cooperative Curriculum in Engineering Science

**Students Working Spring and Fall Quarters—Group A**

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST</td>
<td>Basic Engr. 1310</td>
<td>Basic Engr. 1320</td>
<td></td>
<td>Basic Engr. 1330</td>
</tr>
<tr>
<td>YEAR</td>
<td>Math 1840</td>
<td>Math 1850</td>
<td></td>
<td>Math 1860</td>
</tr>
<tr>
<td></td>
<td>Chemistry 1110</td>
<td>Chemistry 1120</td>
<td></td>
<td>Chemistry 1130</td>
</tr>
<tr>
<td></td>
<td>English 1510</td>
<td>English 1520</td>
<td></td>
<td>English 1530</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310</td>
<td>Graphics 1320</td>
<td></td>
<td>Basic Engr. 1410</td>
</tr>
<tr>
<td>SECOND</td>
<td>Math 2840</td>
<td>Phys. 2310</td>
<td></td>
<td>Math 2850</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>Met. Engr. 2110</td>
<td></td>
<td>WORK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ES &amp; M 3700</td>
<td></td>
<td>ES &amp; M 3311</td>
</tr>
<tr>
<td>THIRD</td>
<td>Math 2860</td>
<td>Phys. 2330</td>
<td></td>
<td>Mech. Engr. 3311</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>ES &amp; M 3110</td>
<td></td>
<td>Elec. Engr. 3120</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elect. Engr. 3110</td>
<td></td>
<td>Comp. Sci. 3150</td>
</tr>
<tr>
<td>FOURTH</td>
<td>Mech. Engr. 3440</td>
<td>ES &amp; M 4320</td>
<td></td>
<td>Math Elective</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>or 3540</td>
<td></td>
<td>Phys. or Bio. Sci. Elective</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or 3210</td>
<td></td>
<td>Non-Tech. Elect.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIFTH</td>
<td>ES &amp; M 4810</td>
<td>ES &amp; M 4010</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>Work</td>
<td>or 4620</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>or 3120</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Phys. or Bio.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sci. Elect.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL: 195 hours**

---

## Students Working Summer and Winter Quarters—Group B

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST</td>
<td>Basic Engr. 1310</td>
<td>Basic Engr. 1320</td>
<td>Basic Engr. 1330</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>Math 1840</td>
<td>Math 1850</td>
<td>Math 1860</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chemistry 1110</td>
<td>Chemistry 1120</td>
<td>Chemistry 1130</td>
<td></td>
</tr>
<tr>
<td></td>
<td>English 1510</td>
<td>English 1520</td>
<td>English 1530</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graphics 1310</td>
<td>Graphics 1320</td>
<td>Basic Engr. 1410</td>
<td></td>
</tr>
<tr>
<td>SECOND</td>
<td>Math 2840</td>
<td>Physics 2310</td>
<td>Math 2850</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td></td>
<td>Physics 2320</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-Tech. Elect.</td>
<td></td>
</tr>
<tr>
<td>THIRD</td>
<td>Math 2860</td>
<td>Physics 2330</td>
<td>Mech. Engr. 3311</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>ES &amp; M 3110</td>
<td>Elec. Engr. 3120</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elect. Engr. 3110</td>
<td>Comp. Sci. 3150</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sci. Elective</td>
<td></td>
</tr>
<tr>
<td>FOURTH</td>
<td>Mech. Engr. 3440</td>
<td>ES &amp; M 3320</td>
<td>Math Elective</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>or 3540</td>
<td>or 3120</td>
<td>Phys. or Bio. Sci.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sci. Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIFTH</td>
<td>ES &amp; M 4810</td>
<td>ES &amp; M 4010</td>
<td>ES &amp; M 4620</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>Work</td>
<td>or 4620</td>
<td>or 3120</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Phys. or Bio. Sci.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sci. Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL: 195 hours**

---

1. Humanities/social studies courses approved by the department.
2. Appropriate courses approved by the department.
3. Appropriate courses in the College of Engineering approved by the department.
4. Upper-division courses in mathematics, statistics, natural science, or engineering approved by the department.
### Cooperative Curriculum in Industrial Engineering

#### Students Working Spring and Fall Quarters—Group A

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1840</td>
<td>4</td>
<td>Math 1850</td>
<td>4</td>
<td>Math 1860</td>
</tr>
<tr>
<td>English 1510</td>
<td>4</td>
<td>English 1520</td>
<td>4</td>
<td>Chemistry 1130</td>
</tr>
<tr>
<td>Chemistry 1110</td>
<td>4</td>
<td>Chemistry 1120</td>
<td>4</td>
<td>Basic Engr. 1330</td>
</tr>
<tr>
<td>Basic Engr. 1310</td>
<td>4</td>
<td>Basic Engr. 1320</td>
<td>4</td>
<td>Basic Engr. 1410</td>
</tr>
<tr>
<td>Graphics 1310</td>
<td>2</td>
<td>Graphics 1320</td>
<td>2</td>
<td>Graphics 1330</td>
</tr>
</tbody>
</table>

#### SECOND YEAR

<table>
<thead>
<tr>
<th>Winter</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2840</td>
<td>4</td>
<td>English Elective</td>
<td>4</td>
<td>Chemistry 1130</td>
</tr>
<tr>
<td>Physics 2310</td>
<td>3</td>
<td>Physics 2300</td>
<td>4</td>
<td>Basic Engr. 1330</td>
</tr>
<tr>
<td>ES &amp; M 3311</td>
<td>4</td>
<td>ES &amp; M 3700</td>
<td>4</td>
<td>Basic Engr. 1410</td>
</tr>
<tr>
<td>Indus. Engr. 2310</td>
<td>1</td>
<td>Indus. Engr. 2320</td>
<td>2</td>
<td>Indus. Engr. 2330</td>
</tr>
</tbody>
</table>

#### THIRD YEAR

<table>
<thead>
<tr>
<th>Work</th>
<th>Humanities Elect.</th>
<th>Work</th>
<th>Work</th>
<th>Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities Elect.</td>
<td>4</td>
<td>Statistics 3460</td>
<td>3</td>
<td>Humanities Elect.</td>
</tr>
<tr>
<td>Indus. Engr. 3630</td>
<td>3</td>
<td>Indus. Engr. 3640</td>
<td>3</td>
<td>Indus. Engr. 3640</td>
</tr>
<tr>
<td>Tech. Elective</td>
<td>3</td>
<td>Tech. Elective</td>
<td>3</td>
<td>Tech. Elective</td>
</tr>
<tr>
<td>Accounti 2130</td>
<td>3</td>
<td>Civil Engr. 4230</td>
<td>3</td>
<td>Economics 2110</td>
</tr>
</tbody>
</table>

TOTAL: 205 hours

### Students Working Summer and Winter Quarters—Group B

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1840</td>
<td>4</td>
<td>Math 1850</td>
<td>4</td>
<td>Math 1860</td>
</tr>
<tr>
<td>English 1510</td>
<td>4</td>
<td>English 1520</td>
<td>4</td>
<td>Chemistry 1130</td>
</tr>
<tr>
<td>Chemistry 1110</td>
<td>4</td>
<td>Chemistry 1120</td>
<td>4</td>
<td>Basic Engr. 1330</td>
</tr>
<tr>
<td>Basic Engr. 1310</td>
<td>4</td>
<td>Basic Engr. 1320</td>
<td>4</td>
<td>Basic Engr. 1410</td>
</tr>
<tr>
<td>Graphics 1310</td>
<td>2</td>
<td>Graphics 1320</td>
<td>2</td>
<td>Graphics 1330</td>
</tr>
</tbody>
</table>

#### SECOND YEAR

<table>
<thead>
<tr>
<th>Summer</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2840</td>
<td>4</td>
<td>English Elective</td>
<td>4</td>
<td>Chemistry 1130</td>
</tr>
<tr>
<td>Physics 2310</td>
<td>3</td>
<td>Physics 2300</td>
<td>4</td>
<td>Basic Engr. 1330</td>
</tr>
<tr>
<td>ES &amp; M 3311</td>
<td>4</td>
<td>ES &amp; M 3700</td>
<td>4</td>
<td>Basic Engr. 1410</td>
</tr>
<tr>
<td>Indus. Engr. 2310</td>
<td>1</td>
<td>Indus. Engr. 2320</td>
<td>2</td>
<td>Indus. Engr. 2330</td>
</tr>
</tbody>
</table>

#### THIRD YEAR

<table>
<thead>
<tr>
<th>Work</th>
<th>Humanities Elect.</th>
<th>Work</th>
<th>Work</th>
<th>Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities Elect.</td>
<td>4</td>
<td>Statistics 3460</td>
<td>3</td>
<td>Humanities Elect.</td>
</tr>
<tr>
<td>Indus. Engr. 3630</td>
<td>3</td>
<td>Indus. Engr. 3640</td>
<td>3</td>
<td>Indus. Engr. 3640</td>
</tr>
<tr>
<td>Tech. Elective</td>
<td>3</td>
<td>Tech. Elective</td>
<td>3</td>
<td>Tech. Elective</td>
</tr>
<tr>
<td>Accounti 2130</td>
<td>3</td>
<td>Civil Engr. 4230</td>
<td>3</td>
<td>Economics 2110</td>
</tr>
</tbody>
</table>

TOTAL: 205 hours
### Cooperative Curriculum in Mechanical Engineering

**Students Working Spring and Fall Quarters—Group A**

**Fall** | **Winter** | **Spring** | **Summer**
---|---|---|---
**FIRST**
Math 1840 . . . . . . . 4 | Math 1850 . . . . . . . 4 | Math 1860 . . . . . . . 4 |  
English 1510 . . . . 4 | English 1520 . . . . 4 | Chemistry 1130 . . . . 4 |  
Chemistry 1110 . . . . 4 | Chemistry 1120 . . . . 4 | Graphics 1330 . . . . 2 |  
Graphics 1310 . . . . 2 | Graphics 1320 . . . . 2 | Basic Engr. 1320 . . . . 4 |  
Basic Engr. 1310 . . . . 4 | Basic Engr. 1320 . . . . 4 | *Humanities/Social Studies Elect.* |  

**SECOND**
Mech. Engr. 2040 . . . . 1 | Math 2860 . . . . . . . 4 | Math 2860 . . . . . . . 4 |  
Physics 2310 . . . . 3 | Physics 2320 . . . . 3 | Physics 2320 . . . . 3 |  
Economics 2110 . . . . 3 | Economics 2110 . . . . 3 | Economics 2110 . . . . 3 |  
*Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* |  

**THIRD**
Math 2860 . . . . . . . 4 | Physics 2330 . . . . 3 | Physics 2330 . . . . 3 |  
ES & M 3700 . . . . 4 | ES & M 3700 . . . . 4 | ES & M 3700 . . . . 4 |  
Comp. Sci. 3150 . . . . 3 | Comp. Sci. 3150 . . . . 3 | Comp. Sci. 3150 . . . . 3 |  
*Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* |  

**FOURTH**
Elect. Engr. 3120 . . . . 3 | Elect. Engr. 3120 . . . . 3 | Elect. Engr. 3120 . . . . 3 |  

**FIFTH**
*Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* |  

**TOTAL:** 202 hours

---

### Students Working Summer and Winter Quarters—Group B

**Fall** | **Winter** | **Spring** | **Summer**
---|---|---|---
**FIRST**
Math 1840 . . . . . . . 4 | Math 1850 . . . . . . . 4 | Math 1860 . . . . . . . 4 |  
English 1510 . . . . 4 | English 1520 . . . . 4 | Chemistry 1130 . . . . 4 |  
Chemistry 1110 . . . . 4 | Chemistry 1120 . . . . 4 | Graphics 1330 . . . . 2 |  
Graphics 1310 . . . . 2 | Graphics 1320 . . . . 2 | Basic Engr. 1320 . . . . 4 |  
Basic Engr. 1310 . . . . 4 | Basic Engr. 1320 . . . . 4 | Basic Engr. 1410 . . . . 2 |  

**SECOND**
Math 2840 . . . . . . . 4 | Math 2860 . . . . . . . 4 | Math 2860 . . . . . . . 4 |  
Physics 2310 . . . . 3 | Physics 2320 . . . . 3 | Physics 2320 . . . . 3 |  
Economics 2110 . . . . 3 | Economics 2110 . . . . 3 | Economics 2110 . . . . 3 |  
*Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* |  

**THIRD**
Math 2860 . . . . . . . 4 | Physics 2330 . . . . 3 | Physics 2330 . . . . 3 |  
ES & M 3700 . . . . 4 | ES & M 3700 . . . . 4 | ES & M 3700 . . . . 4 |  
Comp. Sci. 3150 . . . . 3 | Comp. Sci. 3150 . . . . 3 | Comp. Sci. 3150 . . . . 3 |  
*Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* |  

**FOURTH**
Elect. Engr. 3120 . . . . 3 | Elect. Engr. 3120 . . . . 3 | Elect. Engr. 3120 . . . . 3 |  

**FIFTH**
*Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* | *Humanities/Social Studies Elect.* |  

**TOTAL:** 202 hours

---

*Humanities/social studies electives: minimum of 20 hours required.

*Mechanical engineering electives: senior courses in mechanical or aerospace engineering not otherwise required.

*Technical electives: upper-division courses in engineering, mathematics or physics as approved by the department.
Cooperative Curriculum in Metallurgical Engineering

**Students Working Spring and Fall Quarters—Group A**

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics 1840</td>
<td>Mathematics 1850</td>
<td>WORK</td>
<td>Mathematics 1860</td>
<td>WORK</td>
</tr>
<tr>
<td>English 1510</td>
<td>English 1520</td>
<td>WORK</td>
<td>Chemistry 1130</td>
<td>WORK</td>
</tr>
<tr>
<td>Chemistry 1110</td>
<td>Chemistry 1120</td>
<td>WORK</td>
<td>Graphics 1330</td>
<td>WORK</td>
</tr>
<tr>
<td>Graphics 1310</td>
<td>Graphics 1320</td>
<td>WORK</td>
<td>Basic Engr. 1330</td>
<td>WORK</td>
</tr>
<tr>
<td>Basic Engr. 1310</td>
<td>Basic Engr. 1320</td>
<td>WORK</td>
<td>Basic Engr. 1410</td>
<td>WORK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECOND YEAR</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2960</td>
<td>Math 2960</td>
<td>WORK</td>
<td>Math 2850</td>
<td>WORK</td>
</tr>
<tr>
<td>ES &amp; M 3310</td>
<td>ES &amp; M 3310</td>
<td>WORK</td>
<td>ES &amp; M 2720</td>
<td>WORK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THIRD YEAR</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 2860</td>
<td>Math 2860</td>
<td>WORK</td>
<td>Math 3150</td>
<td>WORK</td>
</tr>
<tr>
<td>Physics 2320</td>
<td>Physics 2320</td>
<td>WORK</td>
<td>Physics 2320</td>
<td>WORK</td>
</tr>
<tr>
<td>ES &amp; M 3310</td>
<td>ES &amp; M 3310</td>
<td>WORK</td>
<td>ES &amp; M 2720</td>
<td>WORK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FOURTH YEAR</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemet. Engr. 3420</td>
<td>Met. Engr. 3220</td>
<td>WORK</td>
<td>Met. Engr. 3230</td>
<td>WORK</td>
</tr>
<tr>
<td>Met. Engr. 4710</td>
<td>Met. Engr. 4710</td>
<td>WORK</td>
<td>Met. Engr. 3150</td>
<td>WORK</td>
</tr>
<tr>
<td>Chem. Engr. 4110</td>
<td>Chem. Engr. 4110</td>
<td>WORK</td>
<td>or 3150</td>
<td>WORK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FIFTH YEAR</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Met. Engr. 4240</td>
<td>Met. Engr. 4250</td>
<td>WORK</td>
<td>Met. Engr. 4770</td>
<td>WORK</td>
</tr>
<tr>
<td>Met. Engr. 4510</td>
<td>Met. Engr. 4740</td>
<td>WORK</td>
<td>Chemet. Engr. 4320</td>
<td>WORK</td>
</tr>
<tr>
<td>Chemet. Engr. 4310.1</td>
<td>Chemistry 3430</td>
<td>WORK</td>
<td>2Non-Tech. Elective</td>
<td>WORK</td>
</tr>
<tr>
<td>Chemistry 3430</td>
<td>Chemistry 3430</td>
<td>WORK</td>
<td>Chemistry 4110</td>
<td>WORK</td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

---

**Students Working Summer and Winter Quarters—Group B**

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1840</td>
<td>Math 1850</td>
<td>Math 1860</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td>English 1510</td>
<td>English 1520</td>
<td>Chemistry 1130</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td>Chemistry 1110</td>
<td>Chemistry 1120</td>
<td>Graphics 1330</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td>Graphics 1310</td>
<td>Graphics 1320</td>
<td>Basic Engr. 1330</td>
<td>WORK</td>
<td></td>
</tr>
<tr>
<td>Basic Engr. 1310</td>
<td>Basic Engr. 1320</td>
<td>Basic Engr. 1410</td>
<td>WORK</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECOND YEAR</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 2140-49</td>
<td>Chemistry 2140-49</td>
<td>WORK</td>
<td>Chemet. Engr. 3410</td>
<td>WORK</td>
</tr>
<tr>
<td>Math 2840</td>
<td>Math 2840</td>
<td>WORK</td>
<td>Math 2850</td>
<td>WORK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THIRD YEAR</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemet. Engr. 3040</td>
<td>Physics 2310</td>
<td>WORK</td>
<td>Chemet. Engr. 3410</td>
<td>WORK</td>
</tr>
<tr>
<td>Met. Engr. 3210</td>
<td>Met. Engr. 3210</td>
<td>WORK</td>
<td>Math 3150</td>
<td>WORK</td>
</tr>
<tr>
<td>Chem. Engr. 3420</td>
<td>Chem. Engr. 3420</td>
<td>WORK</td>
<td>Physics 2320</td>
<td>WORK</td>
</tr>
<tr>
<td>2Non-Tech. Elect.</td>
<td>2Non-Tech. Elect.</td>
<td>WORK</td>
<td>or 3150</td>
<td>WORK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FOURTH YEAR</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
<th>WORK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemet. Engr. 4110</td>
<td>Met. Engr. 3220</td>
<td>WORK</td>
<td>Met. Engr. 3150</td>
<td>WORK</td>
</tr>
<tr>
<td>Elec. Engr. 3110</td>
<td>Elec. Engr. 3110</td>
<td>WORK</td>
<td>or 3150</td>
<td>WORK</td>
</tr>
<tr>
<td>Chemistry 3430</td>
<td>Chemistry 4110</td>
<td>WORK</td>
<td>Chemistry 4110</td>
<td>WORK</td>
</tr>
</tbody>
</table>

TOTAL: 198 hours

1A minimum of one-half (12 quarter hours) of the non-technical electives must be taken from a single group under one of the three areas of the humanities and social studies electives.
## Cooperative Curriculum in Nuclear Engineering

**Students Working Spring and Fall Quarters—Group A**

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST</td>
<td>Math 1840 ....4</td>
<td>Math 1850 ....4</td>
<td></td>
<td>Math 1860 ....4</td>
</tr>
<tr>
<td>YEAR</td>
<td>English 1510 ....4</td>
<td>English 1520 ....4</td>
<td>WORK</td>
<td>Chemistry 1130 ....4</td>
</tr>
<tr>
<td></td>
<td>Chemistry 1110 ....4</td>
<td>Chemistry 1120 ....4</td>
<td></td>
<td>Basic Engr. 1330 ....4</td>
</tr>
<tr>
<td></td>
<td>Graphics 1310 ....2</td>
<td>Graphics 1320 ....2</td>
<td></td>
<td>Basic Engr. 1410 ....2</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310 ....4</td>
<td>Basic Engr. 1320 ....4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECOND</td>
<td>Math 2860 ....4</td>
<td>Physics 2310 ....3</td>
<td>WORK</td>
<td>Math 2850 ....4</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>Met. Engr. 3110 ....4</td>
<td></td>
<td>Physics 2320 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuc. Engr. 2310 ....1</td>
<td>WORK</td>
<td>Nuc. Engr. 2320 ....1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
</tr>
<tr>
<td>THIRD</td>
<td>Math 2860 ....4</td>
<td>Physics 3710 ....3</td>
<td>WORK</td>
<td>Math 4610 ....3</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>ES &amp; M 3311 ....4</td>
<td></td>
<td>Nuc. Engr. 3040 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuc. Engr. 2330 ....1</td>
<td>WORK</td>
<td>Elec. Engr. 3110 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
<td>Math 3150 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nuc. Engr. 3210 ....4</td>
</tr>
<tr>
<td>FOURTH</td>
<td>Math 4710 ....3</td>
<td>Physics 3720 ....3</td>
<td>WORK</td>
<td>Math 4550 ....3</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>Elec. Engr. 3120 ....3</td>
<td></td>
<td>Physicics 3730 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuc. Engr. 3220 ....4</td>
<td>WORK</td>
<td>Nuc. Engr. 3030 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
<td>Met. Engr. 3160 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nuc. Engr. 3730 ....4</td>
</tr>
<tr>
<td>FIFTH</td>
<td>Nuc. Engr. 4110 ....3</td>
<td>Nuc. Engr. 4120 ....3</td>
<td>Nuc. Engr. 4130 ....3</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>Nuc. Engr. 4210 ....3</td>
<td>Nuc. Engr. 4220 ....3</td>
<td>Nuc. Engr. 4230 ....3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nuc. Engr. 4710 ....3</td>
<td>Nuc. Engr. 4720 ....3</td>
<td>Nuc. Engr. 4730 ....3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nuc. Engr. 4810 ....3</td>
<td>Nuc. Engr. 4820 ....3</td>
<td>Tech. Elective ....3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nuc. Engr. 3150 ....3</td>
<td>Tech. Elective ....3</td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** 195 hours

---

## Students Working Summer and Winter Quarters—Group B

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIRST</td>
<td>Math 1840 ....4</td>
<td>Math 1850 ....4</td>
<td></td>
<td>Math 1860 ....4</td>
</tr>
<tr>
<td>YEAR</td>
<td>English 1510 ....4</td>
<td>English 1520 ....4</td>
<td>WORK</td>
<td>Chemistry 1130 ....4</td>
</tr>
<tr>
<td></td>
<td>Chemistry 1110 ....4</td>
<td>Chemistry 1120 ....4</td>
<td></td>
<td>Basic Engr. 1330 ....4</td>
</tr>
<tr>
<td></td>
<td>Graphcis 1310 ....2</td>
<td>Graphics 1320 ....2</td>
<td></td>
<td>Basic Engr. 1410 ....2</td>
</tr>
<tr>
<td></td>
<td>Basic Engr. 1310 ....4</td>
<td>Basic Engr. 1320 ....4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SECOND</td>
<td>Math 2860 ....4</td>
<td>Physics 2310 ....3</td>
<td>WORK</td>
<td>Math 2850 ....4</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>Met. Engr. 3110 ....4</td>
<td></td>
<td>Physics 2320 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuc. Engr. 2310 ....1</td>
<td>WORK</td>
<td>Nuc. Engr. 2320 ....1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
</tr>
<tr>
<td>THIRD</td>
<td>Math 2860 ....4</td>
<td>Physics 3710 ....3</td>
<td>WORK</td>
<td>Math 4610 ....3</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>ES &amp; M 3311 ....4</td>
<td></td>
<td>Nuc. Engr. 3040 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuc. Engr. 2330 ....1</td>
<td>WORK</td>
<td>Elec. Engr. 3110 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
<td>Math 3150 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nuc. Engr. 3210 ....4</td>
</tr>
<tr>
<td>FOURTH</td>
<td>Math 4710 ....3</td>
<td>Physics 3720 ....3</td>
<td>WORK</td>
<td>Math 4550 ....3</td>
</tr>
<tr>
<td>YEAR</td>
<td>WORK</td>
<td>Elec. Engr. 3120 ....3</td>
<td></td>
<td>Physicics 3730 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuc. Engr. 3220 ....4</td>
<td>WORK</td>
<td>Nuc. Engr. 3030 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
<td>Met. Engr. 3160 ....3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nuc. Engr. 3730 ....4</td>
</tr>
<tr>
<td>FIFTH</td>
<td>Nuc. Engr. 4110 ....3</td>
<td>Nuc. Engr. 4120 ....3</td>
<td>Nuc. Engr. 4130 ....3</td>
<td></td>
</tr>
<tr>
<td>YEAR</td>
<td>Nuc. Engr. 4210 ....3</td>
<td>Nuc. Engr. 4220 ....3</td>
<td>Nuc. Engr. 4230 ....3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nuc. Engr. 4710 ....3</td>
<td>Nuc. Engr. 4720 ....3</td>
<td>Nuc. Engr. 4730 ....3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nuc. Engr. 4810 ....3</td>
<td>Nuc. Engr. 4820 ....3</td>
<td>Tech. Elective ....3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nuc. Engr. 3150 ....3</td>
<td>Tech. Elective ....3</td>
<td>Non-Tech. Elect. ....4</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** 195 hours
Agricultural Engineering
(See College of Agriculture)

Basic Engineering and Graphics
(Non-Departmental Unit)

Basic Engineering (179)
Coordinator: W.T. Snyder
1310 Basic Mechanics I (4) Forces, vector quantities, and moments; resultants of force systems; simple static equilibrium. Required of all engineering students except engineering physics majors. Coreq: Math 1840. 3 hrs and one 3-hr lab.

1200 Basic Mechanics II (4) Displacement vectors; particle kinematics and projectile motion; kinetica of particles using Newton's laws, frictional forces, and impulse-momentum. Required of all engineering students except engineering physics majors. Prereq: 1310; coreq: Math 1850. 3 hrs and one 3-hr lab.

1410 Engineering Computations (2) Presentation of data; elementary problem solving; use of slide rule and digital computer; treatment of error; empirical methods. Coreq: 1310. 2 hrs plus open computation lab.

Graphics (443)
Coordinator: J.N. Snider
Professor: C.A. Newton (Emeritus), M.S. Syracuse.
Associate Professors: E.K. Boyce, M.S. Tennessee; W. Watson Jr., M.S. Tennessee.

1310-20-30 Fundamentals of Engineering Graphics (2, 2, 2) Graphic representation of three-dimensional shape and size by orthographic and pictorial projection; sketching and dimensioning; tolerances. Problem solving utilizing spatial relationships and graphical vector analysis, and graphic presentation of engineering data. Must be taken in sequence. Two 3-hr periods or three 2-hr periods.

1410-20 Fundamentals of Engineering Graphics (3, 3) Graphical representation of three-dimenional shape and size; space relationships. Graphical presentation of engineering data. Required of all engineering students. Must be taken in sequence. One lecture and three 2-hr periods or two 3-hr periods.

1415-25 Fundamentals of Engineering Graphics (3, 3) Graphical representation of three-dimensional shape and size; space relationships. Graphical presentation of engineering data. Self-study course with tutorial assistance for those who have had high school mechanical drawing and/or other related experience. Admission by consent of coordinator. Must be taken in sequence. May be interchanged with Graphics 1410-20 courses.

Engineering Studies
(Non-Departmental Unit)

Engineering Studies (338)
Coordinator: E.E. Stansbury

2100 Introduction to Engineering Methodology (4) Designed to introduce non-engineering students to representative methods utilized in engineering design, development, operation, and evaluation of processes and products for society; use of physical laws and examples of techniques such as modeling. Systems analysis, economic balances, problems of resource use and technology control; thematic approach may be used.

4100 History of Engineering (4) History of technology and engineering with emphasis on identification of and developments in major areas such as transportation, communication, energy, manufacturing, design, and materials. Relationship to social and political structures of historical periods. Open to all students.

4200 Technology Forecasting and Assessment (4) Procedures and problems in forecasting of consequence of new technologies; assessment of and decisions on use of these technologies. Social, political, economic, and technological implications of consequence-based assessment and control of technology. Open to all students.

4300 The Interaction Between Science and Engineering (4) Historical-to-current analysis of interactions between science and engineering—patterns of mutual stimulation and of distinction. Open to all students.

Chemical, Metallurgical and Polymer Engineering


Assistant Professors: D.D. Burns, Ph.D. Houston; P.J. Meschter, Ph.D. Pennsylvania.

*Alumni Distinguished Service Professor
*Distinguished Professor
*Space Institute, Tulia, Oklahoma

BACHELOR OF SCIENCE PROGRAM
Separate complete curricula are offered in chemical engineering and metallurgical engineering. However, the first two years of these curricula are identical and a decision as to choice can be made in the third year. Both curricula are arranged to provide a central core of courses with flexibility in the upper-division years to permit emphasis on preparation for graduate study or technical employment.

GRADUATE STUDY PROGRAMS
Graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with majors in chemical engineering, metallurgical engineering or polymer engineering are offered. A program leading to the M.S. and Ph.D. degrees with specialization in polymer sciences and engineering in chemical engineering is conducted jointly with the Department of Chemistry which offers a degree with similar specialization. These programs have been strengthened by fellowships or grants provided by industrial companies including Dow, DuPont, General Electric, Shell, Texaco, Procter and Gamble, Celanese, Monsanto, American Enka, Union Carbide, Stauffer, Owens Corning, Cities Service, and Eastman Kodak, and by graduate fellowships and traineeships provided by National Science Foundation. Other aid to students has been available through research assistantships on contracts with industry and governmental agencies. The University's Graduate School operates a Resident Graduate Program at Oak Ridge, Kingsport, and Chattanooga.

See the Graduate Catalog for detailed information.

Chemical and Metallurgical Engineering (227)

2111 Sophomore Inspection Trip (0) Inspection trip to industrial plant. Usually scheduled in fall on ETEA day. Required for chemical engineering and metallurgical engineering majors. S/N/C.

2200 Process Principles and Materials II (3) Principles and materials of open systems, thermodynamics, and heat transfer. Prereq: 2100, 1330 and 1120. 3 hrs and 1 lab.

2320 Process Principles and Materials III (4) Materials structure—property relationships for metals, inorganic and organic compounds, with emphasis on mechanisms of control of properties by chemical composition, thermal and mechanical treatment; crystalllography, imperfections, mechanical properties, heat treatment, molecular weight and particle size distributions. Prereq: 2100; Chemistry 1130. 3 hrs and 1 lab period.

2220 Analog Computer Practice (1) Introduction to fundamentals of analog programming. Analog computer facilities and analog simulation languages will be emphasized. Prereq: Math 2840; Physics 2310 or Elec. Engr. 3110 or consent of instructor. One lab. S/N/C.

2230 Mini Computer Practice (1) Use of mini computers. Prereq: Basic Engineering 1410, or consent of instructor. One lab. S/N/C.

2240 Mini Computer Data Acquisition (1) Mini computers for data acquisition. Prereq: 2230 or consent of instructor. One lab. S/N/C.

3040 Process Principles and Materials IV (4) Applications of the second law of thermodynamics to physical and chemical processes and thermodynamic properties; applications of the Gibbs free energy in one, two and three phase chemical systems; use of tabular and graphical data in equilibrium calculations. Prereq: 2020; Chemistry 1130; coreq: Math 2840. 3 hrs and 1 lab period.

3100 Introduction to the Materials of Technology (4) Examination of sources, processing, and prop- erties of metallic, ceramic, polymeric, and com- posite materials based upon an historical per- spective and current practices in technology, architecture, and art. Prereq: Consent of instructor. Open to students in all colleges. Prereq: Introductory science course.

4310-20 Seminar (1, 1) Presentation and discussion of economic, political, humanistic, and other topics related to chemical and metallurgical engi- neers. S/NC. 

Chemical Engineering (226)

3010 Industrial Inspection Trips (1) Technology of chemical process industries emphasizing Tennes- see industry, plant trips. S/NC.

3410 Flow of Fluids (4) Differential and overall mo- mentum balances, mechanical energy balances; flow in tubes, piping systems, and packed beds; metering devices, pumps. Prereq: Chemet. Engr. 2020, Math 2850. 3 hrs and 1 lab.

3420 Heat Transfer (4) Differential and overall energy balances; steady and unsteady state, heat conduction in simple geometries; heat transfer in tubes and heat exchangers; condensation and boiling fundamentals. Prereq: 3410. 3 hrs and 1 lab.


4450 Diffusional Operations (3) Diffusion simul- taneous heat and mass transfer, applications in- cluding humidification, gas absorption, extraction. Prereq: 3420, Chemet Engr 3040.

4810 Introduction to Process Dynamics and Con- trol (3) Introduction to concepts of process dynamics and control. Steady-state analysis of chemical process control systems. Unsteady state nature of chemical processes. LaPlace transform techniques, block diagram algebra and transfer functions. Mathematical models for several proc- esses are developed and analyzed in detail. Prereq: Mathematics 2840.

3620 Chemical Process Control (3) Basic control theory applied to chemical processes; feedback control systems, cascade control, feed-forward control, stability analysis, frequency response. Survey of modern control of typical industrial unit operations. Prereq: 3610.

4010-20 Thesis (3, 3) Investigation and report of elementary chemical engineering problem.

4110 Chemical Engineering Data Analysis (3) Ana- lytical and experimental identification of system extraneous factors; statistical analysis and source systems; empirical modeling of processes; statistical process control. Prereq: 3420, Math 3150.

4120 Probabilistic Chemical Engineering Systems (3) Experiment designs, simulation of stochastic systems, predictive techniques, and analysis of network in the process industries. Prereq: 4110.

4130 Introduction to Optimization (3) Principles are applied to problems of optimization techniques to chemical process design; unconstrained optimiza- tion, equality constrained optimization, inequality constrained optimization, and dynamic program- ming. Prereq: Math 2840.

4220 Chemical Engineering Laboratory (3) Labora- tory investigations of controlling factors in chemi- cal engineering operations. Prereq: 3440-50, 3620, 4530.

4230 Project Laboratory (3) Laboratory investiga- tion of chemical engineering problem, stressing techniques of group effort.

4410 Design of Separation Processes (3) Mass transfer theory applied to design of, or materials separation processes. Prereq: 3440-50.

4420 Process Design and Economic Analysis (3) Development of basic information on a process into an integrated plant design considering mass and energy balances. Product specifications, equipment characteristics, capital investment, operating costs and economic merit. Prereq: 4410, 4530.

4430 Special Problems in Design and Economics (3) Extension of 4420 for student participation in A. I. Ch. E. projects. Prereq: 4420.

4540 Hydrocarbon Processing (3) Study of special- ized characterization of physical properties of fossi- fuel raw materials and products, and of pro- cesses for conversion of fossil fuel raw materials into products needed in industrial energy, indus- trial raw material and consumer markets. Prereq: 3440.

4470 Sulfur Removal from Coal and Associated Problems (3) Chemical and physical properties of domestic coals, sulfur distributions; beneficiation by both physical and chemical methods; fluidized bed combustion with both natural and synthetic SOx sorbents; stack gas SOx scrubbing. Prereq: Consent of instructor.

4480 Coal Processing to Liquid Fuels (3) Charac- terization of various coals with respect to current liquefaction methods; modeling of conversion processes and estimation of maximum yields, water and oxygen requirements; pyrolysis and cata- lytic hydrogenation; reactor design considera- tions; review and critique of selected articles from both the current literature and patents. Prereq: Consent of instructor.


4540 Fluid-Solid Operations (3) Heat and mass transport in fixed and fluidized beds; applications include adsorption, ion exchange, crystallization. Prereq: 3440-50.

4620 Process Modeling, Simulation and Control of Chemical Processes (3) Development of process models, experimental process identification, process computer simulation, conventional and nonconventional feedback control, advanced con- trol concepts. Prereq: 3620 or equivalent back- ground in basic control theory and differential equations.

4730 Mass and Energy Flow in Biological Systems (3) Basic physiochemical and organizational prin- ciples applied to biological systems. Deriva- tions of general equations of biomass and energy transfer. Thermodynamics of transport and equi- librium in foods. Discr 2100 and 1/1. Discussion of Volterra’s equation and biological clocks, etc. Prereq: Consent of instructor.

4740 Introduction to Transport Phenomena in Biological Systems (3) Application of principles of transport phenomena to biological systems. Trans- fer of chemical energy and various cellular active transports; structure and rheology of physiological fluids, membrane and interfacial phenomena; analysis and design of artificial organs. Prereq: 3440 and 3450 or consent of instructor.

4750 Microbiological Process Engineering (3) Ap- plication of chemical engineering principles and design concept to microbiological processes; con- sidering the diverse and various processes in food processing and pharmaceutical processes. Prereq: 3440, 3450 or consent of instructor.

4760 Principles of Biochemical Separation (3) Fundamental aspects and similarities of modern biochemical separation methods; classroom demon- strations, design of production and analytical systems. Prereq: Consent of instructor.

4781-82-83 Topics in Chemical Bioengineering (3, 3, 3) Problems of interest in chemical bioengineering. Prereq: Consent of instructor.

4810-20-30 Special Problems in Chemical Engi- neering (3, 3, 3) Chemical engineering problems related to recent developments in industrial prac- tice. Prereq: Consent of instructor.

GRADUATE

5000 Thesis

5010 Graduate Seminar (1)

5050 Engineering Analysis (3)

5120 Heat Convection (3)

5130 Methods of Optimization (3)

5210 Process Dynamics (3)

5250 Chemical Process Industry Economics (3)

5310 Thermodynamics of Heterogeneous Equilib- rium (3)

5320 Statistical Thermodynamics (3)

5410-20-30 Research and Design in Chemical En- gineering (3, 3, 3)

5510 Chemical Reactor Design (3)

5610 Stagewise Mass Transfer Operations (3)

5620 Differential Mass Transfer Operations (3)

5810 Mechanics of Viscous Flow (3)

6000 Doctoral Research and Dissertation

6130 Process Optimization (3)

6210 Advanced Diffusional Operations (3)

6250 Venture Analysis in the Process Industries (3)

6310 Thermodynamics of Irreversible Processes (3)

6320 Statistical Thermodynamics of Non-equilib- rium Systems (3)

6410 Stability Phenomena in Chemical Engineer- ing: Discrete Systems (3)

6420 Stability Phenomena in Chemical Engineer- ing: Continuous Systems (3)

6510 Applied Chemical Reaction Kinetics (3)

6520 Catalytic Reactor Design (3)

6610 Special Topics in Chemical Engineering (3)

6710 Process Dynamics (3)

Metallurgical Engineering (679)

2110 Engineering Materials I (3) Introductory course correlating the atomic, crystal, and micro- structure of solids and mechanical, physical, and chemical properties of engineering significance. 3 hrs and 1 lab.

2210 Electron Microscopy (1) Designed to present to science and engineering students a brief intro- duction to the operation of the electron micro- scope and its applications to scientific problems. Prereq: Physics 2310-20. 3-hr lab. S/NC.

3010 Industrial Inspection Trips (1) Technology of metallurgical industries, emphasizing Tennessee industry; plant trips. S/NC.

3110 Engineering Materials I (4) Introductory course correlating the atomic, crystal, and micro- structure of solids with mechanical, physical, and chemical properties of engineering significance. 3 hrs and 1 lab.

3120 Engineering Materials II (3) Extension of 2110 with emphasis on control of mechanical proper- ties of materials by specification of composition, thermal, and mechanical treatment; correlation of resultant properties with service performance. Suggested for mechanical, civil, and industrial engi- neering students.

3130 Engineering Materials III (3) Extension of 2110 with emphasis on control of electrical and mag- netic properties of materials by specification of composition, thermal, and mechanical treatment; correlation of resultant properties with service performance. Suggested for electrical engineering students.
3140 Engineering Materials IV (3) Extension of 2110 with emphasis on materials processing, specification and evaluation. Suggested for mechanical and industrial engineering students.

3150 Engineering Materials V (3) Extension of 3110 with emphasis on mechanisms and control of reactions of engineering materials with aqueous, non-aqueous, and gaseous environments. Prereq: 3110 or 2110 or Chemet. Engr. 2030.

3160 Engineering Materials VI (3) Extension of 2110 with emphasis on materials of significance in nuclear engineering; nuclear reactor construction materials, nuclear fuel materials, and interaction of radiation with solids to produce changes in engineering properties. Suggested for nuclear and mechanical engineers.

3170 Engineering Materials VII (3) Extension of 2110 to biomedical applications of materials. Engineering materials in biomedical applications; metals, polymers and ceramics; prosthetic devices; dental applications; corrosion problems; failure analysis; fabrication. Prereq: 2110 or equivalent.


3220 Diffusion and Annealing (3) Introduction to solid state kinetics: point defects, solid solutions, diffusion equations and mechanisms, annealing of cold worked structures. Prereq: 3210; Math 2840.

3230 Phase Transformations (4) Thermodynamic and structural factors governing binary equilibrium. Ternary systems. Kinetics and morphology of precipitation and phase transformations in simple and complex systems. Prereq: 3220. 3 hrs and 1 lab.

3310 Biomedical Applications of Materials for Life Scientists (3) Principles of engineering materials; metals, polymers and ceramics; methods of fabrication of components; corrosion; applications of prosthetic devices and dental materials. Prereq: Chemet. Engr. 3110-20-30 or equivalent.

3520 Materials Behavior and Chemical Process Equipment Design (3) Mechanical, metallurgical and chemical considerations in design of chemical processing equipment. Prereq: Chemet. Engr. 2030 or equivalent; 3150; and Chem. Engr. 3420. (Same as Engineering Mechanics 3520.)

3710 Metallurgical Applications in Manufacturing Technology (3) Fabrication methods and principles of mechanical/thermal processing for finished and semi-finished articles; casting, powder metallurgy, plastic forming, joining, heat treatment. Prereq: 2110 or equivalent and recommended senior standing in mechanical engineering.

4010-20 Thesis (3-6, 3-6) Investigation and report on metallurgical engineering problem.

4230 Project Laboratory (3) Group or individual investigation of problems related to metallurgical engineering or materials science. May be repeated for a maximum of 9 credits. Prereq: Minimum of one course beyond 2110, 3110 or Chemet. Engr. 2030.

4240-50 Design and Analysis (3, 3) Design and laboratory sessions on analysis of materials requirements and performance in engineering structures and components. Prereq: 3120 or 4730.

4510-20 X-Ray Diffraction and Crystallography (3, 3) Lectures and laboratory work in crystallography, projections, x-rays, diffraction phenomena and techniques, introduction to structure determination. First quarter serves as introduction to subject, 2 hrs and 1 lab.

4550 Fracture-Safe Design (3) (Same as Engr. Sci. and Mech. 4540.)

4610 Physical Properties of Materials (3) Electron theory of solids, types of bonding in solids; thermal, electrical, and magnetic properties of material; relationship between metallurgical structure and properties. Prereq: 3 hrs or 2 hrs and 1 lab.

4710 Production Metallurgy (3) Thermodynamic and kinetic principles of roasting, smelting, refining. Prereq: Chemet. Engr. 3040.

4730 Mechanical Metallurgy I (3) Elastic behavior. Description of stress, strain, and elastic constitutive relations. Effects of composition, microstructure, and loading on mechanical behavior. Failure by yielding, 2 hrs and 1 lab or 3 hrs. Prereq: 3110 or 3110 or Chemet. Engr. 2030. Also suggested for mechanical engineering, engineering mechanics, and engineering science students.

4740 Mechanical Metallurgy II (3) Ductile and brittle fracture, creep and stress rupture, fatigue, and residual stresses. Effects of state of stress, loading rate, time, temperature, and metallurgical structure. 2 hrs and 1 lab or 3 hrs. Prereq: 3120 or 3230, and 4730 or Mech. Engr. 3650 or consent of instructor. Also suggested for mechanical engineering, engineering mechanics, or engineering science students.

4760 Casting and Welding (3) Principles and processes of casting and welding: heat transfer, solidification, segregation, gas-metal and slag-metal interactions, thermal treatments, associated stresses. Prereq: 3120 or 3230. 3 hrs or 2 hrs and 1 lab.

4770 Mechanical Metallurgy III (3) Finite plastic strain. Plastic stress-strain relations. Principles of fabrication: forging, swaging, extrusion, rolling, deep drawing, 2 hrs and 1 lab or 3 hrs. Prereq: 4730 or consent of instructor. Also suggested for mechanical engineering, engineering mechanics, and engineering science majors.

GRADUATE

5000 Thesis

5010 Graduate Seminar (1)

5050 Engineering Analysis (3)

5110 Point Defects and Dislocations (3)

5120 Plastic Deformation I (3)

5130 Plastic Deformation II (3)

5140 Diffusion and Annealing in Solids (3)

5150 Phase Transformations (3)

5170-80 Plastic Deformation (3, 3)

5210-20-30 Welding Metallurgy (3, 3, 3)

5310 Solidification and Crystal Growth (3)

5410-20-30 Advanced X-Ray Diffraction (3, 3, 3)

5510-20 Applied Properties of Solids (3, 3)

5540-50 Electron Microscopy I and II (3, 3)

5610-20 Radiation Effects on Materials (3, 3)

5750 Corrosion (3)

5810-20-30 Special Topics in Metallurgy (3, 3, 3)

5840-50 Metallurgy of Deformation and Fracture (3, 3)

5910-20-30 Metallurgical Thermodynamics (3, 3, 3)

6000 Doctoral Research and Dissertation

6110-20-30 Theoretical Metallurgy (3, 3, 3)

6210-20-30 Rate Processes in Metallurgy (3, 3, 3)

6320-30 Solidification and Crystal Growth II and III (3, 3)

6410-20 Thermodynamics of Solids (3, 3)

6610 Mechanical and Physical Properties of Crystals (3)

6620 Mechanical and Physical Properties of Crystals (3)

6830 Seminar in Anisotropic Properties of Crystals (3)

Polymer Engineering (805)

4230-40 Project Laboratory (3, 3) Laboratory investigation of polymer engineering problem. Written report required for each quarter.

4910 Applied Polymer Science (3) First course in physical properties of polymers. Polymer structure, crystalline and glass transitions, physical properties of amorphous and crystalline polymers, crystallization kinetics and mechanical properties are discussed. Prereq: Senior standing in engineering or science.

4920 Polymer Processing (3) Rheological properties of polymer melts and solutions, viscometry, unit operations of fiber, plastics and rubber industries; dimensional analysis and scale-up, flow through dies and pipelines, screw extrusion, spinning of fibers, injection molding. Prereq: Senior standing in engineering or science.

4930 Principles of Fiber Textile Engineering (3) Chemical and crystalline structure of important fibers; melt and dry spinning of man-made fibers; drawing and texturizing; preparation of yarn; dyeing, weaving and knitting. Emphasis on quantitative aspects. Prereq: Senior standing in engineering or science.

4940 Plastics Fabrication Operations (3) Lecture and laboratory course treating unit operations of plastics industry. Types and mechanisms of operation of machinery used and structure and properties of fabricated parts. Operations to include extrusion, co-extrusion, injection molding including structural foam, thermoforming, blow molding, rotational molding, etc. Prereq: Senior standing in engineering or science.

GRADUATE

5000 Thesis

5010 Graduate Seminar (1)

5050 Engineering Analysis (3)

5110 Structural Characterization of Polymers (3)

5210 Non-Newtonian Fluid Mechanics (3)

5230 Mechanical Behavior of Solid Polymers (3)

5310 Polymer Solution Properties and Characterization (3)

5510 Modern Research Tools and Instruments for Polymer Science (3)

5710 Phase Transformations in Polymer Systems (3)

5910-20-30 Selected Topics in Polymer Science (3, 3, 3)
Civil Engineering

Including Environmental Engineering

Professors:

Associate Professors:

Assistant Professors:

*On leave
*Space Institute, Tullahoma

BACHELOR OF SCIENCE PROGRAM

The curriculum in civil engineering is designed to provide training in fundamental engineering sciences, certain nontechnical subjects and basic subjects in the civil engineering fields to serve as a basis for entrance into civil engineering practice, and/or for graduate study. By use of technical electives (27 hours maximum), a student can specialize as primary or secondary areas of study in construction, environmental engineering, structures, transportation, or water resources. Primary specialization will be shown on student's transcript.

Students are required to maintain a cumulative grade point average of at least 2.00 in all civil engineering and environmental engineering courses taken at The University of Tennessee, Knoxville and used to satisfy the graduation requirements.

MASTER OF SCIENCE AND MASTER OF ENGINEERING PROGRAMS

Graduate programs in civil engineering and environmental engineering leading to the degree of Master of Engineering are offered by the College of Engineering.
4710 Portland Cement Concrete Mix Design (3)
Properties and tests of portland cement concrete; methods of concrete mix design, nondestructive concrete evaluation testing, use of concrete admixtures. 2 lectures and 1 lab. Prereq: 3710

4720 Asphalt and Bituminous Concrete (3) Properties and tests of asphalts and asphaltic mixes, mix design of bituminous concrete. Emphasis on use of asphalt in transportation construction projects. 2 lectures and 1 lab. Prereq: 3710

4731-32 Earthquake Resistant Structure I, II (4, 4) (Same as Architecture 4731-32.)

4800 Introduction to Civil Engineering Systems (3) Methods of modeling civil engineering systems and their specific application to problems of transportation, environment, water resources and materials. Prereq: Senior standing or consent of instructor.

4850 Elementary Structural Matrix Methods (4) (Same as Architecture 4850 and Engineering Science and Mechanics 4850.)

4860 Civil Engineering Systems Design and Management (3) Introduction to basic systems engineering concepts within a civil engineering context; discussion of the role of decision maker and use of optimal principles in engineering planning. Prereq: Computer Science 3150.

4910-20 Special Topics (3, 3) Problems relating to recent developments and current practice in civil engineering. Prereq: Consent of instructor.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20 Statistically Indeterminate Structures (3, 3)

5140 Statistically Indeterminate Structures (3)

5150 Matrix Formulation of Structural Problems (3)

5160 Analysis and Design of Plate Structures (3)

5170 Introduction to Structural Dynamics (3)

5180 Finite Element Structural Analysis (3)

5220 Pavement Design (3)

5240 Advanced Properties of Materials: Cement and Concrete (3)

5250 Advanced Properties of Materials: Bitumenous Substances and Mixes (3)

5270 Planning and Transportation (3)

5310 Engineering Practice (3)

5320-30 Engineering Practice Applied to Administration of Engineering Projects (3, 3)

5420 Structural Model Analysis (3)

5430-40-50 Construction Management I, II, III (3, 3, 3)

5460-70 Construction Estimating I, II (3, 3)

5550 Soil Mechanics—Plastic Equilibrium (3)

5560 Soil Mechanics—Elastic Behavior (3)

5570 Soil Mechanics—Seepage (3)

5610 Behavior of Steel Structures (3)

5730 Prestressed Concrete (3)

5740 Behavior of Reinforced Concrete Members (3)

5800 Urban Systems: Engineering and Management I (3)

5805 Urban Systems: Engineering and Management II (3)

5810 Traffic Engineering—Characteristics (3)

5820 Traffic Engineering—Operations (3)

5840 Geometric Design (3)

5850 Functional Design of City Streets and Urban Freeways (3)

5860 Urban Transportation Planning (3)

5870 Public Transit Planning (3)

5880 Traffic Accident Reconstruction (3)

5900 Special Problems in Civil Engineering (1-9)

5910-20-30 Special Topics (3, 3, 3)

6000 Doctoral Research and Dissertation

6160 Behavior of Steel Bridges and Buildings (3)

6740 Behavior of Reinforced Concrete Beams and Frames (3)

6750 Behavior of Reinforced Concrete Slabs (3)

6830 Traffic Flow Theory (3)

6860 Statewide Passenger Transportation Planning (3)

6870 Future Transit Technology and Research (3)

6880 Planning Models for Transportation Systems I (3)

6890 Planning Models for Transportation Systems II (3)

6910-20-30 Special Topics in Civil Engineering (3, 3, 3)

ENVIRONMENTAL ENGINEERING (344)

3000 Introduction to Environmental Engineering (3) Introduction to man's interaction with the air, water, and land environment in which he lives; role of engineering in environmental control. Prereq: Junior standing.

3120 Hydraulics (3) Application of basic and developed principles of hydraulics. Flow measurement; flow in closed conduits; uniform and nonuniform open channel flow; pumps and turbines; basic hydraulics; flow similitude and models. 2 lectures and one 3-hr lab. Prereq: Engr. Mech. 3110.


4150 Urban Water Management (3) Introduction to urban water modeling; evaluation of optimum urban water policies; formulation of system constraints and an analysis of decision-making process; management of storm water for beneficial use. Prereq: 3000 and 3330.

4210 Water Resources Engineering Design (3) Elements of water resource structures and systems, including reservoirs, dams, control works, and open channel design. Dam safety control, environmental impact of reservoir projects. Prereq: 3330 or consent of instructor.

4220 Water Resources Engineering Development (3) Multi-objective evaluation procedures for comparing and selecting among water resources development alternatives; achieving project optimality; single- and multi-purpose projects; special topics in new developments in water resources engineering. Prereq: 3330 or consent of instructor.

4330 Hydrologic Design (3) Application of frequency and regression analysis to hydrologic design of water resources system; unsteady surface runoff and streamflow modeling; urban peak runoff design using kinematic wave theory; evaluation of effects of land use changes on steam flow quantity and quality. Prereq: 3330.

4510 Elements of Water and Wastewater Transport Systems (3) Introduction to theory and design of water transportation and distribution systems and wastewater collection systems. Prereq: 3000, 3120 and 3330.

4520 Elements of Water and Wastewater Treatment Systems Design (3) Introduction to unit operations and processes employed in physical, chemical, and biological treatment of water and wastewater. Application of unit operations and processes in design of water and wastewater treatment plants. Prereq: 3000 and 3330.

4530 Sanitary Engineering Laboratory (3) Physical, chemical, and bacteriological analysis of water and wastewater. 3 labs. Prereq: 4030.

4600 Solid Waste Management (3) Quantities and characteristics of solid wastes; collection methods and equipment; disposal and recycle techniques; economics; planning and management. Prereq: 3000.

4700 Air Pollution-Air Resource Management (3) Introductory course on concepts of air pollution; analysis of relationship among emission sources, meteorology and topographic factors, and adverse effects on receptors; engineering approaches for air pollution control. Prereq: Senior standing.

4810 Water Law (3) (Same as Law 8975 and Water Resources Development 4810.)

4820 Environmental Engineering Law (3) Legal aspects of water and air pollution, drainage, land use controls and environmental impact statements with emphasis upon federal-state relations, recent legislation and court decisions, and enforcement. Prereq: Senior standing.

4910-20-30 Special Topics in Environmental Engineering (3, 3, 3) Problems related to recent developments and current practice in environmental engineering. Prereq: Consent of instructor.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5150 Water and Urban Welfare (3)

5160 Planning and Utilities (3)

5200 Water Resources Systems (3)

5210 Advanced Water Resources Engineering (3)

5230 Surface Water Transport Processes (3)

5232 Sediment Transportation (3)

5240 Flood Control Hydraulics (3)

5261 Basic Principles of Remote Sensing (3)

5262 Remote Sensing Data Acquisition (3)

5263 Remote Sensing Data Analysis and Interpretation (3)

5301 Stormwater Modeling I (3)

5302 Stormwater Modeling II (3)

5310 Groundwater Transport Processes (3)

5330 Descriptive Hydrology (3)

5400 Introduction to Environmental Systems (3)

5501 Water and Wastewater Treatment Theory I (3)

5502 Water and Wastewater Treatment Theory II (3)

5513 Advanced Water and Waste Treatment Systems (3)

5530 Environmental Engineering and Natural System Behavior (3)

5551 Water Quality Management (3)

5561 Environmental Management of Water Quality (3)

5582 Microbiology for Sanitary Engineers (3)

5593 Advanced Sanitary Engineering Laboratory (3)

5600 Solid Wastes (3)

5610 Solid Waste Disposal (3)
5620 Solid Waste Collection Systems (3)
5700 Planning and Air Pollution Control (3)
5710 Air Pollution Control Engineering (3)
5720 Air Pollution Particle Collection Theory (3)
5725 Air Quality Modeling and Impact Assessment (3)
5730 Air Pollution Control Device Design (3)
5735 Industrial Source Sampling (3)
5740 Dynamical and Physical Meteorology (3)
5750 Turbulence in the Atmosphere (3)
5760 Diffusion in the Atmosphere (3)
5900 Special Problems in Environmental Engineering (1-4)
5910-20 Special Topics (3, 3, 3)
5990 Environmental Engineering Seminar (1)
6110-20 Advanced Topics in Fluid Mechanics and Convective Transfer (3, 3)
6230 Kinematic Wave Theory (3)
6500 Industrial Waste Treatment and Process Control (6)
6620 Advanced Theory and Applications in Water Resources Energy Systems (3)
6690-20-30 Special Topics in Environmental Engineering (3, 3, 3)

Electrical Engineering (320)

Professors:

Associate Professors:
A.A. Blatop, Ph.D. Clemson; R.C. Gonzalez, Ph.D. Florida; E.L. Hall, Ph.D. Mississippi; H.R. Lough, Ph.D. Oxford (England); H.P. Neff, Ph.D. Auburn, P.E.; M.O. Pace, Ph.D. Georgia Institute of Technology; T.W. Reddick, Ph.D. Louisiana State; D. Rosenberg, E. Eng. Sc. New York; F.W. Symonds, Ph.D. Nottingham (England).

Assistant Professors:

*Distinguished Professor
*Space Institute, Tullahoma

UNDERGRADUATE

The Bachelor of Science in Electrical Engineering is planned to provide a foundation in both the basic sciences and specialized areas of modern electrical engineering. The curriculum also contains a suitable amount of cultural work to excellence that may lead up toward the goal of becoming a professional person with strong personal social awareness. In the senior year, the student may specialize in any one of the following areas of electrical engineering: bioelectric engineering, computer engineering, electromagnetic fields and communications, electronics and instrumentation, energy conversion and power systems, plasma and electro-optics engineering, and systems and networks. All of these areas except the bioelectric engineering option are continued through the M.S. and Ph.D. programs. The senior year curriculum is sufficiently flexible to allow a student to take several courses outside of the chosen area of specialization.

All sophomore and junior course work is offered every quarter and the senior is scheduled so that the student may enter at the beginning of any quarter. This arrangement allows maximum flexibility, since the student may elect the normal four-year schedule, may choose to graduate in three calendar years, or may take the Cooperative Engineering Program.

In addition to the usual research and teaching facilities in machinery, electronics, microwaves, solid state devices and control equipment, the department has both digital and analog computers.

Masters of Science Program

Graduate work leading to the Master of Science degree may be completed during one academic year of full-time study or the degree may be obtained in two or three years of study in the evening. Graduate assistantships and scholarships are available for outstanding students. Graduate assistants may obtain the Master's degree in one calendar year. Course work leading to the degree of Master of Science in Electrical Engineering is offered in the evening. Each course meets for two and one-half hours each week.

The Doctoral Program

Graduate work leading to the degree of Doctor of Philosophy with a major in electrical engineering is offered. The department also participates in the engineering science doctoral program.

General policies of the Graduate School, residence, language, research, examinations, and admission to candidacy requirements are explained in the Graduate Catalog.


2030 Circuits III (3) Polyphase networks considered as networks with more than one source. Magnetics. Transient analysis of circuits containing more than one storage element using classical methods. Steady-state analysis of networks containing various sources of more than one frequency. Coreq: 2020, Math 2850 concurrently. 3 hrs including biweekly lab.

3010 Transient Analysis (3) Analysis of transient response of networks and systems; Laplace transform method and difference equation methods for system analysis; complex frequency and pole-zero concepts; application to ladder network problems. Coreq: 2030.


3050 Basic Field Theory (3) Forces between charges, electric and magnetic fields, Gauss's law and divergence, potential and line integrals, material bodies, polarization, magnetic circuits, Maxwell's equations, dynamic potentials. Coreq: Math 2860.

3060 Propagation I (3) Plane waves, reflection, guided waves, transmission lines, standing waves, impedances, impedance matching, graphical methods, rectangular wave guides. Coreq: 3050. 3 hrs including biweekly lab.

3080 Energy Conversion (3) Magnetic circuits, transformer theory and operation, principles of electromechanical energy conversion with emphasis on input-output characteristics; steady-state analysis of induction motors and d. c. machines. Coreq: 3040. Includes a biweekly lab.

3090 Energy System Operation (3) Synchronous machines, transmission-lines, and transformers as power system elements; power system representation, per unit calculation, symmetrical components, and fault studies. Coreq: 3080. Includes a biweekly lab.


3110 Basic Electrical Engineering—Circuits and Fields (3) For non-electrical engineering majors. Coreq: Math 2650, Physics 2310-20. 3 hrs including biweekly lab.

3120 Basic Electrical Engineering—Electronics (3) For non-electrical engineering majors. Coreq: 3110. 3 hrs including biweekly lab.

3130 Basic Electrical Engineering—Mechanics (3) For non-electrical engineering majors. Coreq: 3110. 3 hrs including biweekly lab.

3135 Basic Electrical Engineering Circuits—Instrumentation (3) For non-electrical engineering majors. Coreq: 3130. 3 hrs including biweekly lab.

3180 Logic Design of Digital Systems (3) Introduction to boolean algebra and design of combinational and sequential circuits. Presents gate and flip flop characteristics. Design of clocked sequential circuits and other systems containing memory. Introduction to minicomputer architecture and system components to include basic structure and function of Arithmetic, Storage, Input/Output, and Control Systems. Instrumentation for electronic and computer programming. Coreq: 3130, Computer Science 3150. 3 hrs including biweekly lab.

3190 Plasma I (3) Engineering applications of physical electronics to plasma effects and devices. Topics include electrostatic precipitators and plasma light sources, laser operation and applications (non-optical), and MHD, controlled thermonuclear and other techniques of advanced electrical engineering.
4460 Lasers and Masers (3) Principles of laser and maser operation based on classical concepts and electrical engineering analogies. Consideration of practical devices and applications. Prereq: Senior standing.

4470 Plasma II (3) Magnetohydrodynamics. Prereq: 3190.

4480 Plasma III (3) Macroscopic plasma equations, particle orbits, interactions, oscillations and waves. Prereq: 3190.


4500 Electro-Optic Detection and Instrumentation (3) Sensitivity, resolution (frequency response) and noise concepts of and practical engineering data for both spatial recording media (e.g. photographic emulsions) and temporal detectors (e.g. photodiodes) will be given. Last third of the course will be devoted to selected electro-optic instrumentation systems (e.g. laser light scattering, optical data processing, holographic interferometry).


4570 Electro-Acoustics (3) Reproduction of monophonic and stereophonic sound, microphones, loud speakers, disc recording, magnetic recordings, film recording, acoustics of studios, auditoriums. Prereq: Senior standing.

4600 Instrumentation Transducers and Signal-Conditioning Electronics (3) Study of various sensors and transducers utilized for parameters for measurement. Use of operational amplifier in signal-conditioning; design examples such as active filters, operational amplifiers, and function generators. Analysis of interfacing problems between transducer and signal-conditioner. Applications to environmental monitoring instrumentation. Prereq: 3120 or 3830.

4610 Analog-Digital Systems (3) Principles of analog computing components. Applied to analog computing to include problem set-up and scaling. Characteristics of analog multiplexers, dividers and function generators are developed. Present comparisons, digital to analog conversion, and analog to digital conversion. Prereq: 3180 and 3830. 3 hrs including biweekly lab.

4620 Sequential Machine and Digital System Theory (3) Considers design aspects of pulse-mode, clock-mode, and level-mode sequential circuits. Theory and characteristics of one- and two-dimensional iterative networks. Design of large scale digital systems are developed. LSI and LSI technologies, introduces principles of reliability and error detection in digital systems. Prereq: 3180. 3 hrs including biweekly lab.

4630 Digital System Organization and Design (3) Considers system organization of digital systems, including minicomputer and microprocessor architecture and comparisons. Characteristics of ALU, CPU and I/O, storage systems (RAM, ROM, and PROM building blocks), and Input/Output systems are developed. Small scale unit organization to include serial-parallel modes of operation, asynchronous-asynchronous time sequencing and microprogramming techniques. Prereq: 3180. 3 hrs including biweekly lab.

4660 Bioelectric Instrumentation (3) Nature and origin of bioelectric potentials, transducers, amplifier requirements, recording systems and noise problems. Prereq: Senior standing.

4680 Electronic Power Amplifiers (3) Transistor, and vacuum-tube power amplifiers, distortion, thermal considerations; r.f. power amplifiers; regulators. Prereq: 3830. 3 hrs including biweekly lab.

4690 Communications Electronics (3) Oscillators, modulation and demodulation; basic communication systems. Prereq: 3830. 3 hrs including biweekly lab.

4700 Switching Circuits (3) Pulse amplification, gating circuits, multivibrators, wave shaping circuits, trigger circuits. Prereq: 3010, 3830. 3 hrs including biweekly lab.

4740 Integrated Circuits (3) Processing and fabrication of active and passive components for monolithic and hybrid circuits. Design of linear and digital and large scale integration. Prereq: 3820.

4750 Interactive Computer Graphics (3) (Same as Computer Science 4750 and Geography 4750.)


4800 Hardware-Software Interface in Minicomputer and Microprocessor System Design (3) Presents minicomputer and microprocessor interface design; hardware-software interface and trade-offs. Priority interrupt structures are discussed and utilized. Telecommunications are developed. Project oriented, contract course. Completion of two projects, one utilizing a minicomputer and the other a microcomputer, are minimal course requirements. Prereq: 3180.

4810 Discrete-Data Systems (3) Introduction to analysis and design of discrete data control systems using frequency domain techniques. Real-time digital filtering techniques; application of digital computers in closed-loop feedback systems.

4820 Introduction to Pattern Recognition (3) Role of pattern recognition within framework of artificial intelligence. Topics dealing with the design of learning and adaptive machines. Typical applications of pattern recognition to problems of practical significance. Computer simulation of elementary pattern recognition problems. Prereq: Either 3100 and Computer Science 3150, or Statistics 3450 and Computer Science 1510. (Same as Computer Science 4820.)

4830 Digital Image Processing (3) Principal methods of coding, storing, and processing images by means of digital computers. Computational algorithms for image transformations. Prereq: 3100 and Computer Science 3150, or Statistics 3450 and Computer Science 1510. (Same as Computer Science 4830.)

4850 Small Computer Systems (3) Basic structure of small computer systems, input-output techniques, interrupt structures, peripheral devices, system software and assembly language programming. Course is project oriented. Prereq: Basic Engineering 1410, Computer Science 1510 or 3150 or consent of instructor. (Same as Computer Science 4850.)

4910-20-30 Special Electrical Engineering Problems (3, 3, 3) Problems in electrical engineering involving library and experimental research.

GRADUATE

5000 Thesis

5040-50-60 Electrical Engineering Research (3, 3, 3)

5070-80 Modern Transform Methods (3, 3)

5110 Introduction to Network Analysis (3)

5120 Network Synthesis and Design (3)

5130 Advanced Network Analysis (3)

5170 Bioengineering Systems I: Models, Systems Analysis and Simulation (3)
interests of students can be met which cannot be accommodated in other programs. Examples of special interest elective groups presently available in the engineering science program are biomedical engineering, engineering mechanics, engineering analysis and synthesis, environmental sciences, and engineering materials. Other elective groups are currently being developed and will be available in the future.

The biomedical engineering elective group provides the basic background for an engineer to contribute to the fields of biology and medicine in such technical areas as the design of research and diagnostic equipment, the development of artificial organs, and the application of the engineering sciences to further the basic understanding of biological systems. With some modifications, the program can emphasize other areas such as the use of computer systems to automate hospital operations, to analyze medical data, and to contribute to the broad area of health care delivery systems. Interested and qualified students may choose to use this program as a background for graduate study in engineering or the life sciences. The program includes the courses required for entrance into most medical schools, including The University of Tennessee Center for the Health Sciences in Memphis.

The engineering mechanics elective group focuses on analytical and experimental methods used in investigating the interaction of forces and matter. It is designed especially to develop engineers capable of engaging in research and development in industrial and governmental research laboratories. Because such preparation involves emphasis on the link between the basic sciences and engineering fundamentals, the engineering mechanics elective group provides a good theoretical background for students wishing to pursue engineering graduate studies.

The engineering analysis and synthesis elective group affords a concentration on the application of mathematical techniques as numerical analysis and similitude for the solution of practical engineering problems. As such, heavy emphasis is placed on the use of digital computing.

The environmental sciences elective group introduces the student to some of the areas of knowledge and to some of the basic skills involved in engineering efforts aimed at solving environmental and ecological problems. This program gives the necessary background in both stress/structural analysis a higher level of competence in this specialty during professional practice or through formal graduate study.

The engineering materials elective group provides background in the use of materials in the solution of engineering problems. This includes the selection of the proper materials to support the anticipated loads and consideration of the environmental conditions that are expected to exist during the design life of the system. There is a special need in industry for individuals with background in
both stress/structural analysis and materials properties. The engineering materials emphasis group provides the student an opportunity to acquire this background.

The basic engineering science curriculum provides an opportunity to study significant blocks of the engineering science areas recognized by the American Society for Engineering Education such as: (1) mechanics; (2) electrical science, electric and magnetic fields, circuits, and electronics; (3) principles of thermodynamics and statistical mechanics; (4) materials science; (5) information science; (6) transfer and rate processes such as heat, mass, and momentum transfer. Other modern engineering fields which may be studied in the engineering science option are the space sciences and the environmental sciences. It is not expected that a student will study all the engineering sciences but will structure a course plan to provide depth in some of the engineering sciences.

Because of the large number of elective courses available in the engineering science degree program, faculty advising plays an essential role in the process of developing the student's course of study. Before the end of the sophomore year, students in the engineering science program are required to develop, in concert with a faculty adviser, a statement of objectives and a course plan for the upper-division years. This course plan must be filed with the Office of Admissions and Records before the student's senior standing sheet can be prepared.

MBA PROGRAMS

Graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with a major in engineering science are available to graduates of recognized curricula in engineering, mathematics, or one of the physical or biological sciences. Requirements include: (1) a minimum of two years of professional experience; (2) a chemical, mechanical, or aerospace engineering program approved by the Graduate School; (3) a thesis advisor; (4) the ability to communicate effectively in both oral and written English; (5) a minimum grade point average of 3.0 on a 4.0 scale; (6) satisfactory performance on a qualifying examination; and (7) permission of the Graduate School. Each applicant must satisfy the requirements of the Graduate School. The student's major professor in the engineering science department is selected from a list submitted by the selected student. Each applicant must be admitted to the program by the Graduate School. The Department of Engineering Science and Mechanics.

The flexibility and interdisciplinary nature of the program options are intended to be of particular interest to prospective students currently employed in research, development, or design activities and whose interests in continuing education (either full-time or part-time) lie at one of the interfaces between science and engineering, or can best be met by interdisciplinary study in engineering. The department's course offerings and research activities are also intended to meet the needs of students who seek preparation for employment in engineering areas requiring specialization in mechanics, or in related interdisciplinary studies such as biomechanics.

General policies of the Graduate School relating to admission, residence, examinations, and research are described in the Graduate Catalog.

Engineering Science and Mechanics (335)

270S Elementary Statics and Dynamics (3) Resolution and composition of forces; moments; results of force systems; free body diagrams and equilibrium; potential energy. (Primarily for transfer students.) Prereq: College Physics (Mechanics); coreq: Math 1830 or equivalent.

2710 Statics (3) Resultants of space force systems; static equilibrium of structural elements and space frames; belt friction; first and second moments. Prereq: 2705 or Basic Engineering 1310, Math 1630.

2720 Dynamics (3) Absolute and relative kine- matics of rigid bodies; kinetics of rigid bodies us- ing Newton's laws, work-energy, and impulse- momentum. Prereq: 2705 or Basic Engineering 1330, Math 2710.

3110-20 Fluid Mechanics (3, 3, 3) Basic laws of fluids, effects of viscosity and compressibility; empirical analysis: Navier-Stokes equations; boundary-layer concepts; potential flow. Must be taken in sequence. 3 hr. lab in 3120 and 3130. Prereq: 2720, Math 2610; coreq: Math 3130 or equivalent.

3210-20 Mechanics of Materials (3) Concepts of stress and strain, stress-strain relations, and Mohr's circle; stresses and displacements in thin-walled pressure vessels, shafting, determinate, indeterminate, and nonholonomic beams; column theory. Must be taken in sequence. Prereq: Basic Engineering 1330.


3410 Introduction to Biomedical Engineering (4) Designed to introduce the facets and practical utilities of biomedical engineering and provide basic terminology and background knowledge for further courses in the field. Subjects include anatomy, physiology, biomaterials, mathematical models of body systems, etc. Coreq: Math 2840 or consent of instructor.

3420 Introduction to Clinical Engineering (3) De- signed to train students in life sciences, health professions, and engineering in use and applica- tions of medical instruments. Body systems are introduced, and instruments used in care of those systems are explained and demonstrated. Prereq: 3410, or consent of instructor.

3430 Perspectives on Medical Ceramics (3) Details development of implant material from both an en- gineering and a medical viewpoint. Demonstrates results of combined efforts of physician and bio- medical engineer. Audiovisual aids and models are used to reinforce lecture topics. Prereq: 3410 and Metallurgical Engineering 2110.

3439 Medical Ceramics Laboratory (1) Surgical ob- servations and laboratory experiments to illustrate design and manufacturing parameters. Design project or paper required. Coreq: 3430.

3510 Materials of Engineering (3) Mechanical properties of engineering materials; behavior of materials under load. 3 hrs. or 2 hrs. and 1 lab. Prereq: 3310 and Metallurgical Engineering 2110 or 3110.

9520 Materials Behavior and Chemical Process Equipment Design (3) (Same as Metallurgical Engineering 3520.)

3700 Dynamics (4) Kinematics of rigid bodies; mass moments of inertia; coulomb friction; kine- matics of rigid bodies using Lagrange's equations; work-energy; impulse-momentum. Not for depart- mental graduate credit. Prereq: 2705 or Basic Engineering 1330; coreq: Math 2950.

3710 Intermediate Dynamics (3) Three-dimen- sional dynamics of particles and rigid bodies; dy- namics of bodies with varying mass; central force motion; Lagrange's equations. Prereq: 2720, Math 2950.

4010 Project in Design and Development (4) Inves- tigation, design, and report of an engineering science project. Prereq: Senior standing.

4011 Project in Design and Development (3) Inves- tigation, design, and report of an engineering science project. Prereq: Senior standing.

4420 Engineering Aspects of Infection Control (3) Biomedical engineer's role in infection control will be related to hospital and clinical activities. Fluid flow phenomena, pressure measurement methods, and basic bacteriological and mycolog- ical tests will be demonstrated. Course identifies new and critical role for biomedical engineers in health care systems, and includes analysis of hos- pital facilities and monitoring systems. Prereq: 3410, or consent of instructor.

4430 Orthopaedic Biomechanics (3) Introduction to engineering principles and applications in ortho- pedics and rehabilitation. Topics include statics, Newton's laws of motion, stresses in simple sections, engineering materials, and biological materials. Prereq: Consent of instructor.

4500 Applied Mechanics for Life Scientists (4) Concise and broad coverage of basic principles and concepts of mechanics. Fundamental con- cepts, statics, vibrations, continuum mechanics and properties of materials. Applications in engi- neering and medicine. Prereq: Math 1800-30 or consent of instructor.

4520 Biomedical Fluid Mechanics (3) Discuss ob- jective, review foundations and present develop- ments in biomedical fluid mechanics. Properties of human blood and blood vessels, determinants of cardiac performance, analysis and measurement of flow and pressure in arteries, nontransmural study, cardiovascular systems, mechanisms of microcirculation, Applications to areas of hemolysis, thrombosis, and fluid dynamics of heart assist devices. Prereq: Math 2650 or consent of instructor.

4529 Biomedical Fluid Mechanics Laboratory (2) Measurement and recording of flow characteristics in biological system. Project and/or term paper required. Coreq: 4520.

4530 Biomechanics (3) Discuss objectives, review foundations and present developments in areas of mechanical properties of living tissues, biome- chanics of injury and prosthesis, material compatibil- ity of prosthetic devices and biomechanical problems related to impact. Prereq: 4500 or consent of instructor.

4540 Fracture-Safe Design (3) A critical review of mechanical properties of materials that are indicative of fracture resistance, including transition temperature, R-curves, stress intensity factors and J-integrals; the use of these properties in de- sign. 3 hrs. or 2 hrs. and 1 lab. Prereq: 3310 and Met. Engr. 2110. (Same as Met. Engr. 4540.)

4580 Principles of Nondestructive Testing (3) (Same as Physics 4580.)

4610 Experimental Stress Analysis (3) Basic con- cepts: theory, techniques, and instrumentation of resistance strain gauges; theory and techniques of basic beam bending; introduction to other stress analysis methods. Prereq: 3310, EE 2020 or 3110. 2 hrs. and a 3-hr. lab.
4620 Dynamic Data Acquisition (4) Instrumentation of measuring systems for dynamic events and responses; signal conditioning; oscilloscopes, oscillographs, and magnetic tape recording; telemetry and data transmission; data processing. Prereq: 3700, 3311, Elec. Engr. 3120, 3 hrs and a 3-hr lab.

4630 Introductory Photomechanics (3) Introduction to photomechanics, photoelastic coating method, Moire method, interferometry, and holography. Prereq: 3310, Physics 2320. 2 hrs and a 3-hr lab.

4710 Fundamentals of Vibrations (3) Free and forced vibrations of damped and undamped lumped parameter systems; energy methods. Prereq: 2720, Math 2830.


4810-20 Engineering Analysis (4, 3) Integration of fundamental physical laws and mathematical methods of analysis with emphasis on application to realistic engineering problems. Prereq for 4810: 3110, 3311, and Computer Science 3150. Prereq for 4820: 3110, 3310, and Math 3150.

4850 Elementary Structural Matrix Methods (4) Same as Architecture 4850 and Civil Engineering 4850.

4910-20 Special Engineering Science Topics (3, 3) Problems related to recent developments and practice. Open to juniors or seniors with consent of instructor. May be repeated for credit once.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20 Fluid Dynamics (3, 3)

5130 Introduction to Turbulence (3)

5180 Finite Element Structural Analysis (3)

5220 Mechanics of Viscous Flow (3)

5230 Non-Newtonian Fluid Mechanics (3)

5410-20 Theory of Elasticity (3, 3)

5430 Thermal Stresses (3)

5440 Theory of Linear Viscoelasticity (3)

5550 Fracture Mechanics (3)

5630-40 Photoelasticity (3, 3)

5710-20 Advanced Dynamics (3, 3)

5730 Advanced Vibrations (3)

5740 Vibrations of Continuous Media (3)

5750 Orbital Mechanics (3)

5800 Introduction to Continuum Mechanics (3)

5840 Perturbation Methods in Mechanics

5860 Introductory Finite Element Methods (3)

5910 Special Topics in Engineering Mechanics (3)

6000 Doctoral Research and Dissertation

6110-20 Advanced Topics in Fluid Mechanics and Convective Transfer (3, 3)

6220-40-50 Theory of Turbulence (3, 3, 3)

6310 Theory of Plates (3)

6320 Theory of Shells (3)

6330 Theory of Elastic Stability (3)

6340 Theory of Plasticity (3)

6610 Photoelasticity (3)

6710 Impact and Stress Waves in Solids (3)

6800 Advanced Continuum Mechanics (3)

6810 Energy Methods (3)

6910 Special Topics in Engineering Mechanics (3)

Engineering Physics

Professor W.M. Bugg (Head); Physics staff as shown on page 223.

The curriculum in engineering physics is designed to fulfill the educational requirements for professional work in various fields of applied science which are based upon a thorough knowledge of physics. The first two years are concerned with fundamental courses in engineering, science, and mathematics. In the upper division, the curriculum allows some choice of courses in engineering and in physics depending upon the interest of the student. The undergraduate program is a complete, professional program, equipping the student for entry into a variety of work in industry and research.

The program also leads to graduate work in either physics or engineering.

The courses in the engineering physics curriculum are shown in tabular form on page 151. Descriptions of the physics courses are found on page 223.

Industrial Engineering (556)

J.N. Snider (Head), Ph.D. Ohio State, P.E.; D.C. Doulet, M.S. Tennessee, P.E.; H.P. Emerson (Emeritus), S.B. Massachusetts Institute of Technology, P.E.; R.M. LaForge (Emeritus), M.S. Georgia Institute of Technology, P.E.; H.L. Loveless, M.S. North Carolina State, P.E.

Associate Professors: W.W. Glaycombe, Ph.D. Virginia Polytechnic; D.H. Hutchinson, Ph.D. Georgia Institute of Technology; J.R. Buchan, M.S. Georgia Institute of Technology; D.H. Pike, Ph.D. Florida; W.G. Sullivan, Ph.D. Georgia Institute of Technology, P.E.


UNDERGRADUATE

The undergraduate curriculum in industrial engineering provides a strong background in both fundamental engineering principles and the analytic methods necessary for solving the multifaceted problems associated with the production, maintenance, and delivery of goods and services. In particular, this curriculum emphasizes the knowledge and skills necessary to integrate systems of people, materials, equipment, and energy wherever they are found, such that the overall system functions at an optimal level and such that the needs of the human components of the system are adequately met.

This curriculum, which is built upon a strong background in mathematics and statistics, introduces fundamental engineering coursework in all of the engineering sciences, introductory economics and accounting, training in fundamental human factors which influence engineering design, the economic analysis of alternative design choices, quality control techniques, manufacturing processes and materials, production and inventory system design and control, material handling systems and facilities design, the mathematical modeling and simulation of complex systems, and the design and installation of information acquisition and control systems. The technical and non-technical electives further allow the students to specialize in an area(s) which meet particular needs.

The solid, broad base in engineering combined with training in applying engineering methodology to traditionally non-engineering problem areas as provided through the industrial engineering curriculum leads to participation by industrial engineers in an unlimited range of fields including, among others, retail distribution, banking, health care delivery, corporate management, municipal management, aerospace systems, research groups and government as well as in the traditional area of manufacturing.

MASTER OF SCIENCE PROGRAM

The graduate program in industrial engineering contains a basic requirement of 18 hours of course work covering topics in industrial engineering at the graduate level. The remaining 18 hours in the program are based upon the educational objective of the student and determined with the approval of the student's advisor. A minor is usually taken in an area related to industrial engineering, and a thesis is required. The program is open to graduates of recognized curricula in all fields of engineering.

A non-thesis program of 45 hours of course work plus a three-hour project is also available and open to graduates in engineering or science. Basic courses (5110, 5520 and 5700, 5710, 5720) are 18 hours of the total and are identical to the basic courses in the program for thesis students. An option is selected from manufacturing, health systems, operations research, human factors or decision processes. Each option requires 9 hours of non-engineering electives to support the selected option. The project requires the design of a procedure or operating system based especially upon the course work in the selected option and clearly applicable as a solution to a problem in actual professional practice. The student is examined on the project and related course work.

2310 Seminar (1) Introduction to the industrial engineering profession, its history and current trends. Plant trips and lectures by the faculty. Prereq: Sophomore standing.

2320 Modeling of Industrial Processes (3) Introduction to model building. Techniques of developing models of industrial processes, elementary simulation techniques, and concept of optimization. Prereq: Basic Engineering 1410.

3330 Computer Applications and Analysis Methods in Industrial Engineering (3) Use of digital computer in problem solving involving matrix operations, deterministic and stochastic simulations, large scale data base manipulation, and general optimization techniques. Prereq: 2320 and Mathematics 1680.
3410 Textile Industry Systems (3) History, basic operations, products and economics of the industry; the application of industrial engineering techniques. Prereq: Junior standing and consent of instructor.


3440 Quality Control (3) Application of statistical methods to control quality of manufactured parts and techniques of inspection. Prereq: 3430.

3510 Introduction to Research Operations I (3) Introduction to methodology of operations research and the application of operations research to industrial problems. Topics covered include statistical inference, decision theory, and queuing theory. Prereq: 3430 and Computer Science 3150.

3520 Introduction to Operations Research II (3) Introduction to mathematical programming includes classical optimization theory, linear programming (with emphasis on the simplex method), the transportation problem, and the assignment problem), and dynamic programming. Prereq: Computer Science 3150 or consent of instructor.


3600 Motion and Time Study (3) Design of work methods, time measurement, activity analysis, and development of work, and determining standards. Laboratory work included. For non-industrial engineering students. Prereq: Junior standing.

3610 Human Factors in Work Design I (3) Human capabilities and limitations which must be reflected in: work place layout; working environment specification; equipment design; and design of industrial communication-control systems. Prereq: Junior standing in College of Engineering or consent of instructor.

3620 Work Methods and Design (3) Job analysis, job evaluation, design of wage structures, design of work-place layouts, flow charting, activity chart and analysis, and methods improvement. Laboratory work included. Prereq: 2310.

3630 Work Measurement (3) Use of work measurements such as time study, predetermined time systems, work sampling, historical data analysis. Construction of time formulas, development of standard time data, use of learning curves, and design of wage incentive systems. Laboratory work included. Prereq: 3220 and Statistics 3450.


4060 Material Requirements System Design (3) Theory and applications of forecasting, production planning, inventory analysis, planning and control, and systems design and implementation. Design of the material requirements process as an integrated system. Prereq: 3510-20.

4070 Production Systems Design (3) Theory and applications of production planning, scheduling, and control, and the design and implementation of production systems; design of production facilities as an integrated system. Prereq: 4060.

4080 Forecasting Methods in Industrial Engineering (3) Application of technological forecasting techniques to industrial engineering problems. Includes moving averages and exponential smoothing; linear and polynomial regression models; autocorrelated time-series analysis, Delphi methods and other selected industrial forecasting methods. Prereq: 4060.

4150 Project Control with CPM and PERT (3) A study of project planning and control based primarily on "critical path" techniques, including resource allocation, time-cost trade-off algorithms, multi-project control, and computer programs. Prereq: 3430.

4160 Materials Handling (3) Analysis and planning for the overall problem of moving, packaging, and storing of materials; equipment comparison and selection; cost analysis. Prereq: 3230, 4520, and Engr. Mech. 3310.

4170 Automatic Process Control (3) Characteristics of automatic processes and controllers; elementary open and closed loop analysis, and applications to industrial control systems. Prereq: Math 2660 and Engr. Sci. and Mech. 2720.

4200 Production Facilities Design (4) Design of production facilities including materials handling, plant layout, storage areas, inventory control, and computer applications, and operating procedures design. Prereq: 3230, 3510-20, 4060, 4520.

4230 Scheduling Systems (3) Performance measures for job shop and flow shop scheduling, including both static and dynamic conditions, as well as techniques for generating production schedules. Deterministic and probabilistic dispatching conditions. Prereq: 3520.

4250 Work Measurement Applications (3) Application of learning curves, queuing theory, standard data methods and incentive systems to the design of industrial work situations. Prereq: 3230.

4310 Seminar (1) Discussions, lectures, and trips to unify student's educational experience. Prereq: Senior standing in industrial engineering.

4520 Engineering Economy (3) Methods and problems in selection or replacement of equipment. Decisions among engineering alternatives, involving capital recovery, economic life of equipment, and rate of return on investment.

4530 Case Studies in Engineering Economy (3) Extension of basic engineering economy principles to working problems faced by competing firms and regulated industries. Case studies taken from literature form basis of classroom discussion. Out-of-class assignment is made which involves working with local companies to evaluate major or buy options, leasing versus cash purchases, equipment replacement studies, energy source economics, etc. Prereq: 4520.

4540 Industrial Development (3) Factors other than mechanical or chemical which enter into successful establishment of manufacturing enterprise. Cost and location studies and market analysis to determine the commercial feasibility of new plants or projects.

4590 Simulation (3) Generation of outcome of complex random processes by computer. Models of complex systems using available simulation languages. Simulation as design tool in industrial systems. Prereq: 3430 and Computer Science 3150.

4600 Predetermined Time Systems (3) Work design and measurement using a predetermined time system such as Methods Time Measurement, Basic Motion Time-Study, or Work Factor. Theory and application. Prereq: 3230.

4610 Human Factors in Work Design II (3) Human capabilities and limitations affecting work place layout, working environment, design of tools and equipment, and communications and response in man-machine systems. Prereq: 3600, 3630 or consent of instructor.

4830 Health Systems Engineering (3) Hospital management systems and means by which they may be improved through application of modern industrial engineering principles and techniques. Prereq: 3220.

4840 Industrial Plant Problems Analysis (3) Industrial problems, application of industrial engineering, field assignment in local industry, problem definition, and solution presentation. Prereq: 3230, 3440, 3510, 3520, 4520, 4860.

4860 Industrial Systems Analysis (3) Matrices and linear vector spaces for industrial systems models. Laplace and Z transform techniques and applications.
Mechanical and Aerospace Engineering


*Alumni Distinguished Service Professor.
*Space Institute, Tullahoma.

BACHELOR OF SCIENCE PROGRAM

Separate, complete curricula are offered in aerospace engineering and mechanical engineering; however, the first two years of these curricula are identical. Depending on the particular engineering sciences of the aerospace and mechanical engineering fields. In the senior year an opportunity is provided for the student to apply this fundamental knowledge to mechanical or aerospace engineering problems. Both curricula are arranged with flexibility in the upper-division years to permit emphasis on preparation for graduate study or technical employment.

Aerospace engineering has scientific foundations close to those of mechanical engineering. The aerospace engineer, however, places a particular attention particularly to the research, development, design, testing, and production of aerospace vehicles—aircraft, spacecraft, missiles; auxiliary systems, cooling, guidance, control; and propulsion systems—piston engines, turbo-jets, ramjets and rockets.

Mechanical engineering has its foundation in the basic sciences and requires an understanding of such areas of applied science as solid and fluid mechanics, thermodynamics, heat transfer, structures, vibrations, mechanical design, manufacturing processes and instrumentation in order to resolve the complex engineering problems of the real world.

In the mechanical engineering curriculum, the student, with the aid and approval of an advisor, must select a senior year program of mechanical engineering and technical electives. The following areas of concentration are available:

Energy. A study of energy conversion systems and the laws governing energy transformations. This option includes the design and analysis of conventional and future power generating systems utilizing various natural fuels. The central courses are Mech. Engr. 4140-50-60.

Environment. A study of the systems which control the environment within encased spaces. The program includes the design and analysis of air conditioning, refrigeration, and heat pump devices encompassing heating, cooling, ventilation, humidifying, and noise control. The central courses are Mech. Engr. 4710-20-30.

Manufacturing. A study of manufacturing methods and production processes common to mass production industries. The program includes the selection of production materials, machining methods and tools, numerical control, and analysis and design of the total manufacturing system. The central courses are Mech. Engr. 4621-22-23-24 with related courses in metallurgy.

Machine Design. The study and application of the mechanics of materials, and manufacturing processes to the design and analysis of machine elements, structures, and systems. The central courses are Mech. Engr. 4660 and 4690.

Propulsion. The study of propulsion devices for ground vehicles, aircraft, and spacecraft. Includes the analysis and design of internal combustion engines, gas turbines, jet and rocket engines using conventional and unconventional fuels. The central courses are Mech. Engr. 4810, and Aero Engr. 4250-60.

Aerospace. The study of aircraft and spacecraft including the mechanics of flight and related systems and propulsion devices. The program includes the analysis and design of a variety of aerospace vehicles and systems. The central courses are Aero. Engr. 4240-50-60.

GRADUATE STUDY PROGRAMS

Graduate programs leading to the degrees of Master of Science, Master of Engineering, and Doctor of Philosophy with specialization in mechanical engineering or aerospace engineering are available to students and undergraduate curricula in mechanical or aerospace engineering and to graduates of other curricula who satisfy the necessary prerequisite courses. The general requirements for advanced degrees are summarized in the Graduate Catalog.

Mechanical Engineering (650)

2040 Introduction to Mechanical Engineering (1)
Presentation and discussion of topics related to mechanical engineering. S/NC.

3000 Energy—An Overview (4) Introduction to available energy resources, recovery and utilization; power generation techniques including conservation schemes; emphasis on the resources—environment—man interaction associated with energy; primarily for non-engineering students.

3040 Seminar (1) Presentation and discussion of topics related to mechanical engineering. Prereq: Junior standing. S/NC.


3321-30 Engineering Thermodynamics (2, 3) Properties of gases and gas mixtures; chemical reactions—equilibrium; applications to mechanical engineering problems. Prereq: 3311 and 3321 respectively.

3410 Fluid Flow (3) Development of continuity, momentum and energy principles for fluid systems; applications to mechanical and aerospace engineering problems. Prereq: Math 2850; coreq: 3311.


3520-30-40 Thermal Sciences (3, 3, 3) Fundamental principles of thermodynamics and transport phenomena as applied to engineering design. For non-departmental majors. To be taken in sequence. Prereq: Math 2820 and Basic Engr. 1330.

3610 Mechanics of Machinery—Kinematics (3) Mechanical motions, graphical and analytical methods; instants; velocities. Prereq: Graphics 1330, machines, and structures.


3660 Manufacturing Processes (3) Selection of processes as related to the design of machine parts. Casting, hot and cold forming, metal removal and weldments. Manufacturing tolerances and surface finishing. 2 hrs and 1-2 hr lab. Prereq: Mech. Engr. 2110.

3681 Dynamics of Machines (3) Motion and forces in machines; vibrations and isolation of machinery; and balance of rotating and reciprocating machines. Prereq: Graphics 1320 and ES & M 2720 or 3700.

3682 Selection of Machine Elements (3) Combined stresses in design, fatigue loading, and stress concentration of machine elements; selection of shafts, belts, gears, and bearings. Prereq: ES & M 3310 or 3311.
5510-20-30 Aerospace Mechanics (3, 3, 3)
5540-50 Aerospace Vehicle Stability and Control (3, 3)
5560 Vertical or Short Take-Off and Landing Aircraft (3)
5570 Aerospace Vehicle Flutter and Vibration (3)
5580-90 Aeronautical (3, 3)
5610 Applied Acoustics (3)
5620 Aeroacoustics I (3)
5810 Aviation Systems: An Overview (3)
5820 Air Vehicles (3)
5900 Selected Engineering Problems (3-9)
5950 Seminars (1)
5990 Special Topics in Aerospace Engineering (1-3)
6000 Doctoral Research and Dissertation
6310-20-30 Magnetohydrodynamics (3, 3, 3)
6410-20 Physical Gasdynamics (3, 3)
6610 Advanced Boundary Layer Theory (3)
6910 Advanced Topics in Gas Dynamics (3)

Nuclear Engineering (716)

Professors:
P.F. Pasqua (Head), Ph.D. Northwestern, P.E.;
W.H. Jordan, Ph.D. California Institute of Technology; T.W. Kerlin, Jr., Ph.D. Tennessee;
H.G. MacPherson1, Ph.D. California (Berkeley);
J.E. Mott, Ph.D. Minnesota; J.C. Robinson, Ph.D. Tennessee;
P.N. Stevens, Ph.D. Northwestern, P.E.

Associate Professors:
H.L. Dold, Ph.D. Tennessee, P.E.; J.B. Fussell, Ph.D. Georgia Institute of Technology;
J.T. Milhalcik, Ph.D. Tennessee; H.C. Roland, Ph.D. Tennessee; O.L. Smith1, Ph.D. Missouri.

Assistant Professor:
L.F. Miller, Ph.D. Texas A & M.

BACHELOR OF SCIENCE PROGRAM

The curriculum in nuclear engineering is designed to provide basic training in many of the fields encountered in the applications of nuclear and radioactive materials. The first two years are concerned with the fundamental courses in engineering, physics, mathematics, chemistry, and English. The last two years encompass scientific and engineering courses equipping the student for entry into a variety of work in industry, research, or graduate studies.

MAJOR OF SCIENCE AND MASTER OF ENGINEERING PROGRAMS

A graduate program leading to a degree of Master of Science and Master of Engineering is available to graduates of recognized undergraduate curricula in engineering and physics. Each applicant will be advised as to the necessary prerequisite courses before entering the program.

The general requirements of the Masters' degrees are summarized in the Graduate Catalog.
4720 Reactor Thermal Design (3) Hydrodynamics and heat transfer in boiling systems; boiling crises; fuel element thermal design, steam generator design. Prereq: 4710.

4730 Nuclear Reactor Design (3) First order reactor design, integration with non-nuclear heat transfer and power conversion system, economic evaluation; optimization procedures, description of typical systems. Coreq: 4130.


4820 Reactor Kinetics and Controls (3) Derivation of kinetic equations; basic kinetics parameters; transient response with feedback; control and protective systems. Prereq: 4110.

4840 Nuclear Reactor Safety (3) Presentation of reactor safety concepts and criteria; credible accidents; fission product release and transport; containment systems; accident analysis; engineered safeguards. Prereq: 4120.

4930 Nuclear Fuel Management (3) Discussion of problems associated with processing of nuclear materials; fuel cycle analysis; burn-up calculation. Prereq: 4120.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20-30 Transport Processes in Nuclear Engineering (3, 3, 3)

5210 System Dynamics (3)

5220 Reactor System Dynamics (3)

5230 Experimental Methods in Reactor Dynamics (3)

5240 Reactor Instrumentation (3)

5310-20-30 Nuclear Systems Reliability (3, 3, 3)

5510-20-30 Nuclear Systems (3, 3, 3)

5710-20-30 Nuclear Reactor Theory (3, 3, 3)

5740 Reactor Shielding (3)

5790 Monte Carlo Shield Design Shielding (3)

5840-50 Fast Breeder Reactors (3, 3)

5910-20 Advanced Nuclear Reactor Design (3, 3)

5970 Special Topics in Nuclear Engineering (3)

5980 Nuclear Engineering Practice (3-12)

6000 Doctoral Research and Dissertation

6110-20-30 Selected Topics in Reactor Theory (3, 3, 3)

6140 Radiation Shielding (3)

6150 Reactor Dynamics (3)

6710 Two-Phase Flow and Heat Transfer (3)
College of Home Economics

Lura M. Odland, Dean
Grayce E. Goertz, Associate Dean
Virginia S. Anagnost, Assistant Dean

Home economics is an integral part of The University of Tennessee's academic program in its three major functions of teaching, research, and extended services. The College ranks among the top three colleges of home economics in the nation in enrollment and second in the number of Master's degrees granted and in the number of doctoral students enrolled. Much of the qualitative and quantitative growth of the College is due to its highly qualified faculty and staff who, being aware of the current community problems and needs, have made its programs relevant to the goals and aspirations of today's students.

Today's students are seeking professional positions in which they can better serve people--individuals, families, consumers--by helping them predict and solve problems arising from the increasingly rapid changes occurring in the society in which we live. The basis of the College's professional programs is to prepare young men and women to serve the needs of people in their many varied environments and different stages of life. The philosophy of the College might best be stated as follows: home economics, while it does seek knowledge which describes and analyzes, is not content with only studying "what is," but also is concerned with promoting "what can and should be" in order to enhance the quality of life and well-being of people and societies.

The College's mission is twofold: its graduate programs are geared toward research producing alternative solutions to technical and social problems which are and will be encountered by the people who are to be served; its undergraduate programs prepare students to work with people in a professional capacity so that they may make use of what has been learned in serving as professional agents of change.

The University of Tennessee pioneered as one of the first institutions of higher education in the South to offer home economics and has continued to hold a position of leadership. The first class was taught in 1897.

The faculty of the College numbers sixty full-time teaching and research staff. There are five departments with curricula leading to the Bachelor of Science degree: Child and Family Studies; Crafts, Interior Design, and Housing; Food Science, Nutrition, and Food Systems Administration; Home Economics Education; and Textiles and Clothing. The undergraduate program in Home Economics Education is offered in cooperation with the College of Education and the Home Economics Extension Education program is offered in cooperation with the Institute of Agriculture. Approximately 350 courses are offered in these departments. The graduate programs leading to the Master of Science degree were begun in the summer of 1925. Programs for the Doctor of Philosophy degree were initiated in 1960. The Doctor of Philosophy degree program in home economics now includes three options: Interdisciplinary, Food Science, Nutrition. Food Systems Administration may be taken as a concentration in the Food Science doctoral option.

Special Resources

Several special programs enhance the offerings of the College:

Selected students have the opportunity to study for one quarter at the Merrill-Palmer Institute for Human Development and Family Life in Detroit, Michigan or at the Child Development Center of the Center for Health Sciences in Memphis. Credits earned may be applied toward a Bachelor of Science degree in most curricula of the College.

Model research programs for infant care and preschool day care and nursery school provide home economics students the opportunity to train for careers as directors of, and teachers in, child care facilities. The need for appropriate child day care facilities staffed with well-trained, competent staff is recognized as one of the most urgent problems of today's urban society. Opportunities for home economics graduates with special interest in preschool programs are numerous and continue to increase. The Nursery School through Grade Three program offered jointly with the College of Education provides certification for teachers in early childhood education.

Each summer the craft workshops in Gatlinburg, Tennessee, are made possible through cooperative efforts between the Department of Crafts, Interior Design, and Housing and the Pi Beta Phi Arrowmont School of Crafts. The Pi Beta Phi Fraternity provides the funds, the facilities and the management for Arrowmont. The University of Tennessee, Knoxville, College of Home Economics, Department of Crafts, Interior Design, and Housing appoints the instructors, and provides for the administration of craft classes with appropriate accreditation. In addition to providing advanced instruction in designer-created crafts through classes taught by nationally known craftspersons, the craft workshops have expanded to a 43rd-fledged program serving as a training center for artists and craftspersons from throughout the United States. Also, cooperation with local and national craft organizations has so stimulated the work of craftspersons throughout the area that their work has gained national recognition.

The U.S. Department of Agriculture Textiles and Clothing Research Laboratory is a part of the Southern Region Mid-Atlantic Area and was located at The University of Tennessee in 1967. Textiles and clothing researchers collaborate with the U.S.D.A. staff to conduct investigations that will (1) determine consumer needs for textiles and clothing and the adequacy of products available to meet these needs, (2) develop basic principles to guide consumers in selection and caring for textiles and clothing, and (3) solve other economic and technical
problems pertaining to the field. Graduate students in this area may be trained at the laboratory.

International study tours in several areas of home economics are offered when a demand is indicated. The course "Home Economics 4910 International Study Tour" is offered for 6 credit hours at the undergraduate level. At the graduate level, "Home Economics 5100 International Studies" is available, depending on demand and resources, for up to 15 graduate credit hours. The length of the tours may vary from 6 to 8 weeks and the program is under the direction of a member of the faculty.

The Department of Food Science, Nutrition, and Food Systems Administration has a cooperative arrangement in which food service systems, such as those of the University, hospitals, schools, hotels, and restaurants are available for laboratory experience for food systems administration students and in food service systems in the food science curriculum. During the senior year students in the Coordinated Undergraduate Program in Dietetics receive clinical experience integrated with courses in the food service systems of the University and other health care facilities. The Food and Lodging Administration program offers coordination of theory and experience with industry during all four years. Graduates of the Coordinated Program will be eligible for membership in the American Dietetics Association (ADA) and application for ADA registration. The Nutrition program is affiliated with the Child Development Center, UT Center for Health Sciences, Memphis, for special study in mental retardation and developmental disorders. A liaison is maintained with the Knox County Health Department to provide field experiences for students in the Community Nutrition option. The Nutrition Science and Community Nutrition programs also conduct academic research in the field for students in the American Dietetic Association.

All departments of the College conduct basic and applied research which may be supported in part by the College, by special grants, contracts, and by the Agricultural Experiment Station. The University of Tennessee Atomic Energy Commission program at Oak Ridge also provides opportunity for training and research.

Workshops on special topics of current importance are offered by the different departments in home economics. These will be of special interest to those desiring to work for advanced degrees. Announcements are sent upon request.

The Continuing Education Program provides advanced courses in all areas of home economics at centers across the state for updating and retraining as faculty resources permit. The program includes short courses, workshops, evening courses, and special video-tape and telelecture courses. Individualized planned graduate programs should be arranged with the appropriate department heads.

Facilities

The Jessie W. Harris Home Economics Building was dedicated in 1926. Since that time two wings have been added, one in 1937 and another in 1959. All departments have well-equipped laboratories for both undergraduate and graduate work.

The Child Development Center is a separate building especially planned as a laboratory for teaching and research with preschool children. It houses an infant day care center, nursery school classrooms for two-, three-, four-, and five-year-old children, a preschool curriculum laboratory, and rooms for observation and research.

A separate Child Day Care Center housed in the UT Golf Range Apartments is staffed by the College and provides a laboratory for study as well as an adequate center for group care of children 2 to 8 years of age. The Family Life Center provides space for home economics.

Food science, nutrition, and food systems administration facilities include well-equipped laboratories for basic food science, experimental food science, experimental food technology, and chemistry for graduate and undergraduate students. A reading room and audio-tutorial laboratory provide opportunity for independent study. Laboratories include instruments for the evaluation of the chemical, physical, histological, and sensory properties of food, in addition to facilities for metabolic and survey studies of human nutrition.

Home economics education offices and laboratories are located in the Home Economics Building. The Department of Crafts, Interior Design, and Housing facilities include provisions for study, regular classroom, laboratory and studio experiences. Laboratories for crafts and interior design and housing studies are especially equipped for that purpose.

Textile research facilities are available to undergraduate and graduate students and to research personnel interested in textile studies that benefit fiber producers, fabric and clothing manufacturers, and consumers. Laboratories are well-equipped for the physical and chemical analyses of fabrics, yarns, and fibers.

Certification in Vocational Home Economics Education

Certification to teach vocational home economics requires either a Bachelor's or Master's degree from an institution offering a curriculum for teacher training approved by the State Board for Vocational Education and by the United States Office of Education. The University of Tennessee, Knoxville is approved for the training of teachers in home economics.

A description of the vocational home economics education leading to recommendation for certification will be furnished upon request. Graduate students interested in meeting certification requirements should consult the head of the Department of Home Economics Education. Transfer and graduate students who desire to qualify for vocational certification in home economics should state this when applying for admission so that their credits may be evaluated in terms of this goal.

Certification in Early Childhood Education

A joint program in Early Childhood Education—Nursery School through Grade Three was recently approved for the Department of Child and Family Studies (College of Home Economics) and the Department of Curriculum and Instruction (College of Education). In addition to preschool education, graduates are certified to teach kindergarten through third grade.

Educational Programs for Home Economics

Extension Education

Students interested in careers as home economists have many opportunities for employment in service to urban and rural families. Special programs of study can be arranged for students in cooperation with the Institute of Agriculture. The student selects a major in one of the curricula offered by the College of Home Economics. Elective courses may be selected by the student from those recommended by a joint advisory committee of the College of Home Economics, the College of Agriculture, and the home economics unit of the Agricultural Extension Service.

Summer field work experience, coordinated by the Department of Agricultural Extension Education, is available to selected students with a minimum 2.5 grade point average. The student must enroll in Agricultural Extension Education 3110 during the fall or spring quarter of the junior year prior to enrolling in Agricultural Extension Education "4110-20 Field Studies" (see page 68 for course descriptions). Six hours credit is awarded for summer field studies during which the student works ten weeks as a Junior Assistant County Agent of the Tennessee Agricultural Extension Service.

Students interested in this program should contact their adviser and the administrative assistant in the Office of the Dean of the College of Home Economics for detailed information.

Undergraduate Study in Home Economics

Curricula in the following areas lead to the degree of Bachelor of Science in home economics:

Child and Family Studies (CFS) Option 1—Early Childhood Development Option 2—Human Development and Family Studies Option 3—Nursery School-Grade 3

Crafts, Interior Design, and Housing (CIDH) Option 1—General Professional Option 2—Professional Interior Design Option 3—General Crafts
Food Science, Nutrition, and Food Systems Administration (FSNFSA)  
- Option 1—Food Services Administration  
- Option 2—Nutrition Science  
- Option 3—Community Nutrition  
- Option 4—Coordinated Undergraduate Program in Dietetics (ADA)  
- Option 5—Food and Lodging Administration

Textiles and Clothing (T & C)  
- Option 1—Merchandising  
- Option 2—Textile Technology

Vocational Home Economics Education (HEeed)  
- Option 1—Food Services Endorsement  
- Option 2—Child Care and Guidance Endorsement  
- Option 3—Clothing Management, Production and Services Endorsement

NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for their particular college or school.

For the degree of Bachelor of Science in Home Economics, students generally plan to complete the last forty-five quarter hours of work (three quarters) at The University of Tennessee, Knoxville. Seventy-two hours must be earned in courses numbered above 3000 at The University of Tennessee, Knoxville. The prerequisite courses must be completed before starting any college-level work. Students planning to transfer to the College of Home Economics are essential to maintaining a program of study with maximum utilization of credit and sequence of course work. All new freshmen and transfer students whose majors require chemistry must enroll in the freshman chemistry course sequence until requirements are completed. It is recommended that transfer students complete the freshman chemistry requirement before transferring to the College of Home Economics.

Students wishing to transfer 36 or more credit hours into the College must have an average of 2.0 for admission. Students with an average of less than 2.0 are not eligible for enrollment in junior or senior courses. During the first quarter of residence, each student takes courses basic to all curricula and is assigned a faculty adviser for program planning. A normal student load per quarter is 15-16 hours. The maximum load is 19 credit hours per quarter (18 hours maximum for the Coordinated Undergraduate Program in Dietetics) unless otherwise approved by the dean. When a student has completed one quarter in residence at The University of Tennessee, Knoxville (with at least a 2.0 average in course work), the student will be eligible to participate in self-registration. Students participating in the voluntary academic registration program bear full responsibility for meeting degree requirements in the proper sequence. A College of Home Economics student may choose to take, for elective credit only, a course (outside the specific requirements of the College of Home Economics and outside the major department) in which the student will receive a satisfactory or no credit grade. The purpose of the satisfactory/no credit (S/NC) grading system is to encourage the student to explore subject matter areas outside of the requirements and other courses of the major by minimizing causes for the student's concern that performance may be somewhat less outstanding than that in preferred subject areas. These courses will count as hours for graduation but not for calculating the student's grade point average. A final grade of C or better will be recorded as satisfactory. The maximum satisfactory or no credit hours which could be counted toward a degree is 30 hours. When the student wishes to take a satisfactory or no credit course, the student must so indicate at the time of registration.

Proficiency examinations are offered for numerous courses of the College. Information concerning which proficiency examinations are offered may be obtained from departments of the College of Home Economics.

Field training provides the opportunity for practical preprofessional experience and constitutes an integral part of many of the college's programs. Students enrolled in certain College of Home Economics courses who have had field experiences are required to participate in the group liability insurance plan offered through the College of Home Economics. The annual cost to the student for this insurance coverage is $4.00 (subject to change). The first digit in course numbers indicates the student group for whom the course is primarily offered: 1000 indicates courses for freshmen, 2000 for sophomores, 3000 for juniors, 4000 for seniors, 5000 and 6000 for graduate students.

Education 3810 should be elected in the sophomore year by those students majoring in the vocational home economics education curriculum. This course is a prerequisite for other required courses in education. Psychology 2500 is a prerequisite for Education 3810.

For majors in the food science, nutrition or textiles curricula, Nutrition 3310 should be taken preferably in the sophomore year and not later than the first quarter of the junior year.

The following four courses are fundamental to home economics and are required in all curricula:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Economics 1510 Family</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 1520 Family</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 2510 Family</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 3510 Family</td>
<td>4</td>
</tr>
</tbody>
</table>

Professional Curriculum in Child and Family Studies

The Department of Child and Family Studies is concerned with early education, human development and family interaction throughout the lifecycle, and with resource management and consumer studies. Departmental goals and objectives are designed to contribute to the interpersonal and professional competence of men and women students, and to provide preparation for careers in the helping professions related to children, adolescents, adults, and families, depending on the option the student selects.

The curriculum is appropriate for persons oriented toward teaching and/or administrative positions in child care centers and nursery schools, in public schools, with family services, child welfare agencies, extension, banks and consumer agencies. Other opportunities exist that require study beyond the bachelor's level (for example: administration, research and clinical services). All options provide necessary background for graduate study in child development, family relationships, early childhood education, and social work.

OPTION 1. EARLY CHILDHOOD DEVELOPMENT

This option is appropriate for persons interested in the following types of positions: day care teacher, nursery school teacher, worker in center for socially disadvantaged and/or handicapped children, entry level positions in social work, or preparation for graduate school.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>3</td>
</tr>
<tr>
<td>Home Economics 1510</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 1520</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics 1540</td>
<td>4</td>
</tr>
<tr>
<td>Philosophy 1510 or 2510 or 2520 or 2310</td>
<td>4</td>
</tr>
<tr>
<td>Music 1210 or Art 1815 or 1825</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td>Language</td>
<td>4</td>
</tr>
<tr>
<td>Speech 1221 or 2021 or 2351</td>
<td>4</td>
</tr>
<tr>
<td>Physical or biological science elective</td>
<td>4</td>
</tr>
<tr>
<td>Social sciences</td>
<td>16</td>
</tr>
<tr>
<td>History or political science elective</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>10</td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFS 3110-25</td>
<td>7</td>
</tr>
<tr>
<td>CFS 3120 or Library Science 3510</td>
<td>3</td>
</tr>
<tr>
<td>CFS 3210-20</td>
<td>6</td>
</tr>
<tr>
<td>CFS 3420 or 4830</td>
<td>3</td>
</tr>
<tr>
<td>CFS 3510 or 3515</td>
<td>1</td>
</tr>
<tr>
<td>Home Economics 2510</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
</tr>
<tr>
<td>Philosophy or religious studies elective</td>
<td>4</td>
</tr>
<tr>
<td>Speech 3333</td>
<td>2</td>
</tr>
<tr>
<td>Physical Education 3333</td>
<td>4</td>
</tr>
<tr>
<td>Public Health 3210</td>
<td>7-8</td>
</tr>
<tr>
<td>Electives</td>
<td>7-8</td>
</tr>
</tbody>
</table>
OPTION 2. HUMAN DEVELOPMENT AND FAMILY STUDIES

This option is for undergraduate CFS majors who want a generalist background in individual and family studies. This option does not prepare for a career in preschool education. Students interested in Cooperative Extension Service, community agencies, general family counseling, social work, and graduate work would choose this undergraduate option.

Freshman Hours Credit
Home Economics 1510.  4
CFS 2110.  3
Home Economics 1520.  4
"Natural science.  12
English 1510-20.  8
"Mathematics.  4
Philosophy 1510 or 2510 or 2520 or 2310 or upper-division foreign language.  4
Music 1210 or Art 1815 or 1825.  4
Electives.  6

Sophomore
"CFS 2120.  3
Literature elective.  4
"Nutrition 1230.  4
Home Economics 2510.  4
Physical education elective.  2
Speech 1221 or 2021 or 2351.  4
Physical or biological science elective.  4
"Social sciences.  16
History or political science elective.  4
Elective..  4

Junior
CFS 2410 or Sociology 3150.  3
CFS 3210.  3
CFS 3220.  3
CFS 3510.  3
CFS 3515.  3
CFS 3520.  3
Home Economics 3150, 3
Economics 2110.  3
History or political science elective.  4
Philosophy or religious studies electives.  4
Electives.  14-15

Senior
CFS 3220 or 4230 or 4350.  3
CFS 4290.  3
CFS 4420 or 4610.  3
CFS 4430.  3
CFS 4810 or Ed. Psych. 4800.  3
CFS 4830.  3
Sociology elective.  4
Electives.  12-21

TOTAL: 191 hours

*Twelve hours selected from the following: Biology 1210-20, Chemistry 1510-20, Physics 1410-20, Zoology 2461-71, Sociology 2920-30.
*Requirement may be satisfied by Mathematics 3000 or Psychology 3150 to be taken the junior year.
*Requirement may be satisfied by Nutrition 3020 to be taken junior year.
*Selected from at least two of the following areas: Psychology 2920, 2530, 2540, Sociology 1510-20, Anthropology 2510, 2520, 2530.

OPTION 3. NURSERY SCHOOL-GRADE THREE

This option is appropriate for persons interested in working with young children up to the age of eight in a variety of settings. A joint program with the Department of Curriculum and Instruction, this option provides certification for grades K-3.

Freshman Hours Credit
HE 1510.  4
HE 1520.  4
CFS 1500.  3
English 1510-20.  8
Speech 2021 or 2311.  4
Music 1210 or 1220 or Art 1815 or 1825.  4
Electives.  6

Sophomore
CFS 2510.  4
CFS 3210.  3
"Health elective.  3
Art Ed. 2100-10.  6
Music Ed. 2100.  3
P. E. 3420.  3
"Physical science.  8
"Literature elective.  4
"Culure and society elective.  4
"History elective.  4
"Social science elective.  4
Economics 2110.  3

Junior
HE 3510.  4
CFS 3120.  3
"Educ. C & I 4490.  3
Educ. C & I 3360-70 or 81.  12
Educ. C & I 3350.  12
Educ. C & I 3720.  12
Educ. C & I 4303.  12
Educ. C & I 3010-20-30 (choose any two).  6
Music Ed. 3110.  3
Public Health 3210.  4
P. E. 3860.  3
Elective.  4

Electives.  14-15

Senior
CFS 3220 or 4230 or 4350.  3
CFS 4610.  3
CFS 4110-11.  3
Educ. C & I 4850-51.  15
Educ. C & I 4451.  3
Educ. C & I 4452.  3
Spec. Ed. 3333.  3
Electives.  5

TOTAL: 191 hours

*Twelve hours selected from the following: Biology 1210-20, Chemistry 1510-20, Physics 1410-20, Zoology 2461-71, Sociology 2920-30.
*Requirement may be satisfied by Mathematics 3000 or Psychology 3150 to be taken junior year.
*Requirement may be satisfied by Educational Psychology 4110 to be taken senior year.
*Requirement may be satisfied by Nutrition 3020 to be taken junior year.
*Selected from at least two of the following areas: Psychology 2920, 2530, 2540, Sociology 1510-20, Anthropology 2510, 2520, 2530.

OPTION 1. GENERAL PROFESSIONAL

This general curriculum is designed for students preparing for positions in business, educational and public service programs and provides background for advanced study in crafts, interior design and housing.

Freshman Hours Credit
Chemistry 1110-20-30 or 1510-20-30.  12
English 1510-20.  8
Food Science 2110.  4
Home Economics 1510.  4
Home Economics 1520.  4
"Humanities and social science electives.  12
Electives.  3
CFS 4410.  4

Sophomore
Home Economics 2510.  4
Economics 2110-20.  4
"English 1510-20.  8
"Psychology 2520 and 2530 or 2540.  8
"CFS 4410.  4
"Sociology 1910.  4
"Speech 2311.  4
"Zoology 2920-30.  8
"Electives.  3

Junior
Food Science 3020.  3
CFS 3420.  3
Microbiology 2010.  4
Nutrition 3020.  4
CFS 3110.  3
CFS 4300.  3
"Social science elective.  4
"Textiles and Clothing 3420.  3
"Electives.  14

Senior
CFS 3210 or 3220.  3
CFS 3510 or 3620.  3
CFS 4300.  3
"Humanities and social science electives.  6
CFS 4410.  4
Electives.  26

TOTAL: 188 hours

*Select from anthropology, art history, sociology, psychology, history.
*Select from anthropology, political science, history.
OPTION 2. PROFESSIONAL INTERIOR DESIGN

The following curriculum provides for those students who are primarily interested in becoming professional interior designers.

**Freshman**  
**Hours Credit**
- Home Economics 1510: 4
- Home Economics 1520: 4
- CIDH 1419: 2
- Art 1115-25-35: 12
- Art 1815-25: 2
- Natural science electives: 12
- English 1510-20: 8

**Sophomore**
- English 2510: 4
- CIDH 2115-16: 4
- CIDH 3125: 5
- CIDH 3130: 3
- Speech 2311: 3
- Economics 2110-20: 6
- Home Economics 2510: 4
- Electives: 8

**Junior**
- Psychology 2500 and 2530 or 2540: 8
- Marketing 3110: 3
- Textiles and Clothing 3420: 3
- CIDH 3260: 3
- CIDH 3255-56: 12
- Home Economics 3510: 4
- Electives 3510: 12

**Senior**
- Collateral area electives: 8
- CIDH 4320: 3
- CIDH 4410: 3
- CIDH 4350: 3
- CIDH 4130: 3
- Textiles 4220: 3
- Textiles and Clothing 5220: 3
- Art 3745: 4
- Electives: 9

**TOTAL: 191 hours**

1. Natural science electives (12-hour sequences) from one of the following: Biology 1210-20-30, Chemistry 1510-20-30, Physics 1410-20-30, Botany 1110-20, 1140.
2. An area which directly reinforces the major chosen from ornamental horticulture and landscape design science, history, textiles, art, architecture, business administration, child and family studies.

OPTIN ON CRAFTS

The curriculum in crafts offers opportunity for specialization in the media of fiber, metal, wood, or clay.  
Graduate and undergraduate students in the area of crafts have a unique opportunity to participate in the summer program at the Pi Beta Phi Arrowmont School of Crafts, Gatlinburg, Tennessee; credit is granted through the University of Tennessee, Knoxville.  
Instructors at the school are nationally and internationally recognized designer-craftspersons who offer, in many instances, different approaches to those of the resident faculty; this further enriches the student's program of study.  
Craft courses are not offered on the Knoxville campus in the summer quarter. Therefore, students attending UT during the summer for crafts study are required to attend the Pi Beta Phi Arrowmont School of Crafts and to pay the additional registration, tuition, and laboratory materials fees required by that school.

OPTION 3. GENERAL CRAFTS

**Freshman**
- Natural science sequence: 12
- English 1510-20: 8
- CIDH 1419: 2
- Art 1115-25-35: 12
- Home Economics 1510: 4
- Electives: 4

**Sophomore**
- Home Economics 2510: 4
- Psychology 2540: 4
- English 2510: 4
- CIDH 2210: 4
- Art 1815-25: 8
- Sociology 1510: 4
- Economics 2110-30: 6
- Accounting 2110 and/or Marketing 3110 and/or Finance 3110: 6
- Electives: 8

**Junior**
- CIDH 3270: 4
- CIDH 3130: 3
- Speech 2311: 4
- CIDH 3310: 3
- CIDH 3310: 3
- CIDH 3410: 3
- CIDH 3610: 4
- CIDH craft courses: 8
- Home Economics 3510: 4
- Electives: 9

**Senior**
- CIDH 4140: 4
- CIDH 4350: 3
- CIDH craft courses: 3
- Humanities and/or social science electives: 6
- Art history: 4
- Electives: 10

**TOTAL: 189 hours**

2. Select from anthropology, art history, sociology, psychology, history.

Professional Curricula in the Department of Food Science, Nutrition, and Food Systems Administration

Entering freshmen interested in Options 1, 2, 3, or 4 will be enrolled as departmental majors and a departmental adviser will be assigned to assist with planning freshman courses. Students will not register in a particular option until their third quarter in residence. They will apply for admission to a specific option by April 1. Designation of an option for each applicant will be made by a faculty committee by May 15, and each student will be assigned to an adviser associated with the chosen option. A second choice of option will be required if Option 4 is the first choice. If a student is listed as an alternate for a particular option, admission may be reconsidered at a later date. Applications may be considered periodically as openings occur.

Transfer students must apply to the Director of Admissions and be admitted to The University of Tennessee, Knoxville, before initiating the application procedure for admission to Options 1, 2, 3, or 4.

OPTION 1. FOOD SCIENCE

The food science curriculum is concerned with relating the cultural and scientific aspects of food science to people and their environment. Emphasis is placed on the application of the social sciences to world feeding problems, consumer reaction to food acceptability and marketing problems; application of the physical sciences is made in the study of food composition and properties and changes associated with processing, preparation, and storage. This curriculum prepares students for positions in food product development and evaluation in industry and government, work in communications media or for direct entrance into a Master's degree program needed for college teaching and research. Information concerning modifications necessary to meet the academic requirements of the American Dietetic Association is available from the department.

**Freshman**
- Chemistry 1110-20-30 or 310: 12
- English 1510-20: 8
- Food Science 1010: 4
- Home Economics 1510: 4
- Mathematics 1540-50 or 1560: 8
- Psychology 2500: 4

**Sophomore**
- Economics 2110, 2310: 6
- English 2510 or 2520 or 2530 or 2540: 4
- Food Science 2510: 4
- Home Economics 2510: 4
- Journalism 2210: 4
- Microbiology 2010: 4
- Speech 2311: 4
- Zoology 2920-30: 8
- Electives: 12

**Junior**
- CFS 3420 or 4210 or 4320: 3
- Food Science 3020, 3510, 4010: 9
- Home Economics 3510: 4
- Nutrition 3310-20-30-39: 12
- Social science electives: 8

**Senior**
- Food Science 4000, 4040: 6
- Food Science 4020: 3
- Nutrition 3410: 5
- Food science, food systems administration or food technology elective: 3
- Humanities electives: 8
- Electives: 22

**TOTAL: 190 hours**

1. Or English 2560 or 2570 or 2580.
2. Or 600 or 4978 by arrangement with instructor.
3. Select from anthropology, art history, literature (other than required), Library and Information Science 3510-20-30, foreign language (beyond introductory level), music (history or appreciation), philosophy, or religious studies.

OPTION 2. NUTRITION SCIENCE

This curriculum provides in-depth training in the basic biological sciences as well as nutrition. This option is designed for students who are interested in graduate study to become college teachers and researchers or who are interested in graduate study and/or a dietetic internship, to become a clinical nutrition specialist.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFS 3420</td>
<td>Dairy Foods</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CFS 4210</td>
<td>Meat Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CFS 4280</td>
<td>Foods in Society</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CFS 4910</td>
<td>Food Safety</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Food Systems Administration 4130</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Library and Information Science 4750</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition 4010</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition 4030</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition 4060</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition 4230</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutrition 4330</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>TOTAL: 188 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Or English 2560 or 2570 or 2580.*

### OPTION 4. COORDINATED UNDERGRADUATE PROGRAM IN DIETETICS (ADA)

The Coordinated Undergraduate Program in Dietetics is a generalist program, training entry-level dietitians in administrative and clinical dietetics, and is accredited by the American Dietetic Association (ADA). The program incorporates the equivalent of a fifth year dietetic internship into a four-year academic curriculum. The curriculum includes a two-year preprofessional sequence that meets general education requirements and prerequisites for professional courses, and a professional phase in the junior and senior years. The junior year provides an introduction to dietetics, basic knowledge in food science, nutrition, and food systems administration, and research techniques. The senior or fourth year consists of advanced work in dietetics. During the professional phase, academic courses are coordinated with planned experiences in selected hospitals and community facilities. The assignment of students to each clinical site is made by the program director.

### Admission and Progression Policies

A student may be admitted to the program at any stage provided all requirements or equivalents of the program up to that time, as well as University of Tennessee and College of Home Economics standards, have been satisfactorily met. Preprofessional courses may be taken at the University of Tennessee, Knoxville, or any accredited junior or senior college or community college. The program has been planned to permit transfer students to apply prior to the beginning of the junior year. Applications should be made to the program director by April 1. Criteria for selection include (1) evidence that the student will successfully complete the two-year preprofessional phase, (2) an overall GPA of 2.2 or higher, (3) personal interview, and (4) recommendations from faculty of selected preprofessional courses. The number of qualified students accepted into the Coordinated Undergraduate Program in Dietetics is contingent on the number of clinical sites available. Criteria for admission may be maintained throughout the preprofessional phase. Exception to criteria may be made by petition to the program director. Criteria for progression in the professional phase junior and senior years will include (1) satisfactory completion of each required professional course as scheduled with a minimum grade of C, (2) periodic evaluation of competency level by academic and clinical faculty, (3) periodic evaluation of professional competency by peers, and (4) participation in voluntary professional activities. The maximum credit hours carried per quarter should not exceed 18 hours without special permission from the program director. Exceptions to the above may be made by petition to the program director.

Upon satisfactory completion of the program, students receive the Bachelor of Science Degree in Home Economics, and are eligible for membership in the American Dietetic Association and to apply for the registration examination to qualify as a Registered Dietitian (R.D.).

A student unable to enter or to complete the Coordinated Undergraduate Program in Dietetics (Option 4) may select Food Science (Option 1), Nutrition Science (Option 2), or Community Nutrition (Option 3) to fulfill the academic requirements for a dietetic internship or traineeship. Upon completion of the academic requirements and the dietetic internship or traineeship, students would be eligible for membership in the American Dietetic Association and to apply for the registration examination to qualify as a Registered Dietitian (R.D.).
Professional Curriculum in Vocational Home Economics Education

The curriculum in vocational home economics education is planned in cooperation with the College of Education.

Successful completion of the requirements of this curriculum results in recommendation for certification to teach vocational home economics in secondary schools in Tennessee.

Total requirements for admission to teacher education, to student teaching and for recommendation for certification are listed on page 105. The State Board for Vocational Education and the United States Office of Education approve programs for vocational education. Only students who have a major in the vocational home economics education curriculum meet certification requirements; students who have a major in other curricula in the College of Home Economics do not meet certification requirements.

All freshmen, sophomore, and junior required courses must be completed before a student engages in student teaching. Home Economics Education 4240 should be scheduled within one of the two quarters immediately preceding the quarter in which student teaching is scheduled. This curriculum will prepare students for graduate study in home economics education; however, it is not a requirement for graduate study in home economics education.

---

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1110-20, or 1110-20-30</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 1510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 2500</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 1520</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Text. &amp; Clo. 1160</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Text. &amp; Clo. 1165</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Text. &amp; Clo. 2110</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 1510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting 2110</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Literature elective</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 2510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Anthropology 2320</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Text. and Clo. 3420</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 2820-30 or biology elective</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Text. &amp; Clo. 3510</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><em>Electives</em></td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychology 1310 or Sociology 3130</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Crafts, Interior Design &amp; Housing 3130</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Marketing 3110-20 and a marketing elective.</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Journalism 2210</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Home Economics 3510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Text. &amp; Clo. 4110</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Text. &amp; Clo. 4230</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>*Text. &amp; Clo. 4620</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Text. &amp; Clo. 3480</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Text. &amp; Clo. 4010</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td><em>Electives</em></td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFS 3430</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CFS 4830</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Choose 6 hours from: crafts, interior design, and housing; nutrition; child and family studies</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>***Text. &amp; Clo. 4630, 4640.</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Text. &amp; Clo. 1165</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><em>Electives</em></td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

TOTAL: 189 hours

*Eight-hour sequence from foreign language or philosophy or history or art history or music.
*Spring quarter only.
*Twenty hours of electives must be upper-division level.
*Approved upper-division courses may be substituted.
*Fall quarter only.
*A minimum grade point average of 2.2 is required to enroll in these courses.

---

### OPTION 2. TEXTILE TECHNOLOGY

This curriculum is appropriate for persons wishing to prepare for positions as research technicians and for graduate study leading to college teaching and research in textiles.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1110-20-30 or 11510-20-30</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Home Economics 1510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 2500</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Home Economics 1520</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Text. &amp; Clo. 1160</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Text. &amp; Clo. 1165</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 3211-19 or Nutrition 3310</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>English 2510 or 2520 or 2530 or 2540</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Home Economics 2510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1840-50-60</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Sociology 1510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Text. &amp; Clo. 3420</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Zoology 2920-30</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td><em>Electives</em></td>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

### Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 2110, 2130</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><em>Electives</em></td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Journalism 2210</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Physics 2210-20 or 1210-20</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Statistics 2100 or 3450</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Home Economics 3510</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><em>Electives</em></td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFS 4830</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CIDH 3430, 3130</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Text. &amp; Clo. 3440, 3450, 3480, 5220</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td><em>Electives</em></td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

TOTAL: 191 hours

*Or English 2560 or 2570 or 2580.
*At least 30 hours must be upper-division courses.
*Eight-hour sequence from foreign language or philosophy or history or art history or music.

---

### Professional Curriculum in Textiles and Clothing

#### OPTION 1. MERCHANDISING

This curriculum is appropriate for students wishing to prepare for positions in merchandising of apparel and/or fabrics, fashion writing, and in public relations with pattern companies and manufacturers of textile products.
Information regarding graduate assistantships, fellowships, and general requirements for admission to graduate study may be obtained from the department head in the area of the student's major interest or the Dean of the College of Home Economics for the interdisciplinary doctoral option. An application for admission and two official transcripts should be submitted directly to the Graduate School. In addition, application is made to the Dean of the College of Home Economics. Those students majoring in child and family studies, the interdisciplinary doctoral option, or home economics education are required to take the Graduate Record Examination.

For a complete description of the Graduate Program in the various areas of home economics, see the Graduate Catalog, including the list of available major and minor areas.

**Departments of Instruction**

**Child and Family Studies (245)**

**Professors:** J.L. Kuipers (Head), Ph.D. Michigan State; C. Beasley (Emeritus), Ed.D. Columbia; M.L. Bishop (Emeritus), Ph.D. Cornell; R.L. Highbarger, Ph.D. Iowa; E.L. Speer (Emeritus), M.A. Columbia.

**Associate Professors:** J.L. Cunningham, Ph.D. Michigan State; D.B. Eastburn, Ph.D. Texas University; Ym, Nordquist, Ph.D. Tennessee; R.M. Swigler, Ph.D. Ohio State; P. White, Ed.D. Tennessee.

**Assistant Professors:** M.F. Kalinowski, Ph.D. Massachusetts; B.C. Miller, Ph.D. Minnesota; L.M. Rawlings, Ph.D. Pennsylvania State; H.M. Reid, M.S. Tennessee; P.B. Scott, Ph.D. Tennessee; L.E. Southworth, Ed.S Tennessee; S.L. Twardosz, Ph.D. Kansas.

1120 Management and its Contribution to Family Living (3) Decision-making process, relationships among decisions; principles of organization for implementing decisions; evaluation procedures; factors affecting consumer decision processes; application of management principles to problems.

1500 Introduction to Early Education (3) Analysis of principles and operation of early education programs for children ages 0-4. Field trips required. Same as Educational Curriculum and Instruction 1500.

2110 Human Socialization (3) Human development with emphasis on socialization process from infancy through adolescence in family, school and peer group settings. 3 hrs. An additional lab (2 hrs) for majors.

2120 Male-Female Relations (3) Examination of issues and development of communication skills and roles involved in relating to opposite sex. (Not open to majors.)

2410 Human Sexuality (3) Dimensions of human sexuality as examined through cultural, social, and psychological influences.

3110 Program Planning (4) Philosophies of pre-school education. Analysis of programs and teacher-child interaction. Observation-measurement laboratory. Prereq: 3210 or equivalent. 3 hrs and 1 lab.

3120 Aesthetic Experiences (3) Examination of subject matter areas—quantity and logic, art, music, literature, science. Prereq: 3110.

3125 Day Care Programming for Infants and Preschool Children (3) Child planning for children from early infancy through 6 years in day care environments. Prereq: 3210 or equivalent.

3210 Child Development I (3) Comprehensive view of the child from birth to age 2. Analysis of interpersonal relationships among various aspects of development: physical, cognitive, emotional and social. Prereq: 2110 or Home Economics 1510 and 1520 3 hrs. Psych. 3 hrs. 1 hr observation per week.

3220 Child Development II (3) Growth and development of the child from 6 to 12 years of age with emphasis on influence of family and community. Special attention given to interpersonal, social and cultural settings. Prereq: 2110, 4 hrs psychology or equivalent. 3 hrs. 1 hr observation per week.

3420 Family Economics (3) Management of family groups of young children under the supervision of pre-pressures to improve income position and reduce income insecurity. Prereq or coreq: Economics 2120.

3510 Intimate Relationships (3) Examination of relationships that carry out functions of traditional nuclear family for the individual.

3515 Family Development (3) Focuses on family from childhood to old age. Some emphasis on family development in a developmental framework. Prereq or coreq: Social Studies 3110 or 3220.

3520 The Family and the Adolescent (3) Problems of growth and development during teen years; role of parents and other adults in fostering adolescent development. Prereq: 2110 or 4 hrs psychology or 4 hrs sociology.

4110 Student Teaching in Preschool Settings (6) Increasing responsibility for planning and guiding groups of young children under supervision of head teacher. Prereq: 3510, 3110, 3120, 3210, coreq: 4111.

4111 Student Teaching of Preschool Children (3) Increasing responsibility for planning and guiding groups of young children under supervision of a head teacher includes 2-hr weekly seminar. Prereq: 1500, 3110, 3120, 3210; coreq: 4110.

4210 Family Finance (3) Analysis of alternative ways of meeting financial problems encountered during life cycle of family.

4220 Conserving Time and Energy in the Home (3) Application of management principles to home-making activities; evaluation of equipment, work centers, and work procedures in terms of time and energy demands. Adaptations for the handicapped.

4230 Development in Infancy (3) Development during prenatal period and first fifteen months of life. Interaction between infant and his environment. Review of research relating to childrearing practices and prediction of later behavior. Prereq: 2110 and Zoology 2930 or equivalent.

4260 Adult Development and Aging (3) Adult life in our society. Adjustment to internal and environmental changes through middle and aged years. Prereq: 2110 or HE 1510 or equivalent background in adult development or consent of instructor.

4350 Advanced Child Development (3) Survey of selected theories relevant to child development with emphasis on research literature and research methodology. Prereq: 4 hrs psychology and 6 hrs child development or equivalent.

4420 Learning Experiences with Parents (3) Dynamics of parent-child interaction. Emphasis on a variety of techniques for developing communication and working relationships between parents and teachers through experiences in a variety of settings. Prereq: 3610 or 4110 or equivalent.

4430 Family Relationships (3) Interpersonal relationships among family members and societal roles. Prereq: 3510 or 3515.

4810 Child in the Community (3) Needs of children; community agencies meeting these needs; visits to agencies contributing to welfare of children. Prereq: 2110 or Home Economics 1510 or equivalent.

4620 Administration of Programs for Young Children (3) Planning for staffing, housing, feeding, scheduling, and financing for day care of infants and young children, nursery school programs, and specialized programs for deprived preschool children. Prereq: 3110 or 3130 or 4110.

4630 Field Work in Child, Family and Consumer Studies (3-15) Opportunity for student to work in nursery schools or community agencies; focus on children, families, and/or consumer concerns. Hrs arranged. May be repeated. Maximum credit 15 hrs.

4710 Contemporary Developments (1-3) Student or staff initiated course for study of special topic(s) pertinent to the field; topics selected to be determined by students and instructor with departmental approval. Elective credit only. Prereq: Consent of instructor. May be repeated with departmental approval for credit up to 9 hrs.

4810 Afro-American Families (3) Historical background; contemporary family structure and relationships; emerging needs and programs. Prereq: 4 hrs in social sciences and upper-division standing as per Black Studies 4610.

4830 Consumers and the Market (3) Factors important to homemakers as family purchasing agents; standardization of goods; grading, branding, labeling; advertising; consumer practices affecting costs; specific household commodity information.

4978 Honors: Child, Family and Consumer Studies (3) Individual special problems for juniors and seniors showing special ability and interests. May be repeated. Maximum credit 9 hrs.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5060 Practicum (1-12)

5110 Field Work in Family Life (3)

5140 Consumption and Standards of Living (3)

5150 Assessment of Family Behavior (3)

5160 Management of Time and Energy in the Home (3)

5170 Consumer Economics (3)

5180 Family Financial Consultation (3)

5190 Standards in Consumer Protection (3)

5210 Theories of Child Development (3)

5220 Family Life Programs (3)

5310 Theory and Research on Human Sexuality (3)

5410 Advanced Family Relationships (3)

5420 Parents and Children (3)

5430 Families in Crisis (3)

5510 Survey of Research in Child and Family Studies (3)

5530 Research Methods in Child and Family Studies (3)

5540 Preschool Curriculum Models (3)

5550 Supervision in Preschool Programs (3)

5610 Theories of Management in the Family Environment (3)

5620 Nursery School Administration (3)

5630 Seminar in Infant Development (3)

5640 Teaching Child and Family Studies (6)

5700 Current Programs and Trends in Child and Family Studies (1-3)

5800 Problems in Child, Family, and Consumer Studies (1-3)

5840 Family Planning Programs (3)

5900 Seminar in Child and Family Studies (1-3)

6110 Seminar in Child Development, Family Relationships and Consumer Studies (3)

6250 Advanced Topics (3)

6310 Individual and Family Development: Physiological Determinants (3)

6320 Individual and Family Development: Cognition (3)

6330 Individual and Family Development: Socialization (3)

6410 Theories of Family Interaction (3)

6450 Conceptual Frameworks for the Family (3)

6540 Seminar in Programs for Infants and Preschool Children (3)

6610-20 Applied Behavior Analysis in Natural Settings (6, 6)

6710 Elements of Consumer Choice (3)

6720 Consumer Protection (3)

Crafts, Interior Design, and Housing (269)

Professors: R.G. Blakemore (Head), Ph.D. Florida State; J.S. Falsetti, M.S. Southern Illinois; L.J. Gasset (Emeritus), Ph.D. Purdue; M.G. Heard (Emeritus), M.A. Columbia.

Associate Professors: W. Moran, M.S. Wisconsin; R. Pierotti, M.M. Utah.


Lecturer: M.W. Heirick, M.S. Tennessee.

PI BETA PHI ARROWMONT SCHOOL OF CRAFTS

(See page 161.)

3330 Metal Design III (4) Advanced experiences in metalwork, emphasizing relationship of design to process and imaginative use of art elements in metal design. Prereq: 3320 or equivalent. 1 hr and 2 labs.

3410 Weaving I (4) Creative design in elementary weaving techniques on a variety of looms; basic weaves and threads. Interpreting and creating designs using various materials; assembling a loom, threading and tie-up of a loom; methods of finishing. Study of weaving of past and present. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3420 Weaving II (4) Same as 3410 except designing, technique, and materials are explored in rug weaving. 1 hr and 2 labs.

3430 Weaving III (4) Advanced weaving techniques with exploration of pattern, color and texture using various warps, fillers and weaves. Further study of weaving, past and present. Prereq: 3410 or 3420 or equivalent. 1 hr and 2 labs.

3440 Demonstration Techniques in Household Equipment (3) Planning and presenting equipment design emphasizing relationship of design to performance, maintenance and cost; developing and using visual aids. Prereq: Speech 2311. 1 hr and 2 labs.

3510 Textile Design (4) Fundamental principles of textures and techniques; application of processes and materials. Emphasis on serigraphy and blockprint methods. Prereq: 1410 or equivalent.

3520 Textile Design (4) Study of resist processes in textile design, fold/dye, batik, and resin resist methods and materials. Interpretation of context. Designers in the field are discussed, as well as examples from the past. Prereq: 1410 or equivalent.

3530 Fabric Structures (4) Design and construction of fabric structures through use of non-weaving processes; looping, interlooping, coiling, interknitting, interlinking, interfacing, and twining. Investigation of tools, materials and non-weaving processes utilized in development of fabric structures. Study of various historical and traditional aspects of these processes in relation to their potential in designing contemporary fabric forms. Prereq: 1410 or equivalent. May be repeated. Maximum credit 12 hrs.

3610 Wood Design (4) Basic skills and appreciation for design developed through wood carving and the making of small household objects and toys. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3620 Wood Design (4) Continuation of 3610. 1 hr and 2 labs.

3710 Enameling I (4) Exploring possibilities and limitations of vitreous enamels. Designing and creating enamelled metalwork and jewelry using a variety of materials and techniques. Contemporary and past enameling. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3720 Enameling II (4) Advanced techniques; exploration of design, color and texture. Further study of art of enamelist, past and present. Prereq: 3710 or equivalent. 1 hr and 2 labs.

410 Home Wiring and Lighting Requirements (3) Service of electricity in modern homes; evaluation of hazards; design of lighting plans in terms of family desires and need for equipment. 1 hr and 2 labs.

4130 Contemporary Design (3) Furnishings and interiors; economics, technological and sociological influences on development of design; changing living conditions; interrelation of architecture and furnishings. Significant designers and their work.

4140 Exhibition Design (4) Display of craft and interior design problems in relation to materials, props, and special exhibition area. Emphasis on knowledge and application of design principles as they relate to promotion, design construction, display and evaluation for two and three dimensional design. Prerequisite: 12 hrs of metal design or equivalent and consent of department.

4155 Interior Space Planning I (6) Analysis, planning and design of office environments; includes contract specifications. Prereq: 3256 or equivalent.

4156 Interior Space Planning II (6) Studio problems involving large scale non-residential interior spaces such as institutions, commercial facilities, stores, institutions, etc. Prereq: 4155 or consent of instructor.

4260 Professional Practice (15) Supervised field experience in establishments engaged in practice of interior design. Prereq: Junior standing, interior design majors, 3260, and consent of department.

4300 Apprenticeship/Field Experience (4-15) Supervised field or apprenticeship experience for craft majors desiring professional training with a professional organization, program or designer/craftsperson; subject to departmental approval. Prereq: Senior standing and consent of faculty.

4310 Crafts in America (3) Craft movement: factors that contribute to growth and development. Educational, social, economic, recreational and therapeutic values of crafts. Place of craftsman in society as producer, teacher, designer for industry.

4320 Family Housing Problems (3) Housing requirements of families. Reading and judging house plans; effect of space, maintenance and design problems; housing regulations and restrictions; site selection and neighborhood development; financing procedures. Prereq: 6 hrs from Economics 2110-20-30.

4330 Care and Repair of Household Equipment (3) Care of equipment to give maximum service in relation to operating cost and service cost; understanding of common repair problems. Prereq: 2430. 1 hr and 2 labs.

4410 Craft Media (4) Possibilities and limitations of variety of craft media; understanding educational and social values of craft work. Designing and executing craft problems using inexpensive materials and tools. 3 labs.

4420 Leather Design (4) Relationship to design, function, and construction of leather objects of original design. Prereq: 1410 or equivalent. 1 hr and 2 labs.

4430 Plastics (4) Possibilities and limitations of various plastics; methods of fabrication; relation of design to function, processes, types of material and use of tools. Prereq: 1410 or equivalent. 1 hr and 2 labs.

4510 Ceramics I (4) Possibilities and limitations of clay: techniques of firing and glazing; making pottery forms using coil, slab and throwing techniques; decorating by slip, underglaze, sgrafitto, incising and embossing; preparation of slip and glazes; setting and firing kilns. Prereq: 1410 or equivalent 1 hr and 2 labs.

4520 Ceramics II (4) Further study in designing, building, decorating, preparing glazes and firing. Role of the potter, past and present. Prereq: 4510 or equivalent. 1 hr and 2 labs.

4530 Ceramics III (4) Advanced design and relation to function, materials, tools and techniques. Further study of history of pottery and contributions of contemporary ceramist to art, architecture and interior design. 1 hr and 2 labs.

4610 Studio Problems in Interior Design (3) Problems for seniors with special ability and interest in interior design. May be repeated to a maximum of 9 hrs. Prereq: Senior standing and consent of department.

4620 Studio Problems in Leather Design (4) Problems for juniors and seniors with special ability and interest in leather design. May be repeated to a maximum of 12 hrs. Prereq: 4 hrs of leather design or consent of department.

4630 Studio Problems in Metal Design (4) Problems for juniors and seniors with special ability and interest in metal design. May be repeated to a maximum of 12 hrs. Prereq: 12 hrs of metal design or equivalent and consent of department.

4640 Studio Problems in Weaving (4) Problems for juniors and seniors with special ability and interest in weaving. May be repeated to a maximum of 12 hrs. Prereq: 12 hrs of weaving or equivalent and consent of department.

4650 Studio Problems in Textile Design (4) Problems for juniors and seniors with special ability and interest in textile design. May be repeated to a maximum of 12 hrs. Prereq: 8 hrs of textile design or equivalent and consent of department.

4655 Studio Problems in Fabric Structures (4) Advanced problems in fabric structures for juniors and seniors with special ability and interest in fabric structures. Emphasis on in-depth research and creative problem solving in one or several areas of fabric structures. May be repeated. Maximum credit 12 hrs. Prereq: 12 hrs of fabric structures (or equivalent) and consent of department head.

4660 Studio Problems in Wood Design (4) Problems for juniors and seniors with special ability and interest in wood design. May be repeated to a maximum of 12 hrs. Prereq: 8 hrs of wood design or equivalent and consent of department.

4670 Studio Problems in Enameling (4) Problems for juniors and seniors with special ability and interest in enameling. May be repeated to a maximum of 12 hrs. Prereq: 8 hrs of enameling or equivalent and consent of department.

4680 Studio Problems in Plastics (4) Problems for juniors and seniors with special ability and interest in plastics. May be repeated to a maximum of 12 hrs. Prereq: 4 hrs of plastics or equivalent and consent of department.

4690 Studio Problems in Ceramics (4) Problems for juniors and seniors with special ability and interest in ceramics. May be repeated to a maximum of 12 hrs. Prereq: 12 hrs of ceramics or equivalent and consent of department.

4710 Contemporary Developments (1-4) Student or staff initiated course for study of special topic(s) pertinent to the field; topics selected to be determined by students and instructor with departmental approval. Elective credit only. May be repeated with consent of department. Maximum credit 12 hrs. Prereq: Consent of instructor.

4968 Honors: Crafts (1-4) Problems for juniors and seniors with special ability and interest in crafts. Hours arranged. May be repeated. Maximum credit 12 hrs. Prereq: Consent of department head.

4978 Honors: Interior Design (1-3) Problems for juniors and seniors with special ability and interest in interior design. Hours arranged. May be repeated. Maximum credit 9 hrs. Prereq: Consent of department head.

4988 Honors: Housing (1-3) Problems for juniors and seniors with special ability and interest in housing. Hours arranged. May be repeated. Maximum credit 9 hrs. Prereq: Consent of department head.

4998 Honors: Equipment (1-3) Problems for juniors and seniors with ability and interest in equipment. Hours arranged. May be repeated. Maximum credit 9 hrs. Prereq: Consent of department head.

GRADUATE:

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5040 Seminar in Design (3)

5050 Advanced Design Studio (4)

5060 Practicum (1-12)

5120 Historic Interior Design (3)

5210 Furniture Appreciation (3)

5310 Interior Design (3)

5330 Craft Design (3)

5341-51-61 Metal Design I, II, III (4, 4, 4)
Food Science (386)

1010 Food Principles (3) Principles of food selection, preparation and service. 2 hrs and 1 lab.

2000 Cultural and Scientific Aspects of Foods and Nutrition (2) Cultural and scientific aspects of foods and nutrition as applied to the individual and community. Must be taken concurrently with Nutrition 2000. Prereq: 12 hrs of natural science.

2510 Nature of Food (3) Classification on basis of composition, type of systems, structure, and consistency, source, food components and their interrelationships. Prereq: 1010, Chemistry 1530 or equivalent. 2 hrs and 1 lab.

3020 Food and the Consumer (3) Economic considerations in food management, including food legislation, quality, consumer acceptability, and convenience. Prereq: 3 hrs economics. 2 hrs and 1 lab.

3021 Clinical Experience in Dietetics (1) Planned experiences for application of economic principles of food selection and consumer acceptability in selected community facilities. Coreq: 3020. Open only to students in the Coordinated Undergraduate Program in Dietetics.

3510 Nature of Food II (3) Food composition in relation to response of foods to heat, microwave, enzymatic and other physical and chemical treatments. Prereq: 2510, Nutrition 3310 or Nutrition 3300. 2 hrs and 1 lab.

4000 Origin of Food and Foodways (3) Food origin and development of individual and group foodways. Prereq: 5 hrs social science or humanities.

4010 Introductory Experimental Food Science (3) Physical and sensory evaluation in experimentation with fats, high protein foods, and batter and dough systems. Prereq: 3510. 2 hrs and 1 lab.

4020 Experimental Food Science (3) Individual experimentation and its relation to research literature. Prereq: 4010, Nutrition 3320 recommended. 1 and 2 labs.

4040 Food in Contemporary Society (3) Consumer's options, responsibility and potential influence with respect to food supply.

4530 Field Experience (3-15) Planned educational experience in selected food industry laboratories. Prereq: Consent of instructor. Hrs and credit arranged.

4710 Contemporary Developments (1-3) Student or staff initiated course for study of special topic(s) pertinent to the field: topics selected to be determined by students and instructor with departmental approval. Elective credit only. Prereq: Consent of instructor. May be repeated with departmental approval for credit up to 9 hrs.

4800 Current Topics (1-3) Assigned reading and group discussion of research literature. Hrs and credit arranged. Prereq: 4010, or consent of instructor.

4900 Seminar (1-3) Individual review, organization and reporting of literature on selected topics. May be repeated for credit. Prereq: 4010, or consent of instructor. Hrs and credit arranged.

49878 Honors: Food Science (1-3) Special problems for juniors and seniors showing special ability and interest in food science. May be repeated for credit and credit arranged.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5140 Foods and Nutrition: Physiological Principles (3)

5510 Food Texture (3)

5520 Food Sensory Testing Methods (3)

5530 Advanced Experimental Food Science (3)

5550 Food Behavior of the Individual (3)
Nutrition (726)

1230 Elementary Nutrition (3) Principles and applications to everyday living.

2000 Cultural and Scientific Aspects of Foods and Nutrition (3) Cultural and scientific aspects of foods and nutrition as applied to the individual and the community. Must be taken concurrently with Food Science 2000. Prereq: 12 hrs of natural science.

2710 Family Health Promotion (4) Management of family health throughout the life cycle with emphasis on family health status, health promotion and maintenance, health care delivery system, and prevention of illness. (Same as Nursing 2710.)

3000 Nutrition Science (3) Basic nutrients as chemical entities. Prereq: Chemistry 1510-20-30 or equivalent.

3020 Nutrition (3) Fundamentals of nutrition which pertain to man. Not open to graduate students or undergraduate majors in nutrition or food science. Prereq: Chemistry 1510-20-30 or equivalent; Zoology 2920-30 or equivalent.

3050 Basic Nutrition (3) Relationship of basic nutrition to human well-being. Prereq: Chemistry 1510-20-30 or equivalent and Zoology 2920-30 or equivalent.

3110 Organic Chemistry (4) Emphasis on subjects leading to 3322, 3330, Textiles and Clothing 3520. Prereq: General chemistry. 3 hrs and 1 lab. Not for graduate credit to nutrition majors.

3320 Food Analysis (4) Elementary quantitative analysis; typical food analyses. Prereq: 3310 or equivalent. 3 hrs and 1 lab. Not for graduate credit to nutrition majors.

3330 Physiological Chemistry (3) Metabolism of carbohydrates, lipids, and proteins. Role of vitamins and minerals in metabolism. Not for graduate credit for food science, nutrition, and food systems administration majors.

3339 Physiological Chemistry Laboratory (1) Prereq: 3320; coreq: 3330, 1 lab. Not for graduate credit to nutrition majors.

3340 Clinical Analyses (2) Laboratory and lecture. Principles, application and interpretation of chemical analyses of physiological materials. Prereq: 3300 or equivalent; coreq: 3330. Not for graduate credit for food science, nutrition, or food systems administration majors.

3410 Science of Nutrition (5) Basic principles of nutrition; significance of recommended dietary allowances and application. Prereq: 3330-39; Zoology 2920-30; Food Science 2510; 4 hrs and 1 lab.

3411 Clinical Experience in Dietetics (1) Planned experiences for application of principles of normal nutrition in selected health care and community facilities. Coreq: 3410. Open only to students in the Coordinated Undergraduate Program in Dietetics.

3610 Nutrition and the Environment (3) External conditions and influences affecting human nutrition, such as drugs, both social and therapeutic; air pollution, soil, air, and water; chemical additives.

3710 Individual and Family Health Problems (4) Influence of long-term and socio-cultural illnesses on individual and family living throughout the life cycle. (Same as Nursing 3710.)

3920 Seminar in Dietetics (1) Introduction to dietetics and to career opportunities; role of dietitian in health delivery systems. Concurrent with FSA 3920. Prereq: Junior standing.

4010 Reproductive and Developmental Nutrition (3) Nutritional requirements of expectant mothers, infants, and preschool children. Prereq: 6 hrs of nutrition, 2 hrs and 1 lab.

4020 Nutrition for Children, Adolescents and Adults (3) Application of basic principles and research findings to good nutrition for children, adolescents and adults. Prereq: 6 hrs of nutrition, 2 hrs and 1 lab.

4030 Community Nutrition (3) Nutrition problems and services in the community; supervised field experiences are integral part of course. Prereq: 6 hrs of nutrition.

4031 Clinical Experience in Dietetics (3) Supervised field experience in the community. Prereq: 4221; coreq: 4030.

4050 Nutrition throughout the Life Cycle (4) Application of nutrition principles throughout the life cycle with emphasis on communication of nutrition information. Prereq: 3500 or consent of instructor.

4110 Introduction to Nutrition Research (3) Discussion of principles and laboratory experiences. Prereq: 6 hrs of nutrition. 2 hrs and 1 lab.

4230 Nutrition in Disease (4) Nutrition problems in diseases influenced by diet. Prereq: 3410. 2 hrs and 1 lab.

4231 Clinical Experience in Dietetics (1) Planned clinical experiences applying principles of nutrition in disease. Coreq: 4230.

4240 Nutrition in Disease II (3) Interdisciplinary lectures and discussions on the metabolic processes of normal and diseased organs and tissues and the dietary or behavior modifications required. Prereq: 4230. Designed for senior students in the Coordinated Undergraduate Program in Dietetics.

4241 Clinical Experience in Dietetics (2) Advanced educational experiences applying principles of nutrition in disease in selected health care facilities. Coreq: 4240. Open only to students in the Coordinated Undergraduate Program in Dietetics.

4320 Readings in Nutrition (3) Reports and discussions of current literature. Prereq: 3410.

4420 Diet and Drug Therapy (3) Effect of drug therapy on absorption and utilization of nutrients, and effect of diet on absorption, utilization and toxicity of drugs. Prereq: 3410 or consent of instructor. 3 hrs.

4440 Clinical Experience in Dietetics (4) Experience in providing coordinated and continuing nutritional care in health delivery systems. Prereq: 4031. Open only to students in Coordinated Undergraduate Program in Dietetics.

4450 Field Experience in Nutrition (1-6) Planned educational experiences based on individual needs and interests of students.

4710 Contemporary Developments (1-3) Student or staff initiated course for study of special topic(s) pertinent to the field; topics selected to be determined by students and instructor with departmental approval. Elective credit only. Prereq: Consent of instructor. May be repeated with departmental approval for credit up to 9 hrs.

4978-88-88 Honors: Nutrition (1-4) Problems for juniors and seniors with special ability and interest in nutrition. Prereq: Consent of department head. Hrs arranged.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20 Advanced Physiological Chemistry (4, 3, 4)

5140 Foods and Nutrition: Physicochemical Principles (3)

5210 Advanced Nutrition (3)

5230 Experimental Methods in Nutrition (3)

5240-50 Research Techniques (3, 3)

5310-20 Community Nutrition (3, 3, 3)

5340 Field Study in Community Nutrition (1-12)

5350 Mental Retardation or Other Developmental Disorders of Childhood (3)

5410-20 Human Nutrition (3, 3)

5430 Physiological Bases for Diets in Disease (3)

5440 Maternal and Child Nutrition (3)

5450 Survey Methods in Human Nutrition (3)

5460 World Food Supply and Human Nutrition (3)

5470 Nutrition and Aging (3)

5610 Nutrition in Mental Retardation and Developmental Disorders (1-12)

5700 Current Programs and Trends in Nutrition (1-3)

5800 Problems in Nutrition (1-3)

5950-60 Seminar (1, 1)

6000 Doctoral Research and Dissertation

6110 Proteins and Amino Acids (3)

6120 Mineral Metabolism (3)

6130 Lipid Metabolism (3)

6140 Vitamin Metabolism (3)

6210 Advanced Topics in Nutrition (1-3)

6900 Seminar (1-3)

Food Systems Administration (388)

2910 Seminar in Food and Lodging Administration (2) Overview of field of food and lodging and professional curriculum. Contacts with industry through field trips and guest speakers. Students must pay for their own field trip expenses.

3000 Dimensions of Tourism (3) Economic and cultural impact of tourism on society. Examination of forces influencing the domestic and international tourist industry.

3110 Quantity Food Procurement, Production and Service (5) Application of principles necessary for determining needs, purchasing, producing and serving foods in volume. Prereq: Food Science 1010 or 2510, Economics 2130 or consent of instructor. 3 hrs and 2 labs.

3220Externship in Food and Lodging Administration (5) Planned educational experience in selected food and lodging operations. Prereq: 2910, 3110.

3320 Food Service Administration (2-3) Effective and efficient use of management resources in food service systems. Two credits to include lectures only. Three credits to include quantity food labora-

tory. Prereq: 3110 or consent of instructor. Not open to majors in food systems administration.
3920 Survey of Dietetics (1) Introduction to dietetics and to career opportunities, and role of dietitian in health delivery systems. Concurrent with Nutrition 3920. Prereq: Junior standing.

4130 Food Systems Administration (3) Functions of management applied to food service systems. Prereq: 3110.

4140 Food Systems Personnel Development (3) Development of training programs for food systems personnel. Prereq: 4130 or consent of instructor.

4150 Design and Layout of Food Service Systems (3) Design of physical facilities and selection and purchasing of equipment for food service systems. Prereq: 3110 or consent of instructor.

4210 Field Experience (5-15) Planned educational experience in selected food services or food and lodging systems. To be taken between junior and senior year if all prerequisites are completed. Prereq: 4130; 4150.

4250 Food and Lodging Managerial Cost Control (3) Cost analysis for control. Use of financial statements for decision making in food and lodging systems. Prereq: 4130, Accounting 2210.

4260 Food and Lodging Physical Plant, Planning and Maintenance (4) Feasibility, planning development and construction of food and lodging physical plant and maintenance. Electrical, mechanical, heating, plumbing, air conditioning and ventilation and illumination systems. Types of building materials and construction. Prereq: 3110, 4150 or consent of instructor. 3hrs and 1 lab.

4270 Food and Lodging Information Systems (3) Qualitative and quantitative analysis of information systems for decision making in food and lodging operations. Prereq: 4130, 4250, Office Administration 2750.

4410-40-30 Clinical Experience in Dietetics (3, 3, 3) Determination of individual and conceptual skills through planned educational experiences at increasing levels of administrative responsibility in selected food systems. Must be taken in sequence. Prereq: 3110; 4410 coreq to 4130; 4420 coreq to 4140. Open only to students in Coordinated Undergraduate Program in Dietetics.

4421 Contemporary Developments in Dietetics (2) Relating professional course concepts to clinical experiences through small group discussions. Open only to seniors in the Coordinated Undergraduate Program in Dietetics. May be repeated. Maximum 6 hrs credit.

4710 Contemporary Developments (1-3) Student or staff initiated course for study of special topics pertinent to the field; topics selected to be determined by students and instructor with departmental approval. Elective credit only. Prereq: Consent of instructor. May be repeated with departmental approval for credit up to 9 hrs.

4800 Current Topics (1-3) Assigned reading and group discussion of research, literature. Hrs and credit arranged. Prereq: 3110, or consent of instructor.

4900 Seminar (1-3) Review, organization, and reporting of literature on selected topics. May be repeated for credit. Prereq: 3410 or consent of instructor. Hrs and credit arranged.

4978 Honors: Food Systems Administration (1-3) Special problems for juniors and seniors showing special ability and interest in institution administration. May be repeated for credit. Hrs and credit arranged.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20 Experimental Quantity Food Study (3, 3)

5210 Methods of Food Systems Research (3)

5220 Experimental Design of Food Systems Facilities (3)

5230 Food Systems Evaluation (3)

5240 Financial Management of Food Systems (3)

5310 Administration of Food Service Delivery Systems (3)

5500 Clinical Training in Health Care Agencies (3)

5700 Current Programs and Trends in Food Systems Administration (1-3)

5800 Problems in Food Systems Administration (1-3)

5850 Field Experience (3-9)

5900 Seminar in Food Systems Administration (1-3)

6110 Advanced Topics in Institution Administration (3)

6210 Manpower Planning and Training for the Food Service Industry (3)

6310-20 Quantitative Methods to Control Resources in Food Services Systems (3, 3)

6900 Seminar (1-3)

Home Economics (481)

Professors: L. M. Oeltzen (Dean), Ph.D. Wisconsin, D.Sc. Rhode Island; G.E. Goertz (Associate Dean), Ph.D. Kansas State.

Associate Professor: M. N. Perry (Dean for Graduate Studies), Ph.D. Tennessee.

Assistant Professor: V. S. Anagnost (Assistant Dean), M.S. Tennessee.

1010 Home Economics as a Profession (1) Scope of the profession of home economics; educational and professional preparation; personal qualities required and satisfaction to be gained from various careers within the profession. S/NC.

1510 Family Systems: Human Development (4) Definition, description and utilization of basic systems concepts as applied to development of individual and family; emphasis on professional development and contribution.

1520 Family Systems: Aesthetic Environment (4) Examination of near and far environment from an aesthetic perspective for quality of life of individuals and families.


3110 Methods of Community Services Development (3) Organization, educational responsibility, objectives, methods and evaluation of community services programs. Prereq: Psychology 2500 or equivalent.

3510 Family Systems: Consumer Resources (4) Appraisal and application of effective management of resources with implications for role of professional in the interactions of individuals and families with society. Prereq: 3 hrs of economics, junior standing.

4000 Senior Seminar (2-15) Personal application of related knowledge and professional competencies through experience in community service training to serve society in a professional capacity; gaining experience benefits to those professional career; scope of current research and career opportunities in home economics; comprehension of professional ethics required of a home economist. May be repeated. Maximum credit 15 hrs. Prereq: Junior or senior standing. Consent of department head required for credit beyond 2 hrs. S/NC.

4110 Community Services Programs with Adults (3) Procedures and techniques in working with adults; individual, group and mass methods. Taken as an off-campus course of field training together with 4120. Prereq: 3110 and consent of instructor.

4120 Community Services Programs with Youth (3) Procedures and techniques in working with youth. Taken as an off-campus course of field training together with 4110. Prereq: 3110 and consent of instructor.

4130 Methods and Procedures for Community Services Work (3) Individual, group, mass and indirect methods in community services work. Prereq: 3110. 2hrs and 1 lab.

4710 Contemporary Developments (1-3) Recent advances in specified areas of home economics, their implications for home economics and related professions. Prereq: Consent of instructor. Hrs arranged. May be repeated with departmental approval for credit up to 9 hrs.

4910 International Study Tour (6) See page 159. Prereq: Consent of instructor.

4978 Honors: Community Services Programs (3) Problems for juniors and seniors with special interest in community services programs. May be repeated. Maximum credit 9 hrs. Prereq: Consent of department.

GRADUATE

5060 Practicum (1-12)

5100 International Studies (1-15)

5210 History and Philosophy of Home Economics (3)

5220 Development of Community Services Programs (3)

5230 Evaluation of Community Services Programs (3)

5600 Home Economics in the Community (3)

5700 Current Programs and Trends in Human Resource Development (1-3)

5800 Problems in Community Services (1-3)

5900 Seminar in Human Resource Development (1-3)

6000 Doctoral Research and Dissertation

6110-20 Theoretical Issues in Human Resource Development (3, 3)

6210 Professional Issues in Human Resource Development (3)

6310 Advanced Topics (3)

6500 Methodological Issues in Home Economics (3)

6900 Seminar (1-3)

Home Economics Education (490)

Professors: N. P. Logan (Head), Ed D. Tennessee; I. Brown (Emeritus), Ph.D. Ohio State.

Associate Professors: J. H. McNair, Ph.D. Florida State; S. W. Miller, Ph.D. Ohio State.

The Department of Home Economics Education is included as an instructional unit in the Department of Vocational Technical Education in the College of Education (see page 123 for course offerings).

Professional subject matter courses are offered by the departments of the College of Home Economics for those preparing for secondary school teaching programs. The vocational home economics education curriculum is designed to
provide the requirements for certification in vocational home economics. The curriculum is listed on page 164.

Textiles and Clothing (971)

Professor: A.J. Trecce (Head), Ph.D. Ohio State.
Associate Professors: I.M. Ford, Ph.D. Pennsylvania State; B.C. Goswami, Ph.D. Manchester (Great Britain); C.J. Noel, Ph.D. Notre Dame; T.L. Vigo, Ph.D. Tulane.
Assistant Professors: R.P. Dowlen, M.S. Tennessee; M.F. Miller, Ph.D. Pennsylvania State.
Instructor: A.L. Bullock, B.S. Mississippi College.

1160 Costume Analysis (2) Analysis and application of design principles related to different figure types and activities. 1 hr and 1 lab.

1165 Clothing (3) Fundamentals of pattern alteration, fitting and construction with emphasis on design quality and construction compatibility. Prereq: 1160. 1 hr and 2 labs.

2110 Fashion (3) How fashion world works, from designers to consumer: fashion trends and cycles.

3330 Textiles (3) Textile products — study of consumer selection, preference and satisfaction with emphasis on performance. For non-majors only.

3410 Cultural and Functional Aspects of Textiles and Clothing (3) Cultural, socio-psychological, functional and technological developments in textiles and clothing. Prereq: 3 hrs of each of the following: child development and family relationships, economics, 4 hrs sociology or anthropology or psychology.

3420 Textiles I (3) Consumer-oriented study of textiles, emphasizing fibers, fabric constructions and finishes in relation to use, serviceability and care of apparel and household fabrics. Prereq: 12 hrs chemistry or physics or biology or botany. 2 hrs and 1 lab.

3440 Clothing II—Advanced Construction (3) Comprehensive study and investigation of fabric designs and processes utilizing basic principles including fitting, elementary flat pattern, quick tailor methods and couture finishing techniques. Prereq: 1150. 1 hr and 2 labs.

3450 Consumer Issues: Clothing for Contemporary Families (3) Problems of clothing consumption encountered during various stages of family life cycle. Prereq: 1150. 1 hr and 2 labs.

3460 Design Analysis (3) Interpretation of dress design terminating in finished garments developed through media of flat pattern.

3470 Tailoring (4) Evaluation and use of tailoring methods as applied in selection, fitting and completion of tailored wool garments. Prereq: 3440. 3 labs.

3480 Historic Costume (3) Development of costume from ancient to modern times with consideration of historic, social, and economic settings.

3510 Fashion Merchandising: Planning and Control (3) Analysis of fashion merchandising practices and problems focusing on application of decision mechanisms. Prereq or coreq: 2110 and Accounting 2110.

4010 Textiles II (3) Recent textile developments with emphasis on man-made fibers, new construction techniques and finishes. Opportunity for individual investigation. Prereq: 3420.

4110 Fashion Buying (3) Analysis of buying practices, procedures, activities, techniques and underlying concepts fundamental to fashion merchandising. Prereq: 3510.


4130 Research Experiences (3-15) Individual juniors and seniors showing special abilities may be assigned to ongoing research within department or work in research and development laboratory or quality control department of fiber, chemical or textile company. Prereq: Recommendation of department head and research adviser. 4010, 4140, and 3 hrs of statistics. May be repeated. Maximum 15 hrs credit.

4140 Introduction to Textile Testing Methods (3) Methods and equipment used in physical testing as approved by recognized textile groups. Prereq: 3420. 1 hr and 2 labs.

4210 Elementary Textile Microscopy (3) Microscopic techniques as applied to study of textile fibers and fabrics. Prereq: 4010. 1 hr and 2 labs.

4220 Textile Fiber Chemistry (4) Chemistry of textile fibers with emphasis on structure, preparation and reactions. Implications relating to dyeing and finishing of fabrics. Prereq: One quarter of organic chemistry. 3 hrs and 1 lab.

4230 Theory and Interpretation of Fashion Design (3) Analysis and application of historical, sociological, cultural and environmental sources of costume design interpretation with emphasis on original contemporary design. Prereq: or coreq: 1150, 3410, and 3440. 2 hrs and 1 lab.

4240 Design Analysis II (3) Interpretation of dress design terminating in finished garments developed through the media of draping.

4510 Teaching Materials (3) Investigation, preparation and evaluation of teaching materials. For students planning to teach or do home demonstration work. Prereq: 3440, senior standing. 1 hr and 2 labs.

4620 Introduction to Field Experience in Merchandising (1) Interviews with store personnel, placement and planning for field experience. Prereq: Economics 2110-30, junior standing, concentration in merchandising option, approval of program coordinator. Open only to students who intend to enroll in 4630-40. May not be repeated.

4630 Field Experience in Merchandising (9) Off-campus, supervised experience in a cooperative program with business establishments which merchandise textiles and/or apparel. Prereq: 4620, senior standing, major in merchandising, and a minimum grade point average of 2.2; coreq: 4640. Offered fall quarter only.

4640 Methods in Field Experience (8) Investigation of training systems and store organization and personnel practices of a business establishment. Prereq: 4620, senior standing, major in merchandising, and a minimum grade point average of 2.2; coreq: 4630. Offered fall quarter only.


4710 Contemporary Developments (1-3) Student or staff initiated course for study of special topic(s) pertinent to the field; topics selected to be determined by students and instructor with departmental approval. Elective credit only. Prereq: Consent of instructor. May be repeated with departmental approval for credit up to 9 hrs.

4788-88-98 Honors: Textiles and Clothing (3, 3, 3) Individual problems for juniors and seniors showing special ability and interest in textiles and clothing. Admission only upon recommendation of head of department. Hrs arranged.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110 Textile Testing and Methods of Research in Textiles (3)
Kenneth L. Penagar, Dean
Mary Jo Hoover, Assistant Dean
Curtis L. Wells, Assistant Dean

The University of Tennessee College of Law commenced operation in 1890 and has continuously sought to provide high quality legal education in a university community.

While the principal objective of the Law College is to prepare students for the private practice of law, its total mission is more broadly conceived. The College of Law exposes students to the legal issues of our society enabling them to develop analytical skills in respect to the decision of law and statutes, the ability to communicate effectively to others their knowledge of the law, an awareness of the historical growth of the law, a knowledgeable appreciation of the interrelationship of law and society, and the ability to use law as an implement of societal control and development. Students are thus equipped to serve their community not only as advocates and counselors, but as policy makers and active, responsible citizens.

The coordinated program of the College of Law has three dimensions. Teaching and learning, research into and appraisal of our legal systems and institutions, and service to the community. Each plays a significant role in the College of Law as a modern law center.

The teaching and learning element of legal education at the College of Law involves a cooperative classroom interaction between faculty and students in the analytical study of a host of questions and problems found in today's legal profession. These involve decisional law, statutory interpretation, administrative regulation, techniques of trial and appellate advocacy, and the roles and responsibilities of the lawyer in advising and representing clients. While proper consideration is given to the problems of Tennessee law, the course of study is conducted with a view toward providing an awareness and understanding of the regional and national perspective so as to prepare our students for service in any state.

The College of Law is also directly involved in providing service to the community of which it is a part. A major element of public service is centered in the Legal Clinic where students, under the guidance of skilled and experienced licensed practitioners, provide legal services to indigent persons of Knox County. Additionally, through research, consultation, and other services to legal institutions and groups within the state, the College of Law seeks to participate in the development and improvement of the society in which its students may eventually practice law. The Public Law Research and Service Program and the Continuing Legal Education Program are primary examples of this function.

In combination, the direction and objectives of the Law College lead to the development not of a narrow technician, but of a student of the law with the perspective, breadth and understanding necessary for the accomplishment of the many tasks assigned by society to the legal profession.

The College of Law Building

Since 1950 the College of Law has occupied a building especially designed for teaching, study, and research in the law. In the spring of 1971 the Law College occupied the new wing begun in the fall of 1969. The new addition has doubled the available facilities. The library, the classrooms, and the offices are air-conditioned. Adequate classrooms, courtrooms, seminar rooms, a private office for each full-time faculty member, the well-equipped offices of the Legal Clinic, and a spacious, well-lighted Law Library are contained in this modern building. Stack space for more than 200,000 volumes will permit the repository of one of the largest law book collections in the South.

Legal Clinic

The University of Tennessee Legal Clinic was established in 1947. Though the Clinic provides legal assistance to indigent persons, it is designed primarily as a teaching device to communicate theory and practice. It introduces the student under faculty supervision to the law in practice through personal contact with clients and their problems. The Legal Clinic functions as a large law office and, in addition, gains experience in interviewing clients, writing legal letters, investigating and evaluating facts, preparing memoranda of law, preparing cases for trial or adjustment, and briefing cases. Classroom work supplements the handling of actual cases. The student is thus trained in the technique of law practice and the management of a law office. The ethical responsibilities of lawyers and their function as public servants are stressed. Under present rules of the Tennessee Supreme Court, Clinic students, under the direct supervision of the Legal Clinic staff, are certified to practice before all the courts of Tennessee.

The Law Library

The Law Library contains the official state reports of all states, the complete National Reporter system which covers all states and the federal courts, the Annotated Reports, standard sets of miscellaneous reports, the reports of the Canadian cases and of English cases from the yearbooks to date. In addition to these, there are adequate encyclopedias, digests and dictionaries, standard textbooks, law reviews, and current looseleaf services, totaling together more than 100,000 catalogued volumes. The Library is under the supervision of a law librarian who is trained in law and library science. The physical facilities, the collection of books, and the library staff combine to make the Law Library of The University of Tennessee one of the best in the South. Law students also have the use of the collection in the Undergraduate Library, which is located across the street from the Law Library, the Undergraduate Library a few blocks away and other branch libraries.
Degree of Doctor of Jurisprudence

The degree of Doctor of Jurisprudence will be conferred upon candidates who complete, with the required average, nine quarters of study and who have 126 quarter hours of credit, including all required courses. The required average is 2.0 and that average must be maintained on the work of all nine quarters and also in the last three quarters. Averages are computed on weighted grades. Grades are on a numerical basis from 0.0 to 4.0. A grade of 0.5 or below is a failure.

Eligible law students may receive credit towards the J.D. degree for acceptable performance in up to three (3) courses taken in other departments at The University of Tennessee. Course selection and registration are subject to guidelines approved by the law faculty which includes the requirement that any such course be acceptable for credit towards a graduate degree in the department offering the course.

Note: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for this college.

Dual J.D.-M.B.A. Degree Program

The College of Business Administration and the College of Law offer a coordinated dual degree program leading to the conferred of both Doctor of Jurisprudence and the Master of Business Administration degrees. A student pursuing the dual program may save up to two academic quarters (24 quarter hours) of course work which would be required if the two degrees were to be earned separately.

Admissions. Applicants for the J.D.-M.B.A. program must make separate application to, and be competitively and independently accepted by, the College of Law for the J.D. degree and the Graduate School and College of Business Administration for the M.B.A. degree, and by the Dual Degree Committee. Students who have been accepted by both colleges may commence studies in the dual program at the beginning of any quarter subsequent to matriculation in both colleges, provided, however, that dual program studies must be started prior to entry into the last 42 quarter hours required for the J.D. degree and the last 48 hours required for the M.B.A. degree.

Curriculum. A dual degree candidate must satisfy the graduation requirements of each college. Dual degree students withdrawing from the dual degree program before completion of both degrees will not receive credit toward graduation from either college for courses in the other college, except as such courses qualify for credit without regard to this dual degree program. For students continuing in the dual degree program the J.D. and M.B.A. degrees will be awarded upon completion of requirements of the dual degree program.

The College of Law will award credit toward the J.D. degree for acceptable performance in a maximum of 12 quarter hours of approved graduate-level courses offered by the College of Business Administration. Three of the 12 quarter hours must be earned in Accounting 5810 or a more advanced accounting course. If College of Law credit is given for such accounting courses the law student may not receive College of Law credit for Legal Accounting (Law College Course No. 8590).

The College of Business Administration will award credit toward the M.B.A. degree for acceptable performance in a maximum of 12 quarter hours of approved courses offered by the College of Law.

Except while completing the first year grades in the College of Law, students are encouraged to maximize the integrative facets of the joint program by taking courses in both colleges each quarter.

Grading of Grades. For grade recording purposes in the College of Law for graduate business courses and in the College of Business Administration for law school courses, grades awarded will be converted to either Satisfactory or No Credit and will not be included in the computation of the student's grade average or class standing in the college where such grades are so converted. The College of Law will award a grade of Satisfactory for a graduate business course in which the student has earned a B grade or higher and a No Credit for any lower grade. The College of Business Administration will award a grade of Satisfactory for a College of Law course in which the student has earned a 2.3 grade or higher and a No Credit for any lower grade. Grades earned at either college may be used on a regular graded basis for any appropriate purpose in the college offering the course. The official academic record of the student maintained by the Registrar of the University shall show the actual grade assigned by the instructor without conversion. The student must pass a final written comprehensive examination to receive the M.B.A. degree.

Satisfactory/No Credit Option

1. Course eligibility
a. Required courses may not be taken on a Satisfactory/No Credit (S/NC) basis except as specifically designated.

2. Satisfactory/No Credit
a. Election to take courses on a Satisfactory/No Credit basis must be made at the time of registration and cannot be changed thereafter.

b. Students who register for a course Satisfactory/No Credit when they are ineligible to do so will be required to change to regular grading when the error is discovered.

b. Credit will be given for a course taken on a Satisfactory/No Credit basis only in quarters in which the student completes (receives a grade in) at least 10 hours on a regular grade basis.

c. Students electing the Satisfactory/No Credit basis must meet all requirements imposed on students taking the course on a regular grade basis, e.g., attendance, term paper, recitation, etc.

d. Examinations and other work of students electing a Satisfactory/No Credit basis shall not be graded separately or differently from that of other students.

e. For purposes of Satisfactory/No Credit grading, Satisfactory shall mean a grade of at least 2.0.

f. A student electing Satisfactory/No Credit who makes 2.0 or above shall receive credit for the course, but the grade shall be recorded as S and will not be used in determining the grade average.

g. A student electing Satisfactory/No Credit who makes below 2.0 will receive an NC for the course and neither this grade nor the hours for the course will be used in computing the grade average or hours credit.

h. A maximum of three courses may be taken on a Satisfactory/No Credit basis.

Maintenance of a Satisfactory Record

No student will be excluded from the College of Law for academic reasons prior to the completion of three quarters of academic study. A full-time student who fails to achieve an overall average of at least 2.0 upon completion (receipt of a grade) of three quarters of academic study shall be excluded. A student who obtained permission to vary the first-year full course load shall be excluded if such student fails to achieve an overall average of at least 2.0 upon completion (receipt of grade) of all required first-year courses, or upon completion of 40 hours, whichever first occurs.

Maximum Course Load Per Quarter

18 hours is the maximum for Law School. If a student does not satisfactorily complete 12 hours in a quarter, then for the remainder of studies the student is restricted to 16 hours per quarter.

Clinical Courses

A student may take no more than a total of three clinical courses for law school credit and normally no more than one clinic course per semester. Clinical courses are 8600, 8605, 8620, 8625, 8630, and 8632-34.

Admission

Information regarding admission, financial aid, academic policies, extracurricular activities, and student services is available in the College of Law Bulletin. Students interested in the College of Law should obtain a copy of the Bulletin from the Office of the Assistant Dean, The University of Tennessee, College of Law, 1505 West Cumberland Avenue, Knoxville, Tennessee 37916. Completed application should be received before March 15 of the year of expected admission.
Faculty

Professors:

Associate Professors:

Assistant Professors:

Instructor:
M.J. Hoover, J.D. Brooklyn Law School.

Instructors in Law and Staff Attorneys in the Legal Clinic:

* Distincted professor.

Program of Instruction

The following program is designed to give the student an adequate preparation for the practice of law. From twelve to fifteen hours of classroom work a week are required of all full-time students. The required courses will be taken as early in the law course as possible or as scheduled by the law faculty. See statement of course availability at end of section.

REQUISITE COURSES


8020 Contracts I (5) The basic agreement process and legal protection afforded contracts. Problems of offer and acceptance, interpretation, illegality, and the statute of limitations.

8030 Contracts II (4) Continuation of study begun in Contracts I. Concentrating on remedies, conditions, impossibility and frustration, third party beneficiaries, assignment and delegation, and discharge.

8040 Criminal Law (4) Course on substantive aspects of criminal law. General principles applicable to all criminal conduct, then specific analysis of particular crimes. Substantive defenses to crimes, including insanity, intoxication, mistake, necessity, legal duty, self-defense, and duress.

8070 Legal Process (3) Introductory course on judicial process. Brief survey of judicial organization and procedure, legal history, case analysis, significance of precedent, influence of the judge as policy maker, adversary system, and role and responsibilities of the lawyer as advocate. Legislative interpretation.

8110-11 Research and Writing I, II (2, 2) This three-quarter sequential offering is designed to provide the student with a progressively more sophisticated involvement in legal research and writing. Fundamentals of legal bibliography with an emphasis upon techniques and research skills will be an integral part. Among other components to be included are preparation of a client letter, drafting of pleadings, contracts and other instruments, the preparation of a memorandum of law, and preparation and presentation of an appellate argument (written and oral). Classes would be divided into small sections, and individual criticism given on all work submitted. Lectures on research writing and advocacy skills will be included. 8110 and 8112 graded S/N/C.


8140 Property II (5) The recording system, title assurance, easements, nuisance, lateral support, water rights, zoning, and eminent domain.

8180 Torts I (4) Intended interference with the person, assault and battery, false imprisonment. Negligence and standard of care, proof of negligence. Affirmative duties, immunities, actual causation, and contributory causes.


8300 Constitutional Law I (4) Judicial review, limitations on judicial power, national legislative power, regulation of commerce, power to tax and spend, other sources of national power, state power to regulate and tax, intergovernmental immunities.

8310 Constitutional Law II (4) Freedom of expression, association and religion. Fourteenth Amendment rights of criminally accused, including discrimination as to race, sex, etc., and apportionment, concept of state action in matters of civil rights.

Either 8300 or 8310 will satisfy the Constitutional Law requirement. One must be taken for that purpose and the other may be taken as an elective.

8660 Legal Profession (3) Role of the lawyer in society and ethical responsibilities implied in that role. Admission to the Bar, the organized profession, solicitation, advertising, unauthorized practice, conflicts of interest, decision to represent or withdraw as counsel; fiduciary relationship, advocacy and its limitations, fees and disciplinary procedures.


ELECTIVE COURSES

8050 American Legal History (3) Examination of historical development of the law, legal institutions, legal profession, and legal education from colonial times to present. Historical relationship of legal system to society emphasized.

8060 Criminal Procedure I (3) Due process, equal protection, arrest, search and seizure, wire tapping and electronic eavesdropping, entrapment, right to counsel, self-incrimination, interrogation and confessions, exclusionary rules.

8065 Criminal Procedure II (3) Bail, prosecutor's discretion, Grand Jury, preliminary hearing. Jurisdiction and venue, joinder and severance, double jeopardy, appeal, habeas corpus.
8160 Interviewing and Counseling (3) Lawyer’s role includes interviewing, counseling, and legal advocacy. Designed to increase interpersonal skills by developing heightened sensitivity and understanding of emotional and behavioral coping and motivational forces. Use of videotape techniques and role playing. Models developed from which students can analyze and evaluate class- room and tape performance.

8170 Trial Practice (3) Criminal and civil litigation, with primary emphasis on trial problems and preparation. Basic trial strategy, professional responsibility, fact investigation, preparation, discovery and presentation of evidence, selection and instruction of juries, opening and closing arguments.


8220 Agency and Partnership (4) Principal and agent. Master and servant. Authority, unauthorized transactions, notice, ratification, restitution. Parties to transactions in individual and partnership areas. Partnership ancillary provisions, dissolution, winding up, Organizational problems and devices to reduce risk. The Uniform Partnership Act.

8240 Arbitration Seminar (3) Arbitration of labor and employee disputes. Legislative developments, nature of process, relationship to collective bargaining, selected arbitration problems on various topics, the role of arbitrators and the role of lawyers and arbitrators in the process. When course is not offered law students with law firm affiliations Economics 4000.


8280 Conflict of Laws (5) Jurisdiction, foreign judgments, choice of law, contractual limitations, choice of law, and classification.


8345 Criminal Law Seminar (3) Advanced problems in criminal law and administration of justice.

8390 Family Law (4) Survey of laws affecting the formal and informal family relationship. Topics include premarital disputes, antenuptial contracts, creation of property arrangements, legal effects of marriage, support obligations within the family, legal separation, annulment, divorce, alimony, property settlements, child custody, child support, adoption, abortion, and illegitimacy.

8380 Equity (4) Jurisdiction and power of courts of equity. Specific performance. Injunctions.

8400 Estate Planning (3) Problems of estate planning both inter vivos and testamentary. Principles of wills and trusts and the taxation and administration of various types of ownership. The law and practice of fiduciary administration, insurance, wills, trusts, inter vivos contracts, and estates. Use of videotape techniques. Research on assigned topics. Drafting of wills for hypothetical fact situations. Prereq: 8560 and 8840. In addition, recommended that student have had as many of following courses as possible: Wills, Personal Property, Corporations, Taxation Income, Partnerships and Trusts.

8420-40 Evidence I & II (3, 3) Rules regulating introduction and exclusion of oral, written, and demonstrative evidence, including relevancy, competency, impeachment, hearsay, privilege, judicial notice, presumptions, and burden of proof.

8460 Federal Courts (4) Jurisdiction of federal courts, and conflicts between federal and state judicial systems, including nature of judicial power, federal question, diversity, removal, jurisdiction in federal court, choice of state or federal law, habeas corpus, abstention, enjoining state proceedings, appellate jurisdiction and joinder of parties and issues.

8490 Environmental Law (4) Survey course examining basic federal and state statutory schemes for air and water quality, together with other legal provisions such as the federal (plus related states) Environmental Quality Control Act. Selected introduction to role and scope of federal, state, and local agencies in enforcing and proposing new laws and regulations.

8500 Future Interests (4) Law of future interests, including reversioners, remaindermen, possibilities of reverter and rights of entry, executory interests, construction of limitations, and rule against perpetuities.

8510 Government Contracts (3) Principles relating to government procurement, both federal and state, award, performance, and termination of contracts. Administrative settlement of disputes arising under government contracts. Prereq: 8290.


8525 International Business Transactions (3) Legal status of persons abroad, acquisition and use of property within a foreign country, development of business abroad as a corporation, engaging in business within a foreign country, and expropriation or annulment of contracts or concessions. Prereq: 8305, 8530.

8530 International Law I (3) International agreements, organizations, recognition of states, nationality, territory, jurisdiction and immunity.

8533 International Law II (3) International claims, expropriation, force and war.

8535 Jurisprudence (3) A comparative examination of legal theories including natural law, idealism, historical jurisprudence, utilitarianism, analytical jurisprudence, sociological jurisprudence, legal realism, and the policy science approach.

8540-42 Labor Relations Law I, II (3, 3) Evolution of labor relations laws, rights of self-organization; employer rights; strikes and picketing; collective bargaining; public employee labor relations; internal union affairs; individual rights; unfair labor practice; Employment discrimination; federalism and preemption and unions and the antitrust laws. Courses recommended in sequence, but one offering may be elected.

8545 Juvenile Law Seminar (3) After examining the unique history and philosophy of juvenile justice system, course will consider jurisdiction, judicial and extra-judicial functions of juvenile court, and various dispositional alternatives. Students will read judicial opinions and materials from fields of history, sociology, and psychology. Knox County Juvenile Court will serve as laboratory for students, and professional staff from the Court will participate in seminar on regular basis.

8560 Labor Relations Law Seminar (3) Study and discussion of selected labor relations law problems.

8555 Negotiations and Dispute Settlement (3) Study of: (1) Negotiations process and its role in legal disputes, with training in art of negotiating and settling disputes in manner which fulfills the needs and requirements of clients and avoids unnecessary litigation; (2) Negotiative use and further development of institutional methods of dispute settlement, including pretrial procedures, grievance procedures, mediation and other third party intervention.

8560 Law, Language and Ethics (4) An intermediate level jurisprudence-type course. Law is the mind’s attempt to defend, direct and administer human activity, and its development. Internal and external factors underlying formal legal reasoning and statement. Analysis of judicial reasoning and legal concepts through the methods of epistemology.


8580 Law and Current Problems Seminar (2-3) Credit hours determined at the option of instructor. May be repeated for credit.

8590 Legal Accounting (2) Course designed to familiarize law students with accounting problems and techniques, and to enable them to use and understand accounting information.

8600 Civil Advocacy (5) Nature, function, dynamics, and processes of lawyering and learning, with emphasis on development of frameworks and models useful in helping law students evaluate and analyze roles in legal system. In addition to classroom component, supervised field work experience will be offered to introduce students to such lawyering skills as negotiations, pleadings, drafting and general trial preparation and practice. Prereq: 8940 and 8420 or 8440.

8605 Advanced Civil Advocacy (5) Students continue and complete complex civil cases. Expanded opportunities for negotiations, trial advocacy, and public interest litigation. Classroom component deals in more advanced skills and strategies. Prereq: 8420.

8615 Regulated Industries (3) Federal and state governmental regulation of natural monopolies and other "regulated industries" (e.g., transportation, public utilities, broadcasting).

8620 Criminal Advocacy (5) Classroom component devoted to trial skills and strategies. Case loads diversified among crises with intensive staff supervision. Courtroom experience limited to pre- liminary hearings and misdemeanor charges in general sessions and city courts. Prereq: 8060 or 8065 and 8420 or 8440.


8630 Specialty Clinic (3) Each component headed by a faculty supervisor. Provides experience on a specialized problem in conjunction with seminar on course topic. Major litigation and law reform efforts may be involved.

8632-34 Economic Development Clinic (2, 3) Two-quarter course in the role of economic development ventures. Emphasis on non-litigative skills: negotiation, counseling, document drafting, business management, grantmanship and related representations before administrative agencies. Course extends two quarters and completion of both quarters is required. One hour credit. Incomplete (I) will be assigned for 8632 (first two-hr section). Course to be graded numerically or with completion of 65% or better (second section, 3 hrs credit). Prereq: 8740 and 8662.

8640 Legal Draftsmanship (2) Independent drafting by students under direct supervision of instructor.

8650 Intellectual Property (3) Protection for intellectual property under federal and state law, patents, trade secrets, copyright, and protection of intellectual property rights.

8670 Legal Writing (1-4) Legal research and writing of papers on problems of law. Work on Tennessee Law Review may count toward fulfillment of requirements. One hour credit may be given for preparation of brief in National Moot Court Competition. May be repeated for credit. Prereq: Faculty consent.
8880 Legislation (3) Approximately half the course is devoted to traditional case method approach to such problems as interpretation, drafting, and enacting private law. The remainder of the course is devoted to class project in which class considers a potential area for legislative reform from preliminary research to legislative bill drafting, final drafting, parliamentary debate and voting.

8900 Modern Land Use Law (3) Land use planning, nuisance, zoning, and eminent domain.

8700 Local Government Law I (3) Distribution of power between state and local governmental units. Sound and private efforts in local government operations. Creation of local governmental units and determination of their boundaries. Home Rule.

8705 Local Government Law II (3) Problems presented by fragmentation of local government units. Current solutions to include government as authorized by Tennessee law. Problems in the financing of local services. Current constitutional issues (e.g., school financing and land use control). Influence of federal programs on local government finance and decision making.

8710 Oil and Gas Law (3) Selected materials on nature of interest, conveyancing, royalties, grants and reservations, leases and taxation.

8720 Advanced Constitutional Law (3) Select problems in constitutional law. The course is designed to give students an understanding of the principles upon which our political system is based. Emphasis will be placed on current issues in the field of constitutional law.

8723-35 Tennessee Legal System (3,3) Basic legal system of Tennessee from the perspective of its impact on day-to-day life of citizens. Focus on law of contracts, real property with emphasis on landlord and tenant law, juvenile law, criminal law, family law, bankruptcy, governmental law, and the legal rights of individuals. Law students are assigned readings. Prereq: 8300 and 8310 or consent of instructor.

8730-35 Tennessee Law Society (3,3) Basic legal system of Tennessee from the perspective of its impact on day-to-day life of citizens. Focus on law of contracts, real property with emphasis on landlord and tenant law, juvenile law, criminal law, and the legal rights of individuals. Law students are assigned readings. Prereq: 8300 and 8310 or consent of instructor.

8740 Private Corporations I (3) History and nature of the corporation; selection of appropriate form of business enterprise; C and S corporations; judicial and legislative regulation of corporations; incorporation; banking and insurance, partnership and limited liability, financial statements, and capital structure of corporations. Prereq: 8735.

8750 Remedies (4) Study of judicial remedies, including damages, restitution and equitable relief. Major attention will be paid to problems connected with the availability and scope of equitable remedies, especially specific performance and injunctions, but Remedies is not a substitute for Equity. One objective of the course will be comparative evaluation of remedies available in given situations.

8760 Private Corporations II (3) Corporate finance; rights, duties, and responsibilities of shareholders; directors and officers. Prereq: 8750.


8790 Advanced Bibliography and Research Techniques (2) A survey of materials not covered in Research and Writing I. Included will be use of U.S. government documents; preparation of legislative histories for state and federal legislative materials; specialized research tools in areas of taxation, labor law and international law.

8800 Sales (3) Art. 2 (Sales) and Art. 7 (Documents of Title) of the Uniform Commercial Code.

8810 Secured Transactions (3) Brief survey of security interest and guaranty. Art. 9 (Security Interests in Personal Property) of the Uniform Commercial Code.

8815 Race and Sex Discrimination and the Law (4) Comparison of race and sex discriminatory practices, and impact of these practices on society, including the affect education, employment, housing, political participation, and other social and economic activities. Legislative, judicial and administrative materials.

8820 Securities Regulation (3) Advanced problems of governmental regulation of issuances of securities.

8830 Social Legislation and Employee Benefits (3) A study of legal problems arising under such programs as workmen's compensation, wage and hour laws, unemployment compensation, public assistance, Social Security, and Medicare.

8840 Taxation (State, Gift and Inheritance) (3) Federal Estate and Gift Tax laws. History and development. Relationship of the two taxes. Procedure and review before boards and courts. Preparation of a retirement plan or will. Legal facts and presentation of research results on assigned topics. Problems involving the law of several states are assigned.

8850 Seminar in Law and Mental Health (3) Composed of equal number of law and medical students. Assigned readings. Pair of law and medical students to prepare a case. Jointly taught by professor and psychiatrist.


8862 Taxation (Income) II (3) Taxation of formation, operation and dissolution of the corporation; partnerships; small businesses; trusts; estates.

8865 Taxation (Income) III (3) Corporate reorganizations; methods of corporate distributions; sale of corporate business; other income tax problems of corporations.

8870 Seminar in Business Planning (3) Selected problems on corporate and tax aspects of business planning and transactions.

8890 Seminar in Environmental Protection (3) Through a review of current input of selected experts, course will focus on specific problems of mitigating defense in the environment and mobilizing public and private resources in defense of the environment. Problems of proving environmental impact of selected projects, interpretation and evaluation of scientific data, use of expert witnesses. Attention will also be given to special environmental concerns of the region, e.g., TVA operations, mining, forest management, wildlife preserves.


9810 Administrative Law Seminar (3) In-depth study of principles of administrative law not covered in basic courses, as discretion, choice of adjudication of rulemaking to develop administrative policy, consistency in administrative action.


9830 Seminar in Consumer Protection (3) Selected problems in consumer protection.

9835 Law and Medicine Seminar (3) Examination of medical profession's involvement in judicial process. Include: (1) medical malpractice and alternatives to liability-based liability; (2) responsibilities for disposition and care of dead bodies and dead legal principles (e.g., testamentary bequests) to medical profession's involvement in the care of the seriously ill; (3) professional medical proof and testimony; (4) medical-legal aspects of euthanasia; (5) other more specific matters such as legal restrictions on medical profession's involvement in the care of the seriously ill. Home Rule.


9845 Trial Moot Court I (1) Experience and training in trial of law and equity cases. Third-year students will act as counsel in all aspects of trial practice. Knox County Criminal Court judges serve as judges of Trial Moot Court. S/NC.

9850 Trial Moot Court II (1) Training in trial of law suits. S/NC.

9855 Seminar in Trade Regulation (3) Study and discussion of selected problems arising under antitrust laws and laws applicable to regulated industries.


9875 Water Law (3) Survey study in water law, including case studies and water law doctrines. Let us have a special seminar on organ transplantation; (Same as Environmental Engineering 4810 and Water Resources Development 4810.)

9885 Directed Research (1-3) Independent research by a student under the direction of an instructor. May not be taken for credit maximum of once each year in last two years of study.

9890 Land Finance Law (3) Financing devices such as mortgages, deeds of trust and land contracts, problems involved in transfer of interests subject to these devices, and problems incurred in event of default. Consideration also directed to contemporary problems arising in such areas as condominiums, cooperatives, housing subdivisions and shopping centers.

9898 Land Acquisition & Development (3) Alternative business forms will be assigned teams of students who will then present and prepare for seminar discussion all major documents (notes, deeds, prospectus, etc.) necessary to accomplish the acquisition or development of large pieces of raw land. Prereq: 8890.

Course Offerings Subject to Change

The necessity of adjustments to accommodate changing conditions may dictate modifications to the course offerings and other features of the program described above. Accordingly, the College of Law reserves the right to make such variation in its program as circumstances may require. Prospective students who are interested in the precise course offerings at a given time or who desire other special information should make inquiry in advance. It is necessary to offer some courses and seminars only on an every-other-year basis. Choice is based on subject matter and past patterns of student enrollment. In order to facilitate student and faculty planning these courses and seminars are listed as follows: 8350, 8510, 8520, 8525, 8570, 8705, 8710, 8720, 8780, 8830, 8930, 8955. These may be offered in the summer quarter session with the addition of an additional faculty, but this will be done only after satisfying other priorities.
College of Liberal Arts

Robert G. Landen, Dean
Charles O. Jackson, Associate Dean
Boyd L. Daniels, Assistant Dean for Student Academic Affairs

The arts and sciences encompass the entire range of human knowledge, from the earliest records to the latest laboratory results. All human beings have observed about themselves, about their societies, and about the natural world around them is of concern to one or another of the arts and sciences.

The curriculum of the College of Liberal Arts reflects this wide-ranging concern with the life of the mind. It emphasizes the breadth of human knowledge, perceived not only in terms of the traditional categories of the humanities and the natural and social sciences but also in broader perspectives which extend across academic fields and reach beyond the boundaries of a college of liberal arts. It also stresses depth of learning, thereby seeking to acquaint the student with the rigors of the intellectual process. Through a study of the liberal arts one thus learns to participate in an intellectual tradition which is independent of particular teachers and which guides one in the choice of subjects for investigation and in the interpretation of those subjects. With time the individual begins to apprehend the great outlines of knowledge, the principles upon which it rests, the scale of its parts, and its lights and shadows.

The central purposes of a liberal education include the encouragement of intellectual tolerance, a dedication to the quest for knowledge as a worthwhile goal in and of itself, and the cultivation of a responsible, creative, individual mind. These qualities should enable one to develop throughout life an ability to reason and to express oneself clearly, an incentive to absorb emerging knowledge, and a competence to confront the uncertainties of human experience. For

the student whose interests and talents lead into research, scholarship, and teaching, a liberal education provides an invaluable foundation. For the individual who enters business, industry, the professions, or government service, it furnishes a broadly useful and well-rounded educational background. For all it offers the opportunity to share in a rich intellectual heritage, in the adventures of the mind, and in the life of the educated imagination. A liberally educated person is identified not so much by specific knowledge as by quality of mind and by creative response to the challenges of the times.

At the heart of a liberal education is an appreciation of and a familiarity with a great triad: language, literature, and the arts; history and society; science and mathematics. These three great wellsprings of human thought are sources of the programs of study offered students in the College of Liberal Arts.

Programs of Study

Granting the broad, general goals of a liberal education, students come into the College of Liberal Arts with a wide variety of specific educational and vocational objectives. Recognizing this diversity, the college offers a number of different programs of study leading to the baccalaureate degree, and also several preprofessional curricula which prepare the student for advanced study but do not lead to a degree from this college.

Degrees Offered

(1) BACHELOR OF ARTS

The Bachelor of Arts is the basic liberal arts degree, representing the attainment of a broad knowledge of the arts and sciences as well as a comprehensive understanding of one or more areas of special interest. Four programs leading to this degree are open to the student:

(a) Basic Program—The program appropriate for most B.A. students, it is developed around broad area

requirements in the Triad plus intensive study in one or more of the specified departmental or interdepartmental major fields described below.

(b) Individualized Program—Designed for students whose educational goals are best met by a program tailored to their particular needs, it is similar to the Basic Program in broad area requirements but permits the student to develop an individual concentration incorporating work in two or more departments.

(c) College Scholars Program—Intended for a limited number of students who are especially highly qualified and motivated and who have been selected to undertake this honors-level program, the College Scholars Program permits the student maximum freedom to design a curriculum to meet particular interests and goals.

(d) Pre-Professional Program—The Pre-Professional Program is offered for those who wish to participate in one of the cooperative 3-1 curricula in the health sciences (medicine, dentistry, pharmacy, or medical technology). The student proceeds directly to specialized training in the chosen area after the third year of liberal arts study and offers the first year of professional study in lieu of a major concentration in the College in satisfying the requirements for the B.A. degree.

(2) BACHELOR OF FINE ARTS

The Bachelor of Fine Arts degree represents intensive study preparing students for graduate study and professional positions in art. The degree is offered with a major in studio art. Recommended course combinations for those who desire to concentrate in communication design, drawing, painting, oil, watercolor, printmaking or sculpture are available in the art department office.

(3) BACHELOR OF MUSIC

The program leading to the Bachelor of Music degree prepares students for graduate study and for positions in which a professional degree is required. The degree is offered with a major in music which has concentrations in music theory,
Program Planning

Each student's academic program is highly individualistic, reflecting that person's special interests, goals, and aspirations. Unfortunately, it will reveal a growing intellectual sophistication and the development of particular motivations. On occasion, unfortunately, it gives indication of frustration and lack of clear direction. Viewed as a whole it may appear to be a miscellany of unrelated courses which were chosen almost capriciously; or it may be a carefully selected curriculum which the student brings together in a way which represented for that individual the most appropriate and effective way of attaining education goals.

The importance of program planning can hardly be overemphasized. A few students enter the College with firm educational objectives in mind and their programs develop quite readily around these predetermined goals. Many, however, do not reach that stage of certainty until their academic careers are relatively far advanced. For these persons the exploration of possible directions and programs, in consultation with faculty advisers, is an important part of the educational process. It is essential for these students to develop their programs carefully and creatively in order that maximum flexibility in their ultimate decision making may be assured.

A basic decision, of course, is the degree to be sought. If it is one of the three professional degrees (Bachelor of Fine Arts, Bachelor of Music, or Bachelor of Science in Chemistry), the student's program will be somewhat circumscribed, for these degrees are necessarily more prescriptive than the general liberal arts degree. If the student chooses to work for the Bachelor of Arts degree, the three elements which make up the curricula leading to that degree will need to be kept in balance: the broad requirements in the Triad, the major area, and the elective courses which support and supplement the work in the first two categories. Most students find it desirable to lay a broad foundation by taking courses which will satisfy Triad requirements in the first two years, thus reserving most of the final years for in-depth study in the area of concentration. Elective courses may be taken at any time.

Advisers in the Liberal Arts Advising Center (220 Ayres Hall), in the various major departments, in the University Counseling Center, and elsewhere on campus are available to assist students with their program planning. In the final analysis, however, only the student can determine the program which will best satisfy particular needs.

Requirement for Degrees

Bachelor of Arts

As has already been stated, the general liberal arts degree is the Bachelor of Arts, and it is the appropriate objective for most students in the College of Liberal Arts. Requirements for this degree and the several curricular programs which lead to it will now be discussed in detail.

Note: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

GENERAL REQUIREMENTS

Each student seeking a Bachelor of Arts degree must develop a program which includes the following:

1. A minimum of 180 credit hours;
2. At least 60 credit hours in courses numbered 3000 and above;
3. Appropriate work to satisfy the breadth requirements of the Triad, counting no course for more than one Triad area (Basic Program, Individualized Program, and Pre-Professional Program only);
4. A major consisting of at least 36 credit hours in courses numbered 2000 or above as specified by the department or program, and counting no course in this major which has been used for Triad credit. (A course which satisfies a Triad requirement may serve, however, as prescriptive in a major.) A minimum grade of C must be earned in every course counted as part of a major. Students transferring from other institutions must complete at least 12 credits at The University of Tennessee, Knoxville in each major awarded on this campus.

Note on Multiple Majors:

After the general requirements described above have been satisfied, additional majors may be recorded on the transcript without regard to course overlap among majors or among these additional majors and Triad requirements. Students developing multiple majors must specifically declare this intent at the time they apply for graduation. Once a student has graduated, the establishment of additional majors becomes subject to University second-degree requirements.

I. Basic Program

A. THE TRIAD:

Language, Literature, and the Arts

Science and Mathematics

Language, literature, and the arts play a vital role in shaping human experience and perception. They give expression to human thought and feeling and give form and order to a sense of the world. The written and spoken word, the dramatic motion and gesture of theatre, film, and dance, the sensuous structures which address the eye and ear in painting and sculpture, architecture and music—all of these help to define what is human.

It is important that every student of liberal arts become acquainted with these modes of experience within this culture and through exposure to cultures that are foreign, distant, and strange. To know what one is not is essential for knowing what one is.

Although there is no universal formula for determining which disciplines, skills, and enjoyments are of primary or of secondary importance, the written and spoken word has a wider range of reference than any other human skill. A basic competence in writing and reading is thus a minimal condition for knowing how to think about and relate all other activities.

The study of history is an integral part of a liberal education. Because human beings build on one another's experience, a clear understanding of the present requires an historical perspective. Such perspective may be developed by a number of courses, including the traditional survey of world civilizations and other broad surveys such as Asian history, Latin American history, history of the United States, and Afro-American history. More specialized courses in the history of particular segments of human experience, e.g., philosophy or religion, may also prove valuable.

A liberal education presupposes not only an awareness of the past but also a familiarity with contemporary social institutions, processes, and practices. From a wide variety of offerings in the social sciences the student may choose courses useful in acquiring that familiarity. Only by such knowledge can people of good will hope to maintain humane values in a world where industrialization, urbanization, and other dimensions of technological change challenge traditional patterns of individual and collective behavior.

Study of science and mathematics develops in the student an inquiring attitude toward the natural environment and confidence in the ability to understand scientific explanations of diverse phenomena. These ends may be realized through an understanding of the empirical and the rational in scientific methods of inquiry and an awareness of the limitations of science and technology in solving problems. The student should attain a knowledge of the way in which the development of science and technology has affected beliefs, philosophies, and the development of civilization.

Specific Requirements in the Triad

(1) Language, Literature, and the Arts

(a) Writing Proficiency

Each student is required to demonstrate ability to use the English...
language effectively and coherently in one of the following four ways:

(i) By completing nine credits in English writing courses in one of the following series: (1) English 1010, 1020, and three additional credits drawn from 1031, 1032, or 1033. Students who complete 1020 with the grade of A have the additional option to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the department. (2) English 1018, 1028, 1038. Students who obtain the grade of A or B in 1028 have the additional option, with permission, to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the department. (3) English 1431, 1441, 1451.

(ii) By earning a score of 4 or 5 on the College Board Advanced Placement Test in English; or, with special permission, by earning a score of 3 on that examination and completing one 2000-level course in English at The University of Tennessee, Knoxville, with a grade of B or better.

(iii) By passing (normally after completing one quarter of freshman English at UT) a proficiency examination in writing, administered by the Department of English in cooperation with the Committee on Writing Standards.

(iv) By completing 3 hours of freshman English followed by a minimum of 6 hours in courses which require substantial emphasis on writing. The writing-emphasis courses are identified by the Committee on Writing Standards; a list of those approved may be obtained in the office of the Department of English or in the Liberal Arts Advising Center.

Note: Students should normally take English in the first quarter of their registration and continue to take English or a writing-emphasis course in each succeeding quarter until this requirement is met.

(b) Literature, Foreign Language, and the Arts

The student may select any one of the following three options to satisfy this requirement:

(i) 8 hours of literature in a foreign language in the 3000-level or above. Prerequisite to this option is intermediate-level competence in the language, demonstrated by diagnostic (non-credit) or proficiency (credit) examination or by completing a 2000-level sequence in that language.

(ii) Intermediate-level competence in a foreign language demonstrated by diagnostic (non-credit) or proficiency examination or by completing a 2000-level sequence (or an approved equivalent) in that language, and a minimum of two courses of literature in English (or fallacy in English or in translation) drawn from the list of courses published by the Committee on Language, Literature, and the Arts, available in the Liberal Arts Advising Center. A minimum of two years of high school study will often qualify a student for entry into a 2000-level language sequence.

(iii) 24 hours in an integrated program in literature, culture, and/or the arts, focusing either on (1) a particular nation or area other than the United States, or (2) a comparative study of literary and artistic modes, genres, or movements. Suggested programs are published by the Committee on Language, Literature, and the Arts and are available in the Liberal Arts Advising Center; students may also propose individual programs to the committee for consideration.

Note: In options (i) and (ii), those who take the diagnostic examination will not receive credit toward graduation but will be exempted from the portion of the requirement satisfied by the examination. Those who take the proficiency examination may earn up to 16 hours of credit toward graduation for previous study of the language, in addition to the credit they may earn for courses undertaken in the college. Normally two years of high school language study is regarded as equivalent to one year of college study. Students who have had four years of high school study of the same language should be able to satisfy the requirement for intermediate-level competence in either option by examination and those who have had less than four years of study may be able to satisfy a portion of the requirement in this way, thus reducing the time required to satisfy this requirement. Full credit toward graduation is given for any language study undertaken successfully in the college regardless of the amount of previous study of that language.

Students who have had less than two years of study of the same language in high school are admitted with an entrance deficiency. Satisfactory completion of the final quarter of the first year sequence of college level foreign language study, normally in the fourth year, is necessary to remove this deficiency.

(2) History and Society

Each student must complete 24 hours of course work in this area including:

(a) One 8-hour sequence from the several survey courses offered by the Department of History or in a comprehensive interdisciplinary sequence having a substantial emphasis on history.

(b) 8 hours in courses with emphasis on man and society which are not primarily historical in nature.

(c) The remaining hours may be taken in either categories (a) or (b).

A list of courses which satisfy this requirement is published by the Committee on History and Society and is available in the Liberal Arts Advising Center.

(3) Science and Mathematics

Each student must complete 24 hours of course work in this area, including:

(a) One of the following two options:

(i) An 8-hour sequence in a biological science; or

(ii) An 8-hour sequence in a physical science;

(b) 16 hours drawn from additional courses in the biological and/or physical sciences or from designated courses in:

(iii) the history, philosophy, or social impact of science;

(iv) mathematics and logic.

No more than 16 hours may be applied toward this requirement from any one of the above four categories.

A list of courses which satisfy this requirement is published by the Committee on Science and Mathematics and is available in the Liberal Arts Advising Center.

B. THE MAJOR

In many ways the most important part of each student’s program is the major, for it is in this intensive study of one more or less limited field of knowledge that the individual begins to find a niche in the world of intellectual endeavor. The major may be drawn from the offerings of a single department or it may bring together related concerns of two or more departments. In either case the student should work out a program of study which has a definite design and aims at some overall objective. Guidelines are published by each major department or interdepartmental committee to assist the student in ascertaining goals and to provide a framework within which to develop a particular program. Additional assistance in the form of personal counseling is available in the Liberal Arts Advising Center and from designated faculty advisers in each major department or area.

Requirements for the specified majors available to students in the Basic Program vary from a minimum of 36 to a maximum of 56 credit hours in courses numbered 2000 and above, including prerequisites and corequisites (i.e., supporting courses in other departments or areas). Insofar as is consistent with the objective of a total program balanced reasonably between broad area requirements in the Triad, the major and required courses, the student may elect as many courses as desired in any department or area.

*See Phi Beta Kappa requirements in mathematics, page 39.

Majors available in the Basic Program:

Anthropology
Art
Art History
Audiology
Biology
Botany
Chemistry
Computer Science
Cultural Studies
Economics
English
French
Geography
Geology
German
Greek
History
Human Services

Italian
Latin
Mathematics
Microbiology
Music
Philosophy
Physics
Political Science
Psychology
Religious Studies
Russian
Sociology
Spanish
Speech Pathology
Speech & Theatre
Statistics
Zoology
C. SUPPLEMENTARY ELECTIVE COURSES

At least one-fourth of each student's curriculum in the Basic Program will be made up of courses selected according to the individual's interests to supplement and support the work being done in the major and in the Triad. This dimension of the student's experience in the University represents that freedom within which total education may be rounded out and enriched. Elective courses should be chosen with care so that they will truly enhance the student's total program and help in the achievement of well thought-out educational objectives.

Some of the choices which the student might make in selecting the elective courses are:

1. Additional courses in the major field;
2. A related minor in another department or area or in another college of the University (24 or more credit hours in courses numbered 2000 or above; see Note below);
3. An area in the arts;
4. An off-campus quarter. Only the student's imagination and initiative and the willingness to conceive and develop a truly meaningful academic program limits the choices of supplementary elective courses.

Note: Minors are available in most of the departments and areas in which majors are offered, and also in the following:

Asian Studies
Biochemistry
Black Studies
Comparative Literature
Latin American Studies

Linguistics
Medical Studies
Physical Sciences
Portuguese
Women's Studies

Minors may be developed in other colleges of the University, but they must be approved by petition. Students transferring from other institutions must complete at least 6 of the 24 credit hours required for a minor at UTK.

II. Individualized Program

The Basic Program described above will meet the educational needs of most of the students enrolling in the College of Liberal Arts. Some, however, come with particular strengths in their preparation or with special interests which do not coincide with the departmental or interdepartmental majors specified in the Basic Program. For these students the Individualized Program has been established as a means of attaining a closer correlation between student needs and academic programs.

Students in the Individualized Program will normally satisfy the broad requirements of the Triad, just as those in the Basic Program do, although some latitude is provided for substitutions approved by the student's adviser and the dean of the college. The point at which the greatest degree of individualization takes place, however, is in the area of concentration. Although the quantitative aspect of the area of concentration is the same as for the major in the Basic Program (i.e., a minimum of 36 hours in courses numbered above 2000), there is no restriction in principle on the choice of courses of which it is comprised. The student may design a program in consultation with an adviser, and submit it for consideration to the Committee on the Individualized Program. The proposed courses of study must have some clear central theme, usually implemented through intensive work in two or three departments; an undirected scatting of courses will not be approved. For further information consult the program director, Dr. Harry Jacobson (Ayres Hall).

III. College Scholars Program

A limited number of freshmen, entering transfer students with less than 60 credit hours, and resident students with less than 90 credit hours are invited each year to enter this distinguished honors curriculum. Selection is based on previous academic record, test scores, recommendations, a written essay, and a personal interview. Admission is provisional for two quarters; continuation depends upon maintenance of a satisfactory record (normally 3.25 or above) and evidence of ongoing motivation and interest.

The College Scholars Program affords the highest degree of freedom to the student in developing a meaningful curriculum. Each program is worked out individually with a special adviser (tutor) who under ordinary circumstances continues to advise the student throughout the college career. Together they determine what kinds of course-work and/or other learning experiences will best fulfill the student's objectives, while at the same time achieving the kind of liberal education the College believes is important for every student. In the final two years of the program students will be heavily involved in independent study or research resulting in a senior honors thesis or project report.

Further information and applications may be obtained from the program director, Dr. Harry C. Jacobson, 226 Ayres Hall.

IV. Preparation for the Health Professions

Pre-Dental
Pre-Dental Hygiene
Pre-Medical
Pre-Medical Record Administration
Pre-Medical Technology
Pre-Nursing
Pre-Pharmacy
Pre-Physical Therapy
Other Health Professions

Pre-health professional programs are available for students who plan a career in one of the health professions. The programs preparing students for the study of medicine, dentistry, and pharmacy include the specified courses required for admission to the respective colleges of the University of Tennessee Center for the Health Sciences at Memphis (UTCHS), as well as those required for the Bachelor of Arts degree in the College of Liberal Arts at UT, Knoxville.* The pre-medical technology program prepares students to undertake professional training during the fourth year of study at the University of Tennessee Center for the Health Sciences at Memphis. Other pre-health professional programs—dentistry, hygiene, medical record administration, nursing, pharmacy, and physical therapy—are offered for those students who are planning to pursue professional training in health professional areas which lead to an undergraduate degree from UTCHS but not to a degree from UTK.

*Students wishing to prepare for professional training at institutions other than the University of Tennessee Center for the Health Sciences in Memphis should consult the catalogs of those institutions to determine the specific preparation required for admission.
the B.A. degree is granted upon satisfactory completion of the first year of study at the UT Center for the Health Sciences. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the College, including a major of 36 or more hours in addition to the courses listed below. The requirement for a major is waived for those completing their fourth year at Memphis. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at The University of Tennessee, Knoxville, before entering the UT Center for the Health Sciences.

Although the B.A. degree is not required for admission to the College of Dentistry at Memphis, most of the students accepted into the study of dentistry have the baccalaureate degree before admission. Therefore, pre-dental students are encouraged to plan to complete all requirements for the B.A. degree before enrolling in the College of Dentistry.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics (1540) 1550-60 or 1840-20</td>
<td>8</td>
</tr>
<tr>
<td>Triad (Language, Literature &amp; the Arts)</td>
<td>8</td>
</tr>
<tr>
<td>Triad II (History and Society)</td>
<td>12</td>
</tr>
</tbody>
</table>

### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology 1210-20-30 or Zoology 1118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry 3211-21-31 and 3219-29-39</td>
<td>12</td>
</tr>
<tr>
<td>Triad I</td>
<td>12</td>
</tr>
<tr>
<td>Triad II</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
</tbody>
</table>

### Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 2210-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Biology and/or zoology</td>
<td>12</td>
</tr>
<tr>
<td>Triad I</td>
<td>12</td>
</tr>
<tr>
<td>Triad II</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total:** 155 hours

### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of major program and B.A. requirements</td>
<td>45</td>
</tr>
<tr>
<td>Completion of one year at the UTCHS</td>
<td>8</td>
</tr>
</tbody>
</table>

**Total: 180 hours**

---

**PRE-DENTAL HYGIENE PROGRAM**

A Bachelor of Science in Dental Hygiene is granted by the UT Center for the Health Sciences upon completion of a program which includes 96 hours of prescribed courses in the College of Liberal Arts and 6 quarters of study at Memphis. Students interested in the pre-dental hygiene program are encouraged to consult with a health professions advisor in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the pre-dental hygiene program and requirements in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

### PRE-MEDICAL PROGRAM

The College of Liberal Arts offers both three-year and four-year programs leading to the degree of Bachelor of Arts for students preparing for the study of medicine. Both programs are based upon the program outlined below. In the three-year program the student must complete at least 135 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at the UT Center for the Health Sciences. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the College, including a major of 36 or more hours in addition to the courses outlined below. The requirements for a major are waived for those taking their fourth year at Memphis. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at UTK before entering the UT Center for the Health Sciences.

Although the B.A. degree is not required for admission to the College of Medicine, most students accepted into the study of medicine have the baccalaureate degree before admission. Therefore, pre-medical students are encouraged to plan to complete all requirements for the degree before enrolling in the College of Medicine.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics 1840-50</td>
<td>8</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Triad II (Language, Literature &amp; the Arts)</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
</tbody>
</table>

### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology 1210-20-30 or Zoology 1118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry 3211-21-31 and 3219-29-39</td>
<td>12</td>
</tr>
<tr>
<td>Triad I</td>
<td>12</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
</tbody>
</table>

### Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 2210-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total:** 155 hours

### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of major program and B.A. requirements</td>
<td>45</td>
</tr>
<tr>
<td>Completion of one year at the UTCHS</td>
<td>8</td>
</tr>
</tbody>
</table>

**Total: 180 hours**

---

**PRE-MEDICAL TECHNOLOGY PROGRAMS**

The College of Liberal Arts offers two programs leading to the study of medical technology:

1. **Science-Medical Technology Curriculum**
   - Leading to a Bachelor of Arts degree with a major in medical technology from UTK.
   - 3-year program in biological sciences.

2. **Science-Medical Technology Curriculum**
   - Leading to a Bachelor of Science degree in medical technology from UTCCHS at Memphis.

**Science-Medical Technology Curriculum**

The Science-Medical Technology Curriculum is a three-year program consisting of a minimum of 135 credit hours in the College of Liberal Arts. Students who complete this curriculum satisfactorily may apply for admission to the course of study in medical technology at The University of Tennessee Memorial Research Center and Hospital in Knoxville. Successful completion of this course, which results in the granting of 50 credit hours, makes the student eligible for a Bachelor of Arts degree with a major in medical technology from UTK. In addition, a Certificate of Laboratory Training will be awarded by the UT Memorial Research Center and Hospital. Students will then be eligible for examination by the Board of Registry of the American Society of Clinical Pathologists in order to become certified as registered medical technologists.
Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>1210-20 or 1118-28</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Triad I (Language, Literature &amp; The Arts)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Triad II (History &amp; Society)</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 3211-21-31 and 3219-29-39</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
</tr>
<tr>
<td>Biology 3110-20</td>
<td>8</td>
</tr>
<tr>
<td>Microbiology 3000-09</td>
<td>5</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Triad II</td>
<td>8</td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microbiology 3061 or 3071 or Biochemistry 4110</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 2140-48</td>
<td>4</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>19</td>
</tr>
<tr>
<td>(Total 135)</td>
<td>42</td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical technology course of study at UTMCRC</td>
<td>50</td>
</tr>
</tbody>
</table>

Students interested in the pre-nursing program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for specific requirements for admission.

PRE-NURSING PROGRAM

The minimum requirement for admission to the College of Nursing at the UT Center for the Health Sciences is 48 hours of prescribed courses in the College of Liberal Arts. The program at Memphis, which leads to the Bachelor of Science in Nursing from UTCHS, is three years in length.

Registered nurses who wish to work for a degree of Bachelor of Science in Nursing must complete 54 hours of prescribed courses to qualify for admission with advanced standing.

Students interested in the pre-nursing program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for specific information.

PRE-PHARMACY PROGRAMS

The College of Liberal Arts offers three programs preparing students for the study of pharmacy at the UT Center for the Health Sciences in Memphis. The Bachelor of Science in Pharmacy degree is conferred by UTCHS upon completion of three years of professional study at Memphis following any of the three programs.

The two-year program prepares students to be admitted to the College of Pharmacy upon completion of 90 hours of a prescribed course of study in the College of Liberal Arts. Further information may be obtained from the Health Professions Office, 218 Ayres Hall.

The three-year and four-year programs, which lead to a Bachelor of Arts degree from The University of Tennessee, Knoxville, as well as to the professional degree in pharmacy from the UT Center for the Health Sciences, are based upon the program outlined below. In the three-year program, the student must complete at least 135 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at Memphis.

The four-year program is granted upon completion of 180 or more credit hours while enrolled in the College, including a major of 36 or more hours in addition to the courses outlined below. The requirement for a major is waived for those taking their fourth year at Memphis. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at The University of Tennessee, Knoxville, before enrolling in the College of Pharmacy.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology 1118-28-38</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Chemistry 3211-21-31 &amp; 3219-29-39</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Triad I (Language, Literature &amp; The Arts)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Triad II (History &amp; Society)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology 1210-20-30 or 1118-28</td>
<td>12</td>
</tr>
<tr>
<td>Zoology 1119-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry 3211-21-31 &amp; 3219-29-39</td>
<td>12</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Triad II</td>
<td>8</td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
</tr>
</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting 2110</td>
<td>3</td>
</tr>
<tr>
<td>Physical 2210</td>
<td>8</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Triad II</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>(Total 135)</td>
<td>39</td>
</tr>
</tbody>
</table>

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of major program and B.A. requirements</td>
<td>45</td>
</tr>
</tbody>
</table>

Completion of one year at the UT Center for the Health Sciences.

Bulleted describing the three pre-pharmacy programs in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-PHYSICAL THERAPY PROGRAM

Admission to the physical therapy program at the UT Center for the Health Sciences, leading to the degree of Bachelor of Science in Physical Therapy from UTCHS, requires completion of 135 hours of prescribed courses while enrolled in the College of Liberal Arts. The program in Memphis is 15 months in length.

Students interested in the pre-physical therapy program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for specific information. Students in the three- or four-year program must complete the last 45 hours of credit in residence at The University of Tennessee, Knoxville, before enrolling in the College of Pharmacy.

OTHER HEALTH PROFESSIONS

Cytotechnology
Histotechnology
Optometry
Radiologic Technology
Veterinary Medicine

A library of materials about career opportunities in the health professions, including most allied health areas, has been developed and is located in the Health Professions Office, 218 Ayres Hall.

Academic advisers are available to assist students in planning their programs in order to meet the requirements for admission to other programs.

Bachelor of Fine Arts

The Bachelor of Fine Arts degree represents intensive study preparing the student for graduate programs and careers relating to art. A minimum of 180 credit hours are required for graduation.

Although there are no specific concentrations within the major, guidelines for the following recommended programs are available in the departmental office: (1) communication design, (2) drawing, (3) painting, (4) oil, (5) watercolor, (6) printmaking, and (7) sculpture. Transfer students are advised that a minimum of 28 credit hours in studio
and graduation in the College Artists Program will be noted on the student's transcript.

Students may apply for the program upon completion of 45 credit hours, but will not normally be considered after the completion of 90 hours. Admittance to the College Artists Program is based on four criteria: 1) an overall grade-point average of at least 3.0, 2) a portfolio of work, 3) the proposed course of study, and 4) a personal interview. A minimum grade-point average of 3.25, at least 12 hours per quarter, and evidence of continuing motivation and interest must be maintained to remain in the program.

Each College Artist will normally enroll in one or more general or departmental honors courses each quarter, and must participate in an honors exhibition prior to graduation.

STUDIO HONORS COURSES

Courses are designed for the exceptional student. Honors courses may be taken in any of the areas of studio instruction, and admittance is based on the following criteria:

- A grade-point average of 3.2 in studio art courses
- A portfolio of class and/or outside work
- C. Recommendation of the studio faculty, and approval of the instructor

Continued participation is subject to periodic review by the faculty. Students qualified for honors courses will enroll in course numbers which most closely parallel their present level, i.e., sophomores in 2008, juniors in 2008, seniors in 4008. Each course number may be repeated for a maximum of 24 hours credit.

Bachelor of Music

The Department of Music offers the degree of Bachelor of Music with concentrations in music theory, composition, music history and literature, piano literature, and applied music (voice—piano—organ—strings—woodwind, brass and percussion instruments—multiple woodwind instruments). The study is designed to prepare students for graduate study or for positions in music for which a professional degree is required.

Students who plan to work for this degree are assigned an adviser in the Department of Music at the time they enter the program. Continuation in the program at the 3000 level requires the achievement of an average of 2.5 or better in all music courses taken. The minimum requirement for the degree is 180 credit hours, including the specified courses outlined below.

Note: In addition to the concentrations offered in the Bachelor of Music curriculum, a major in music with a concentration in either music history and literature or applied music is available in the Bachelor of Arts curriculum.

MUSIC THEORY

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Music 1118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Music 1113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 1130</td>
<td>3</td>
</tr>
<tr>
<td>Applied music</td>
<td>3</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>3</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
<tr>
<td>Sophomore</td>
<td>0</td>
</tr>
<tr>
<td>Music 2118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Music 2113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 2310-20-30</td>
<td>9</td>
</tr>
<tr>
<td>Music 2599</td>
<td>6</td>
</tr>
<tr>
<td>Applied music</td>
<td>3</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>3</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
<tr>
<td>Junior</td>
<td>0</td>
</tr>
<tr>
<td>Applied music</td>
<td>3</td>
</tr>
<tr>
<td>Music 3111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 3113-23</td>
<td>6</td>
</tr>
<tr>
<td>Music 4112 or 4115</td>
<td>3</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Music 3199</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

COMPOSITION

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>8</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Music 1118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Music 1113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 1130</td>
<td>3</td>
</tr>
<tr>
<td>Applied music</td>
<td>3</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>3</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
<tr>
<td>Sophomore</td>
<td>0</td>
</tr>
<tr>
<td>Music 2118-28-38</td>
<td>12</td>
</tr>
<tr>
<td>Music 2113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 2310-20-30</td>
<td>9</td>
</tr>
<tr>
<td>Music 2599</td>
<td>6</td>
</tr>
<tr>
<td>Applied music</td>
<td>3</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
<tr>
<td>Junior</td>
<td>0</td>
</tr>
<tr>
<td>Music 4111</td>
<td>3</td>
</tr>
<tr>
<td>Applied music</td>
<td>3</td>
</tr>
<tr>
<td>Music 4111</td>
<td>3</td>
</tr>
<tr>
<td>Music 4599</td>
<td>3</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>Music history/literature (3000-level and above)</td>
<td>0</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

TOTAL: 180 hours

COLLEGE ARTISTS PROGRAM

A program of 180 hours is to be determined by the student and approved by the Department of Art honors committee. This program allows the gifted student greater opportunity for establishing a unique education in studio art, which may include independent study, off-campus study, foreign study in addition to formal class work. Participation
<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Music 1111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 1113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 1340</td>
<td>3</td>
</tr>
<tr>
<td>Applied music</td>
<td>6</td>
</tr>
<tr>
<td>English, Italian, or German</td>
<td>3</td>
</tr>
<tr>
<td>Music 1810</td>
<td>4</td>
</tr>
<tr>
<td>Foreign language (French or German)</td>
<td>8</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 2113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 2310-20-30</td>
<td>6</td>
</tr>
<tr>
<td>Applied music</td>
<td>6</td>
</tr>
<tr>
<td>Art 1815-25</td>
<td>8</td>
</tr>
<tr>
<td>Foreign language (French or German)</td>
<td>8</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2340</td>
<td>3</td>
</tr>
<tr>
<td>Music 3112</td>
<td>3</td>
</tr>
<tr>
<td>Music 3113-23</td>
<td>3</td>
</tr>
<tr>
<td>Music 4260</td>
<td>3</td>
</tr>
<tr>
<td>Music history/literature (3000-level or above)</td>
<td>12</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
<tr>
<td>Music history/literature (3000-level or above)</td>
<td>12</td>
</tr>
<tr>
<td>Electives</td>
<td>0</td>
</tr>
<tr>
<td>Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 4320</td>
<td>3</td>
</tr>
<tr>
<td>Music 4200</td>
<td>3</td>
</tr>
<tr>
<td>Music 3912</td>
<td>3</td>
</tr>
<tr>
<td>Comparative literature or religious studies</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>Music history/literature or theory (3000-level or above)</td>
<td>6</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
<tr>
<td>Applied music</td>
<td>2</td>
</tr>
<tr>
<td>Music history/literature (3000-level or above)</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL: 180 hours</td>
<td></td>
</tr>
</tbody>
</table>

**PIANO LITERATURE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>Music 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Music 1111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 1113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 1340</td>
<td>3</td>
</tr>
<tr>
<td>Principal study</td>
<td>6</td>
</tr>
<tr>
<td>Music 3969</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>8</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 2113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 2310-20-30</td>
<td>6</td>
</tr>
<tr>
<td>Principal study</td>
<td>6</td>
</tr>
<tr>
<td>Music 3969</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2340</td>
<td>3</td>
</tr>
<tr>
<td>Music 3112</td>
<td>3</td>
</tr>
<tr>
<td>Music 313-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 3113-23</td>
<td>3</td>
</tr>
<tr>
<td>Music 4260</td>
<td>3</td>
</tr>
<tr>
<td>Music history/literature (3000-level or above)</td>
<td>12</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>8</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 4010-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Music history/literature (3000-level and above)</td>
<td>3</td>
</tr>
<tr>
<td>Principal study</td>
<td>12</td>
</tr>
<tr>
<td>Music 3969</td>
<td>3</td>
</tr>
<tr>
<td>Senior recital</td>
<td>0</td>
</tr>
<tr>
<td>Music electives</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>15</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**VOICE**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Music 1111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 1113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 1340</td>
<td>3</td>
</tr>
<tr>
<td>Principal study</td>
<td>6</td>
</tr>
<tr>
<td>Music 1010-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Music 2055-65-75</td>
<td>6</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 2113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 2310-20-30</td>
<td>6</td>
</tr>
<tr>
<td>Principal study</td>
<td>6</td>
</tr>
<tr>
<td>Music 3969</td>
<td>3</td>
</tr>
<tr>
<td>Senior recital</td>
<td>0</td>
</tr>
<tr>
<td>Music electives</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>15</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2340</td>
<td>3</td>
</tr>
<tr>
<td>Music 3112</td>
<td>3</td>
</tr>
<tr>
<td>Music 313-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 3113-23</td>
<td>3</td>
</tr>
<tr>
<td>Music 4260</td>
<td>3</td>
</tr>
<tr>
<td>Music history/literature (3000-level or above)</td>
<td>12</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>8</td>
</tr>
<tr>
<td>Theatre 2111</td>
<td>4</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 3012-22-32</td>
<td>6</td>
</tr>
<tr>
<td>Music 4012-22-32</td>
<td>3</td>
</tr>
<tr>
<td>Principal study</td>
<td>12</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Senior recital</td>
<td>0</td>
</tr>
<tr>
<td>Foreign language (French, Italian, German)</td>
<td>8</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>8</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**TOTAL: 180 hours**

**ORGAN AND CHURCH MUSIC**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td></td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Music 1111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 1113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 1340</td>
<td>3</td>
</tr>
<tr>
<td>Principal study</td>
<td>6</td>
</tr>
<tr>
<td>(Organ)</td>
<td></td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Liberal arts electives</td>
<td>8</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2111-21-31</td>
<td>9</td>
</tr>
<tr>
<td>Music 2113-23-33</td>
<td>3</td>
</tr>
<tr>
<td>Music 2310-20-30</td>
<td>6</td>
</tr>
<tr>
<td>Principal study</td>
<td>6</td>
</tr>
<tr>
<td>Music 1010-20-30</td>
<td>3</td>
</tr>
<tr>
<td>Music 2055-65-75</td>
<td>6</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 2310</td>
<td>3</td>
</tr>
<tr>
<td>Music 3113-23</td>
<td>3</td>
</tr>
<tr>
<td>Music 2320-30-40</td>
<td>3</td>
</tr>
<tr>
<td>Music 2371-51-61</td>
<td>3</td>
</tr>
<tr>
<td>Music 4074-64</td>
<td>8</td>
</tr>
<tr>
<td>Music 1525</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>7</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music 3012-22-32</td>
<td>6</td>
</tr>
<tr>
<td>Music 4012-22-32</td>
<td>3</td>
</tr>
<tr>
<td>Principal study</td>
<td>12</td>
</tr>
<tr>
<td>Ensemble</td>
<td>3</td>
</tr>
<tr>
<td>Senior recital</td>
<td>0</td>
</tr>
<tr>
<td>Foreign language (French, Italian, German)</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>9</td>
</tr>
<tr>
<td>Music 2000</td>
<td>0</td>
</tr>
</tbody>
</table>

**TOTAL: 180 hours**
### Bachelor of Science in Chemistry

Students who desire to major in chemistry may select either the curriculum leading to the degree of Bachelor of Arts or that leading to the degree of Bachelor of Science in Chemistry. This latter program is approved by the American Chemical Society and is designed to train students to go directly into positions in the chemical industry or to enter graduate study leading to positions in research and college teaching.

A minimum average of C must be made on all chemistry courses applied toward the Bachelor of Science in Chemistry degree.

**COOPERATIVE PROGRAM IN CHEMISTRY**

A cooperative program is available to students in the B.S. in Chemistry curriculum. After the freshman year the student alternates a quarter in school with a quarter in a job in a chemical industry. The program normally requires five years and involves a total of seven work quarters and twelve school quarters. Students are required to have at least a 2.5 average to enter and remain in the program. Some opportunity exists for students to enter the program later than the end of the freshman year. Students interested should make application to the head of the department at least one quarter in advance of the beginning of the first work period. Further information will be supplied on request.

### CURRICULUM REQUIREMENTS

<table>
<thead>
<tr>
<th>Curriculum</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>1118-20-30</td>
</tr>
<tr>
<td></td>
<td>1118-28-38</td>
</tr>
<tr>
<td>Sophomore</td>
<td>3219-25-30</td>
</tr>
<tr>
<td></td>
<td>3219-35-39</td>
</tr>
<tr>
<td>Junior</td>
<td>3240-25-30</td>
</tr>
<tr>
<td></td>
<td>3240-35-39</td>
</tr>
<tr>
<td>Senior</td>
<td>4430-25-30</td>
</tr>
<tr>
<td></td>
<td>4430-35-39</td>
</tr>
<tr>
<td>WOODWIND, BRASS, AND PERCUSSION INSTRUMENTS</td>
<td>180 hours</td>
</tr>
</tbody>
</table>

**NOTE:** The curricula in strings; woodwinds, brass, and percussion; multiple woodwinds; and voice allow 12 hours of ensemble credit to apply toward electives. This is in addition to the hours in ensemble listed in the tabular resumes.

### Preparation for Other Professions

**Law**

Students who plan to study law should consult the statement regarding admission to the College of Law (page 173) and discuss their programs with advisers in the Liberal Arts Advising Center.
Library Science

Certain courses in the Graduate School of Library and Information Science are open to students in the College of Liberal Arts interested in beginning positions in a library or in preparation for future graduate study in professional librarianship. For further information, see page 50 or consult the Director of the Graduate School of Library and Information Science.

Planning

Students who wish to consider a career in city and regional planning or a related field will find a brief description of the program of the Graduate School of Planning on page 51. Students are accepted into planning from a broad variety of undergraduate backgrounds. Detailed information on the planning profession, admission requirements and the program of study may be obtained from the Graduate School of Planning.

Public Administration

Students majoring in political science who wish to prepare for an administrative career in the public service may select courses to fit that objective. The concentration appearing below is suggested for students with public service career interests. The degree to be awarded is a Bachelor of Arts with a major in political science, augmented by supportive work in related disciplines.

Freshman

| Political Science 2510-20, 2530 (choose 8 hours) | 8 |
| Economics 2110-20-30 | 9 |

Sophomore

| Political Science 3555-66 | 8 |
| Political Science 3545-46 or 3801-02-03-04 | 8 |
| Economics 3340 | 3 |
| Accounting 2110-20-30 | 9 |

Junior

| Political Science 4610-20 | 7 |
| Political Science 4410 | 4 |
| Economics 3410 | 3 |
| Accounting 3510 | 3 |
| Finance 4350-60 | 6 |

In addition, sufficient electives in political science must be taken to meet the number of hours required for a major in political science.

Further information may be obtained in the Department of Political Science.

Teaching

Students in the College of Liberal Arts who wish to be certified for secondary school teaching must satisfy state certification requirements as well as all degree requirements of the College of Liberal Arts, and must be recommended for certification by the College of Education. The College of Education is approved by the National Council for Accreditation of Teacher Education (NCATE); recommendation for certification by the College, therefore, in effect certifies the student in thirty states.

Application for admission to the Teacher Education Program should be made during the second or third quarter of the sophomore year in the office of the Dean of the College of Education, 212 Claxton Education Building. Criteria for admission are: (1) a 2.2 cumulative grade-point average; (2) satisfactory ratings in speech and hearing as determined by tests administered by the Speech and Hearing Center; (3) recommendation of the student's adviser.

One quarter during the senior year must be reserved for student teaching (Education C&I 4710-20). Application for student teaching must be filed not later than January 1 of the year preceding the academic year in which the student teaching will be undertaken. Those planning to student teach during the 1979-80 academic year must apply by January 1, 1979.

Curricula for students seeking teacher certification should include the following:

1) English 1510-20 or 1510-98
2) 16 hours, representing at least 3 fields, including:
   a) 4 hours of 2000-level English
   b) 12 hours of the student's choice from anthropology, art, English for literature, Library and Information Science 3510-20-30, foreign language (beyond the elementary level), history (upper division), music, philosophy, or religious studies
3) Language, Literature, and the Arts: 0-24 hours, the number of hours and choice of courses depending upon the options selected and the choices made in (2) above
4) History and Society:
   a) One of the 8-hour historical sequences in category (a) of the Triad list
   b) Psychology 2500 or 2518
   c) 4 hours from anthropology, economics, geography, human sciences, political science or sociology courses on the Triad list
   d) 6-8 additional hours of the student's choice from courses on the Triad list, the number of hours depending upon choices made in (2) above
5) Science and Mathematics:
   a) One of the 8-hour natural science sequences in categories 1 or 2 of the Triad list
   b) 4 additional hours of natural science courses in categories 1 and 2
   c) 4 hours of mathematics courses in category 4
   d) 8 additional hours of the student's choice from courses on the Triad list

6) Speech 2311
7) 9 hours in health and physical education, including at least 3 hours of school health, public health, or nutrition and 2 hours of physical education
8) Professional Education courses:
   a) Education C&I 3010-20-30
   b) Educational Psychology 3810
   c) 6 hours of appropriate methods courses
   d) Education C&I 3521-22-23
   e) Education C&I 4710-20 (student teaching)
   f) 6 hours of electives from the College of Education
9) Additional courses necessary to complete liberal arts major(s)
10) Additional courses required for certification in teaching subject area(s) (Consult Certification Clerk, 212 Claxton Education Building)
11) Electives to reach total of 180 hours, including at least 60 upper-division hours, required for graduation.

*Admission to the Teacher Education Program is prerequisite for Education C&I 3010, 3030, and 4710-20.

Theology

Students planning to study theology should follow one of the Bachelor of Arts curricula. Any liberal arts major is acceptable for admission to most theological schools; strong preparation in literature, philosophy, history, religious studies, and social science is desirable. Students may wish to consult with faculty members in the Department of Religious Studies in planning their programs.

General Information

Admission to the College

For information regarding admission to the College of Liberal Arts, see page 16.

Course Load

The average course load in the college for any quarter is 14-16 credit hours. The University defines full-time undergraduate students as those who register for a minimum of 12 hours. The maximum number of hours which may be taken by liberal arts students is 17, exclusive of elective work in ensemble music and physical education. Exceptions to this rule will require approval by the Assistant Dean for Student Academic Affairs (218 Ayres Hall).

The 17 credit limit was one of three means chosen to implement a 1972 decision by the college faculty to reduce the average number of courses carried by students. A second means has been to introduce four-credit courses into the curriculum on a broader scale than ever before. Using such courses the credits achieved by students each quarter would remain substantially the same as in quarters prior to this innovation but would
be generated with fewer courses. A final means has been to decrease the total number of hours required for the degree. The goal of the load reduction is to provide an opportunity for a deeper, more thorough learning experience in the courses which are taken.

Lower Division—Upper Division
Courses numbered at the 1000 and 2000 levels are considered lower division and are normally taken by students in the freshman and sophomore years. Courses numbered 3000 and above are upper division and are designed for students at the junior and senior levels.

Satisfactory/No Credit Courses
A few courses in the College are offered only on a Satisfactory/No Credit (S/NC) basis, and students may elect to take others on this basis, except in areas where the option is specifically prohibited. Such courses, if successfully completed, will count as hours for graduation although neither S nor NC will be calculated in the student's grade point average. Satisfactory is defined as C or better work on the traditional grading scale and No Credit is defined as less than C. The following restrictions apply:

1. S/NC courses, except those offered only on this basis, may not count for Triad requirements or major and minor requirements unless specifically permitted for a petition. This restriction applies also to major or minor prerequisites or corequisites.

2. The maximum number of S/NC elective hours which may be counted toward graduation is 30, exclusive of courses offered only S/NC, physical education courses and/or satisfactory hours earned by examination, military training, etc.

3. A student who desires to take a course S/NC should indicate that intention at the time of registration. A change from S/NC grading to regular grading or regular grading to S/NC will not be permitted beyond the add deadline in each quarter. (Exception: Students who register for a course S/NC in a restricted area will be required to change to regular grading when the error is discovered.)

4. A transfer student who has more than 30 S/NC or equivalent hours earned prior to admission to The University of Tennessee, Knoxville, may count all of these hours toward graduation but may not elect additional S/NC hours.

5. A transfer student with S/NC or equivalent credit earned prior to admission to The University of Tennessee, Knoxville, in a course which satisfies a Triad requirement may count it for that purpose. In the case of a course which satisfies a major or minor requirement, statement (1) applies. The option of taking courses on a S/NC basis is provided to encourage the able student to venture beyond the limits of those courses in which the student does well and, motivated by intellectual curiosity, to explore subject matter in which performance may be somewhat less than work in preferred subject fields.

Note: Students planning to seek admission to graduate or professional schools (e.g., medical sciences) should discuss with their advisers possible limitations on exercise of the S/NC option before registering for courses on this basis.

Off-Campus Study
Recognizing that learning is not restricted to formal classroom situations, the College provides for students to earn credit toward graduation for approved off-campus study. Such study may be undertaken only with prior approval of the faculty member and the department concerned. It may include certain kinds of work experiences, community involvement, working in political campaigns, etc. Credit per quarter will vary from 1-16 hours. Up to 24 hours of credit earned in this way may be applied toward a degree in the College of Liberal Arts, although individual departments may limit the number of hours which may be applied toward a specific major.

Independent Study
Certain educational goals may best be met through independent study done by an individual under the direction of a faculty member. Students who wish to do such independent work should obtain the approval of the faculty members and the departments concerned prior to embarking upon their study. Credit per quarter will vary from 1-16 hours. Up to 24 hours of credit earned in this way may be applied toward a degree in the College of Liberal Arts, although individual departments may limit the number of hours which may be applied toward a specific major.

Study Abroad and Foreign Study Courses
Several opportunities for study abroad are available to students in the College of Liberal Arts. One avenue is through group programs arranged and supervised by departments of the college on a full- or quarter- or summer term basis. A second is through group programs conducted abroad by other academic institutions to which UTK students with approval may enroll for credit. Assistance in identification of and registration in such programs may be obtained through the Overseas Study Information Service located in the University's Division of International Education. A third opportunity is through individualized programs under the foreign study number 4101. The nature of this work as well as credit should be negotiated by students prior to departure with the appropriate liberal arts departments. Credit will be awarded only after completion of all agreed upon requirements. Students may earn from 1-16 hours in any one department. Up to 24 hours of such credit, exclusive of that earned in group programs offered by departments, could apply toward a degree in the College of Liberal Arts in any of the above forms, however, limit the hours of credit which can be applied toward a given major.

Liberal Arts Advising Center
Academic advising for students of the college is offered by the Liberal Arts Advising Center, 220 Ayres Hall, as well as through the several major departments. The Advising Center is staffed on a regularly scheduled basis by members of the college faculty, each of whom has been trained for this specialized work. Students in their first quarter of residence are assigned to the Advising Center, where they may relate themselves to a particular adviser of their choice or consult the person on duty at the time they need assistance. Most students continue in this relationship to the Advising Center until they have determined their major, normally by the beginning of the junior year, at which time they may be transferred for advising to a faculty member in the major department.

Student Academic Affairs Office
Academic assistance for students is also provided through the Student Academic Affairs Office, 218 Ayres Hall. This office serves primarily those students not assigned to the Liberal Arts Advising Center, helping them meet a variety of academic needs relating to the development of their academic programs, satisfying graduation requirements, etc. For those who are planning careers in the health sciences it provides a liaison with the Center for the Health Sciences. Each quarter the Student Academic Affairs Office issues the Liberal Arts Quarterly Bulletin in order to keep students informed about changes in the College curriculum as well as matters relating to registration, courses, and requirements.

Office of Black Studies
The Office of Black Studies, 812 Volunteer Blvd., cooperates with the various departments and colleges of the University with respect to the development of curricular changes and innovations which incorporate the Black experience into academic and extracurricular programs of the institution, supplies information on financial assistance for Black students, and serves as the focal point for the coordination and development of an improved and expanded Black Studies Program at the University.

Black Cultural Center
The Black Cultural Center represents one effort by the University to promote greater awareness of the nature of the Black experience and the contribution of Black America to the national past. The Center seeks to fulfill this role through a variety of programs and occasions. Typical of its cross-campus work is sponsorship of Black History Week, and the Black Arts Festival. Within the Center itself exhibits related to the Afro-American past, small group lectures, group study sessions, and a tutorial program aimed especially at minority students are a few of the ongoing activities.
The Center is located at 812 Volunteer Blvd. All members of the University community are invited to visit this location and utilize the opportunities provided by the Center to gain knowledge about the Black experience. For further information contact the director.

**Bureau of Public Administration**

The University has established in the College of Liberal Arts a Bureau of Public Administration, for the purpose of promoting sound governmental administration through research, publication, and consultation. Offices and staff are maintained in both Knoxville and Nashville. The head of the Department of Political Science serves as director of the Bureau of Public Administration.

**Psychological Clinic**

The Psychological Clinic is an outpatient psychodiagnostic and treatment center established by the University within the Department of Psychology. It provides advanced graduate training for students in clinical psychology and also serves as a training facility for graduate students in the School of Social Work. Referrals for treatment come from many sources, including self-referrals and referrals by relatives and friends and by various social and mental health agencies. Treatment services are available to anyone regardless of residence, sex, age, race, or citizenship.

**University Theatres**

The Department of Speech and Theatre offers a full schedule of dramatic presentations in three different theatres. The Clarence Brown Theatre has outstanding facilities for proscenium and open staging and for film productions, and, in a separate Studio Theatre, for laboratory productions. Carousel Theatre is designed for arena staging, and can be converted for open-air performances in the summer. Hunter Hills Theatre, located in the foothills of the Great Smoky Mountains near Gatlinburg, is an outdoor theatre in which performances are offered during the summer months.

**Instructional Facilities**

The College of Liberal Arts carries out its varied teaching and research activities in more than two dozen principal buildings in two areas of the campus, as well as in a number of converted residences which provide office, studio, or clinical space. The older of the two clusters of buildings is on “The Hill,” and includes Ayres Hall (psychology and mathematics), Austin Peay (psychology), Hesler (biological sciences), Physics (physics and astronomy), Geology-Geography (geology and geography), and Dabney and Buehler (chemistry). West of “The Hill” is a recently built group of buildings for the humanities, social sciences, and fine arts: McClung Tower and the Humanities-Social Sciences classroom building (classics, English, foreign languages, history, human services, philosophy, political science, religious studies, sociology, and speech and theatre), the Music Building (music), and the Hearing and Speech Center (audiology and speech pathology). In this area also are the McClung Museum and the Clarence Brown and Carousel Theatres, as well as the Undergraduate Library. Anthropology is housed in South Stadium, and art utilizes several small buildings for its studios.

**College Offices**

The College Administrative Office is in 226 Ayres Hall and houses the office of the Dean/Associate Dean as well as the office of Curriculum and Special Programs. The Student Academic Affairs Office is in 218 Ayres Hall. The Liberal Arts Advising Center is in 220 Ayres Hall.

**Departments of Instruction**

**American Studies**

*See Cultural Studies.*

**Ancient Mediterranean Civilizations**

*See Cultural Studies.*

**Anthropology (122)**

**Professors:**

W.M. Bass (Head), Ph.D. Pennsylvania; C.H. Faulkner, Ph.D. Indiana; A.K. Guthe, Ph.D. Michigan; P.W. Parmelee, Ph.D. Texas A&M.

**Associate Professors:**

I. Harrison, Ph.D. Syracuse; R.L. Jantz, Ph.D. Kansas.

**Assistant Professors:**


**Research Assistant Professor:**


**UNDERGRADUATE**

A major in anthropology shall consist of 39 hours, 12 of which are to be in the introductory 2000-level courses. Of the remaining 27 hours, 4450 and six hours of 3000 level or above courses are required in each of these subfields: (a) Cultural; (b) Physical; and (c) Archaeology.

(a) Cultural: 3410, 3440, 3450, 3510, 3530, 3540, 3710, 3800, 4200, 4210, 4240, 4250, 4259, 4400, 4410, 4420, 4430, 4440, 4500, 4510, 4550, 4570, 4590, 4740.

(b) Physical: 3070, 3900, 3920, 3930, 4930, 4950, 4960, 4970.

(c) Archaeology: 3610, 3620, 3630, 3640, 3660, 4400, 4500, 4600, 4610, 4640, 4650.

A minor in anthropology consists of 27 hours including the 2510, 2520, 2530 introductory courses.

2510 Human Origins (4) Non-technical survey of man’s primate background, fossil primates, fossil man, and living races of mankind.

2520 Prehistoric Archaeology (4) Survey of prehistoric culture with specific emphasis on method and theory in archaeology: prehistory of western Europe and Africa; archaeology in Americas.

2530 Human Culture (4) Introduction to ethnology: survey of nature of culture and society and similarities and differences in man’s mate cultures, social, economic, and political organizations, his ideology, art, and language.

2540 Introduction of Linguistic Anthropology (4) Basic linguistic concepts. Aspects of language studied by anthropologists and sociolinguists.

3070 Genetics and Society (3) (Same as Botany 3070)

3410 Principles of Cultural Anthropology (3) Basic concepts and objectives in study of culture. Range of cultural phenomena and approaches to its study. 2530 recommended.

3440 Religion of Primitive Peoples (3) Religions of non-literate peoples. Place of religion in their social and cultural systems. 2530 recommended. (Same as Religious Studies 3440)

3450 Community Studies in Complex Culture (3) Review of cross-cultural comparative urban and village communities and methodologies used in community studies. 2530 recommended.

3490 African Religions (4) (Same as Religious Studies 3490 and Black Studies 3490)

3510 Peoples and Cultures of Mainland Asia (3) Ethnographic survey of indigenous cultures of mainland Asia. Cultural diversity and human ecology in a real perspective. 2530 recommended.

3550 Peoples and Cultures of Africa (3) Ethnographic survey of aboriginal cultures of sub-Saharan Africa. Cultural diversity and human ecology in a real perspective. 2530 recommended.

3540 North American Indians (3) Ethnographic survey of cultures of Arctic, Southwest, Plains and Eastern areas. Emphasis on cultural differences of peoples occupying these areas during pre-colonial period. 2530 recommended.

3555 Cherokee Ethno History (3) Survey of socio-political aspects of internal affairs and external relationships from first European contact to present. Emphasis on 18th and 19th centuries.

3575 Afro-American Anthropology (3) Anthropological perspectives on Blacks in New World: examination of Afro-Americans via anthropological theories and methodology.

3580 Peoples and Cultures of Mesoamerica (3) Ethnographic survey of aboriginal peoples and post-conquest changes in Indian cultures. Emphasis upon analysis of small rural communities using modern village studies as source material. Recommended prerequisite: 2530.

3610 Archaeology of United States and Canada (3) Survey of prehistoric peoples north of Mexico from initial occupation to European contact. 2530 recommended.
GRADUATE
The general requirements for the Master's and Doctor's degrees are given in the Graduate Catalog.

5000 Thesis
5010 Graduate Research (1-9)
5100 Seminar in Cultural Anthropology (3, 3, 3)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5140 Seminar in Zooarchaeology (3)
5149 Laboratory Studies of the Vertebrate Skeleton (4)
5159 Laboratory Study of the Mollusca (4)
5160 Seminar in Archaeology (3-9)
5200 Special Topics in Anthropology (3)
5210 Community Anthropology: The Local Community (3)
5340 Fieldwork in Archaeology (3-6)
5400 History of Anthropological Theory (3)
5440 Peasant Societies (3)
5450 Comparative Social Organization (3)
5460 Quantitative Methods in Anthropology (3)
5470 The Healer in Cross-Cultural Perspective (3)
5510 Seminar in Ethnology of Western North America (3)
5600 Theory in Archaeology (3)
5610 Problems in North American Archaeology (3)
5620 Problems in Old World Archaeology (3)
5630 The Maya (3)
5640 Archaeological Resource Management (3)
5660 Seminar in Prehistoric Lithic Technology (3)
5670 Seminar on Aboriginal Lithic Resources (3)
5700 Theory in Folk Culture Studies (3)
5710 Problems in Folk Culture Studies (3)
5900 Dental Anthropology (3)
5910 Measurement of Man (3)
5920 Advanced Physical Anthropology (3)
5930 The Human Skeletal in Forensic Medicine (3)
5940 Skeletal Biology of Early Human Population (3)
5945 Comparative Primate Anatomy (4)
5950 Paleopathology (4)
5960 Dermatoglyphics (3)
5970 Emergence and Early Evolution of Man (3)
5980 Neanderthal Man and Human Evolution (3)
5990 Human Variation (3)
6000 Doctoral Research and Dissertation
6140-20-30 Seminar in Cultural Anthropology (3, 3, 3)
6480 Seminar in Social Structure (3)
6610 Selected Topics in Archaeology (3)
6910 Selected Topics in Physical Anthropology (3)
6970 Seminar in Human Paleontology (3)

Arabic
See Romance Languages.

Art (140)

Professors:

Associate Professors:

Assistant Professors:
M.C. Clausen, M.F.A. Michigan; W.C. Jackson, M.F.A. Tennessee; T.J. Riesing, M.F.A. Nebraska; R.R. Steinmetz, M.Ph. Yale; L.D. Wiesener, M.F.A. Florida State.

Instructors:

Art has two aspects: history of art and practice of art. Knowledge of the practice of art is required of art history majors; knowledge of art history is required of studio majors.

The department reserves the right to acquire student studio work.

UNDERGRADUATE

B.A. Major: Art History—Consists of 36 hours in art history courses numbered 2000 and above. Courses numbered 2000 and above in the following areas may also be included in the 36 hours: Greek and Roman art and archaeology, aesthetics, history and theory of architecture (School of Architecture), and up to eight hours in studio courses in the Department of Art. Undergraduate work in art history is enhanced by a knowledge of at least one foreign language. Graduate work normally requires a reading knowledge of at least two foreign languages.

B.A. Major: Art (Concentration in Studio)—Art 1115-25-35 and Art 2715, and eight additional hours of art history are prerequisite to a major of 36 hours of courses numbered 2000 and above, including a minimum of 21 hours in upper-division courses.

Minor: none offered.

For information regarding the Bachelor of Fine Arts degree, see page 182.

1115-25-35 Studio Fundamentals (4, 4, 4) 1115—Drawing and the illusion of space; 1125—Surface composition and color; 1135—Real space and volume. For art, architecture, related arts and art education majors. Others with consent of instructor only.

1815-25 World Art (4, 4) A survey: 1815—prehistory to 1400; 1825—1400 to present.

2008 Honors: Art (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hrs.

2105 Introduction to Drawing (4) Prereq: 1115.

2115 Drawing II (4) Prereq: 2105. May be repeated for a maximum of 8 credit hrs.


2205 Introduction to Painting (4) Oil, acrylic and watercolor. Prereq: 1115-25-35 for art majors.

2215 Painting II (4) Oil and acrylic. Prereq: 2205. May be repeated for a maximum of 8 credit hrs.

2215 Watercolor II (4) Prereq: 2205. May be repeated for a maximum of 8 credit hrs.

2405 Introduction to Sculpture (4) Prereq: 1115-25-35 for art majors.

2415 Sculpture II (4) Prereq: 2405. May be repeated for a maximum of 8 credit hrs.


2516 Advertising Design (4) Fundamentals of lettering and layout for newspaper, magazine television, outdoor advertising. Non-art majors only.

2545-55-65 Photo-Graphics (4, 4, 4) Introduction to art of photography.

2605 Introduction to Printmaking (4) Relief, lithography, intaglio, and screen printing. Prereq: 1115-25-35 for art majors.

2615 Intaglio II (4) May be repeated for a maximum of 8 credit hrs.

2616 Lithography II (4) May be repeated for a maximum of 8 credit hrs.

2617 Screen Printing II (4) May be repeated for a maximum of 8 credit hrs.

2715 Survey of Contemporary Art (4) 1945 to present.

2725 Black Art (4) Black artists in society. Emphasis on contemporary art forms.

2935 Film Design (4) Introductory theory and practice of film making. Emphasis on graphic elements through use of motion picture camera. May not receive credit for both 2116 and 2935.

3008 Honors: Intermediate Art (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hrs.

3115 Drawing III (4) May be repeated for a maximum of 12 hrs. Prereq: 2115.

3215 Painting III (4) May be repeated for a maximum of 12 hrs. Prereq: Consent of instructor.

3315 Watercolor III (4) May be repeated for a maximum of 12 hrs credit. Prereq: Consent of instructor.

3415 Sculpture III (4) May be repeated for a maximum of 12 hrs.

3515 Visual Communications I (4) Graphic design: theory and techniques of problem solving for printed material. Prereq: 2525.

3516 Typography (4) Theories and techniques of typography and printing as a fine art medium. May be repeated for a maximum of 12 hrs.

3517 Airbrush (4) Techniques and creative applications. May be repeated once for credit. Art majors only.

3525 Visual Communications II (4) Advanced pictorial perception, concepts, methods, and techniques for designer. Prereq: 2525.


3615 Intaglio III (4) May be repeated for a maximum of 12 hrs.

3616 Lithography III (4) May be repeated for a maximum of 12 hrs.
diagnostic audiologic or aural habilitation-rehabilitation. Students in speech pathology may specialize to a limited extent by choosing elective courses which emphasize speech disorders, language disorders, or cultural language differences. Students desiring school certification in speech and hearing or education of the deaf should consult the Department of Special Education and Rehabilitation for specific requirements. A major in audiology consists of Audiology and Speech Pathology 3010, 3050, 3200, 3310, 3710, 4040, 4450, 4720, 4930 plus not less than 10 or more than 22 credit hours from the following: 3065, 4320, 4460, 4470 and 4940.

Additional recommended courses for audiology majors are: Audiology and Speech Pathology 4560, 4610, 4750 and Psychology 2500, 2520, 2540 and 3150.

A major in speech pathology consists of Audiology and Speech Pathology 3010, 3050, 3065, 3200, 3310, 4040, 4320, 4330, 4650, 4720, plus not less than 9 nor more than 15 credit hours in the following: 3065, 4330, 4340, 4400, 4610, 4930, 4940.

Additional recommended courses for speech pathology majors are: Audiology and Speech Pathology 4520, 4450, 4460, 4470, 4750, Anthropology 2530 or 3410, Psychology 2500, 2520, 2530, 2540, 3150, Special Education 4030, 4341, 4342, 4110, 4120, 4130, 4610, and Child and Family Studies 4810.

1261 English Pronunciation for Foreign Students (3) (Same as English 1261.)

3010 Basic Auditory Research (3) (Same as Psychology 3110.)

3040 Introduction to Speech Pathology and Audiology (3) Nature, etiology, and incidence of speech, hearing, and language disorders. Cannot be used to satisfy requirements of major in audiology or speech pathology.

3050 Speech Science I: Phonetics (4) Basic phonetics including production and production of spoken English sounds with analysis of their formant characteristics. Prerequisite: Speech 3010.

3065 Speech Science II (4) Anatomy and physiology of speech production mechanism. Prerequisite: Speech 3050.

3200 Speech and Language Development (4) Speech and language development in the normal child including development of distinctive features and implications of this process on diagnosis of speech and language development. Prerequisite: Psychology 3540 or Education 2430.

3310 Articulation Disorders (4) Etiology, diagnosis, and treatment of articulatory defects. Prerequisite: Speech 3050. (Same as Special Education 3310.)

3710 Audiology I (4) Fundamental aspects of normal hearing including anatomy and physiology of ear and basic audimetric principles. Prerequisite: Speech 3010. (Same as Special Education 3710.)

4040 Assessment of Speech and Language Disorders (4) Diagnostic procedures for children and adults with speech and language problems including observation and practice with diagnostic tests. Prerequisite: Speech 3050. (Same as Special Education 4040.)

4070 Free Association (4) Oral and written free association as process for diagnosing and treating communication disorders. Includes didactic self-analysis.

4101 Forensic Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4190 Speech Development of the Hearing Impaired (3) Prerequisite: Speech 3050. (Same as Special Education 4190.)

4200 Practicum in Speech Development of the Hearing Impaired (3) (Same as Special Education 4200.)

4210 Language Development of the Hearing Impaired (3) (Same as Special Education 4210.)

4220 Language Development of the Hearing Impaired (3) (Same as Special Education 4220.)

4250 Introduction to the Education and Psychology of the Deaf (3) (Same as Special Education 4250.)

4310 Stuttering (4) Nature and treatment. Review and integration of various theories. (Same as Special Education 4310.)

4320 Clinical Practice in Speech Pathology (1-6) Prerequisites: Speech 3040, 3050, 3310, 4040, and consent of instructor. S/N. (Same as Special Education 4320.)

4330 Clinical Practice in Speech Pathology (1-6) Prerequisites: Speech 3040, 3050, 3310, 4040, and consent of instructor. S/N. (Same as Special Education 4330.)

4340 Clinical Practice in Speech Pathology (1-6) Prerequisites: Speech 3040, 3050, 3310, 4040, and consent of instructor. May be repeated for credit. S/N. (Same as Special Education 4340.)

4400 Voice Disorders (4) Etiology, diagnosis, and treatment of voice disorders. Function of voice in the communication process. Prerequisite: Speech 3065. (Same as Special Education 4400.)

4450 Clinical Practice in Audiology (1-6) Prerequisites: Speech 4720, 4930, or 4940. S/N. (Same as Special Education 4450.)

4460 Clinical Practice in Audiology (1-6) Prerequisites: Speech 4720, 4930, or 4940. S/N. (Same as Special Education 4460.)

4470 Clinical Practice in Audiology (1-6) Prerequisites: Speech 4720, 4930, or 4940. May be repeated for credit. S/N. (Same as Special Education 4470.)

4520 Speech Pathology (3) Independent study of special problems in speech pathology. Prerequisite: Consent of instructor.

4550 Problems in Speech Pathology (3) Prerequisite: Consent of instructor.

4560 Problems in Audiology (1-6) May be repeated to maximum of 6 hours credit. Prerequisite: Consent of instructor.


4650 Speech and Language of the Culturally Different Child (3) Discussion of speech and language differences of children of various minority groups, of different ethnic and class membership and from different geographic regions; their causes, and their effects upon educational programs.

4700 Audiology for Educators of the Deaf (4) Fundamental aspects of hearing, including physiology of the ear, etiology and rehabilitation of hearing loss and basic audimetric techniques. May not be used to satisfy requirements of major in audiology and speech pathology. (Same as Special Education 4700.)

4719 Audiology Laboratory (1) Prerequisite: Consent of instructor. Undergraduate credit only. (Same as Special Education 4719.)

4720 Audiology II (4) Etiology and rehabilitation of hearing loss including pediatric and geriatric aspects, medical treatment and diagnostic audiology. Prerequisite: Speech 3710. (Same as Special Education 4720.)

4750 Noise in the Environment (3) Discussion of extent to which noise problem exists, introduction to methods of noise measurement, basic techniques in sound and vibration abatement, acoustical factors, and physiological concomitants in noise stimulation. Knowledge of acoustics is advisable.

4760 Introduction to Hearing Conservation (4) Roles of noise-hazard evaluation, medical monitoring, health education, hearing protective devices, administrative controls, and acoustical engineering controls in hearing conservation. Prerequisite: Speech 3710; coreq: Speech 4720.

4930 Aural Rehabilitation: Speechreading and Auditory Training (4) Speechreading as a receptive language process and development of maximum use of residual hearing in acoustically handicapped. (Same as Special Education 4930.)

4939 Laboratory in Aural Rehabilitation (1) (Same as Special Education 4939.)

4940 Advanced Aural Rehabilitation (4) Prerequisite: Speech 4930 or consent of instructor. (Same as Special Education 4940.)

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5040 Advanced Clinical Practice in Audiology (1-6)

5045 Practicum in Hearing Aid Orientation and Communication Counseling (1-6)

5050 Practicum in Aural Habilitation (1-6)

5051 Practicum in Aural Rehabilitation (1-6)

5060 Anatomy and Physiology of Speech (3)

5070 Anatomy and Physiology of Hearing (3)

5071 Physiological Acoustics (3)

5100 Comparative Anatomy of Peripheral Auditory Structures (3)

5110 Introduction to Research in Speech and Hearing (3)

5117 Instrumentation in Audiology and Speech Pathology (2)

5119 Laboratory in Instrumentation in Audiology and Speech Pathology (1)

5200 Seminar on Stuttering (3)

5201 Aphasia (3)

5320-30-40 Advanced Clinical Practice in Speech Disorders (1-6, 1-6, 1-6)

5350-60-70 Advanced Clinical Practice in Speech Diagnosis (1-6, 1-6, 1-6)

5380 Cerebral Palsy (3)

5390 Cleft Palate (3)

5440 Hearing Aid Evaluation (3)
UNDERGRADUATE
No major is offered, although course work in biochemistry is applicable to majors in biology, and chemistry.
For the Bachelor of Arts degree with a minor in biochemistry, the following courses are required: Chemistry 2140-49, 3211-23, 3219-29-39, and Biochemistry 4110-20 and 4119. Additional credits from Biochemistry 4210-20-30 and/or 4500 and/or 5010 are desirable.

4110-20 Cellular and Comparative Biochemistry (4, 4) Electrolyte behavior; chemistry and structure of proteins; enzyme behavior and biological function; catabolism and energy capture; synthetic metabolism; nucleic acid function, protein synthesis and biochemical genetics; regulation of biological processes. Must be taken in sequence. Prereq: Chemistry 3211-21-31, 3219-29-39, and one course from Biology 1210-20-30 or Botany 1110-20. Three lectures and discussion.

4119 Cellular and Comparative Biochemistry Laboratory (2) Basic biochemical procedures of general application in biochemistry and molecular biology. Prereq: 1 quarter of analytical chemistry. Prereq or coreq: 4110.

4210-20 Introduction to Physical Biochemistry (3, 3) 4210—Introduction to thermodynamics; phase stability concepts; chemical potential; osmotic pressure; activity and the Debye-Huckel model; electrochemistry; membrane permeability. 4220—Elements of statistical mechanics, diffusion, collision theory, chemical kinetics and transition state theory; higher order kinetics; specialized kinetics of enzymatic processes; some bio-polymer considerations. Prereq: Mathematics 1640-50-60, Chemistry 3211-21-31 and 3219-29-39, and an introductory course in biology.

4230 Introduction to Physical Biochemistry (3) Physical characterization of macromolecules; polarized light, absorption and fluorescence, sedimentation and transport hydrodynamics, electrophoresis, light scattering, and structural x-ray crystallography of proteins and nucleic acids. Prereq: 4220 or Chemistry 3430, or equivalent.

4500 Independent Research in Biochemistry (1-6) Special experimental problems under direction of staff member. Limited to undergraduates, and by consent only. May be repeated for credit. Prereq or coreq: 4110-20, 4119.

GRADUATE
The Master’s Program
Master’s degree requirements are found in the Graduate Catalog. Candidates usually should offer an undergraduate major in either biology or chemistry.

The Doctoral Program
Requirements for the Doctor’s degree are found in the Graduate Catalog. An incoming student must present an undergraduate major in either chemistry or biology.

5000 Thesis

5110 Biochemical Techniques (2)

5120 Membranes, Compartmental, and the Regulation of Energy Metabolism (3)

5130 Protein Structure and Enzyme Function (3)

5220 Structures and Functions of the Nucleic Acids (3)

5320 Protein Synthesis and Its Role in Metabolic Regulation (3)

5300 Graduate Research Participation (3-9)

5310-20-30 Experimental Techniques (2, 2, 3)

5450 Special Topics (1-3)

5510 Properties of Biomolecules Related to Function (3)

5520 Molecular and Cellular Basis of Metabolic Regulation (3)

5530 Biosynthesis and Regulatory Functions of Informational Molecules (3)

6000 Doctoral Research and Dissertation

6010 Advanced Biochemistry Seminar (1)

6410-20-30 Current Topics in Biochemistry (2, 2, 2)

Biology (190)
Coordinator: K. J. Monty

A major in biology may be met by completing one of the two following concentrations:

A. Concentration in Cell Biology
Consists of Biology 3110-20-30, Chemistry 3211-21-31, 3219-29-39, Biochemistry 4110-20, and 12 hours from approved upper-division courses in biochemistry, botany, microbiology, and zoology. 1 Prerequisites to this concentration include 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30. Corequisites are Math 1841-51; a year sequence in physics (except 1410-20-30); and Chemistry 2140-49.

B. Concentration in Organismal and Systems Biology
Consists of Biology 3110, 3120, 3130, Chemistry 3211-21-31, 3219-29-39, and 18 hours from approved upper-division courses in biochemistry, botany, microbiology, and zoology. 1 Prerequisites to this emphasis are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30. Corequisites are Math 1841-51 or 1550-60 (Math 1841-51 is recommended choice); a year sequence in physics (except 1410-20-30) or Geology 1510-20.

Notes: Students majoring in biology are advised to exercise care in fulfilling the science and mathematics triad requirements. Math 1841-51 (or in some cases 1550-60) and Chemistry 1110-20-30 or equivalent (20 hours altogether) must be completed by biology majors. Students majoring in biology are advised to consider completion of a physical science minor (page 223).

Minor: Consists of Biology 3110-20-30 and 12 hours of upper-division courses chosen from the list below. Biochemistry 4110-20, 4119, 5010; Botany, any 3000- or 4000-level courses; Microbiology, any 3000- or 4000-level courses; Zoology, any 3000- or 4000-level courses.

1Biochemistry 4110, 5010; Botany, any 3000- or 4000-level courses (except 3050, 3070, 3093); Microbiology 3000-09, 3007-19, 4111-31, 4120-30, 4210-30, 4211-29, 4811-19, Zoology 3050, 3060, 3080, 3150, 3320, 4010, 4050, 4110-20-30, 4250, 4280, 4310, 4369, 4380, 4450, 4610-20. (In meeting the upper-division minimum requirement, not more than 8 hours may be credited from any one biological science department, and not more than 4 hours of research courses may be credited.)

2Biochemistry 4110-20, 4119, 5010; Botany, any 3000- or 4000-level courses including not more than one from 3050, 3070, 3093; Microbiology, any 3000- or 4000-level courses; Zoology, any 3000- or 4000-level courses except 3010-20-30 and 3093. (In meeting the upper-division minimum requirement, not more than 12 hours may be credited from any one biological science department, and not more than 4 hours of research courses may be credited.)

Bacteriology
See Microbiology.

Biochemistry (188)
Professors: J. E. Churchich, Ph.D. Sheffield (England); K. J. Monty (Acting Head), Ph.D. Rochester; T. P. Salo, Ph. D. Michigan.

Associate Professors: S. W. Hawkins, Ph.D. Chicago; J. G. Joshi, Ph.D. Poona (India).

Assistant Professors: L. Brattsten, Ph.D. Illinois; R. E. Bryant, Ph.D. Illinois; R. F. Feinberg, Ph.D. California (Berkeley); L. Huang, Ph. D. Michigan State.
Botany (198)

Professors: R.W. Holton (Head), Ph.D. Michigan; E.E.C. Clebsch, Ph.D. Duke; H.R. DeSelm, Ph.D. Ohio State; W.R. Herron (Vice Chairman for Academic Affairs), Ph.D. Vanderbilt; L.R. Hesler (Emeritus), Ph.D. Cornell; L.W. Jones, Ph.D. Texas; J.F. McCormick (Director of Ecology Program), Ph.D. Emory; P.H. Norris, Ph.D. Ohio State; J.S. Olson, Ph.D. Chicago; R.H. Petersen, Ph.D. Columbia; A.J. Sharp (Emeritus), Ph.D. Ohio State; P.L. Walne, Ph.D. Texas.

Associate Professors: C.C. Amundsen, Ph.D. Colorado; S.L. Bell, Ph.D. Chicago; M.W. Bierner, Ph.D. Texas; J.D. Caponetti, Ph.D. Harvard; A.M. Evans, Ph.D. Michigan; A.S. Heilman, Ph.D. Ohio State; H.H. Shugar, Ph.D. Georgia.


Instructor: B.D. Durland, M.S. Georgia College.

UNDERGRADUATE

Major: Consists of Botany 3110-20-30; 23 upper-division hours of botany, including 3210 and at least 2 hours from 4710-20-30, plus 4 hours of upper-division courses from a related biological science (zoology, physiology, inorganic chemistry, agricultural biology, forestry, ornamental horticulture and landscape design, or plant and soil science). Not more than 3 hours from 3050, 3070, 3090 allowed for major credit. Prerequisites to this major are Botany 1110-40 or 1118-28 or Botany 1210-20-30 and Chemistry 1110-20-30.

Corequisites are Math 1840-50 or Math 1550-60, Physics 1210-20-30 or Physics 2210-20-30 or Chemistry 3211-21-31, 3219-29-39 or Geology 1510-20 plus 4 additional hours in geology.

Minor: Consists of Botany 3110-20-30 and 15 upper-division hours in botany. Not more than 3 hours from 3050, 3070, 3090 are allowed for minor credit. Prerequisites to this minor are Botany 1110-20, 1140 or 1118-28 or Botany 1210-20-30.

Corequisites are 8 hours of upper-division courses in a related biological science (zoology, microbiology, biochemistry, agricultural biology, forestry or plant and soil science).

1110-20 Fundamentals of Botany (4, 4) Nature and development of plants, including processes, structure, life histories, inheritance, ecology and importance to man. Enrollment in sequence is desirable. Two 3-hr discussions and approximately 3 hrs audio-tutorial laboratory per week. Students may not receive credit for both Botany 1110-20 and Biology 1210-20-30.

1118-28 Honors: Fundamentals of Botany (6, 6) Honors course designed for superior students in beginning botany. Open to freshmen with a score of 22 or better on the SAT or 650 in the science section of the American College Testing Program, and sophomores who have a cumulative grade point average of 3.25 (or 3.5 in the sciences) or who are approved through an interview with a member of botany faculty. Students receiving C or D in 1118 must transfer to 1112. Three 2-hr lecture-lab-discussion periods. Must be taken in sequence. Students may not receive credit for both Botany 1118-28 and Biology 1210-20-30.

*Students with 2 years of high school biology and satisfactory ACT scores may, with the consent of the department, omit the freshman year sequence and enter Botany 3110-20-30 directly (see course listings under biology).

Black Studies

See Cultural Studies.

140 Selected Topics in General Botany (4) Areas will include plant growth, population genetics, environmental interactions and impact of human activities on biological resources. Lectures, laboratory, field trips and individual projects. Two hrs lecture-discussion and 4 hrs laboratory per week. Occasional field trips. Prerequisite: Botany 1110-20 or Biology 1210-20-30.

3010-20 Plants in Evolution (4, 4) Monera to angiosperms; emphasis on evolutionary relationships, morphology and development. Not for botany graduate credit. Prerequisite: 6 hrs in biological sciences. For botany graduate credit.

3031-2 Field Botany (4, 4) Emphasis on field and winter flora, respectively. Prerequisite: 3030. Not to be taken in sequence.

3050 Socio-Economic Impact of Plants (3) Significance of agricultural and horticultural development of human cultures, evolution of cultivated plants, and roles of plants in present civilizations. Occasional field trips. Not for botany graduate credit.

3070 Genetics and Society (3) An introduction to genetics, anthropology and evolution with emphasis on their implications for human society. Not for botany graduate credit. (Same as Anthropology 3070.)

3090 Biology and Human Affairs (3) Basic biological principles involved in deterioration and preservation of an environment in which man and his cultures may survive. Not for botany graduate credit. (Same as Zoology 3090.)

3130 Introductory Plant Pathology (4) Same as Agricultural Biology 3130.

3210 Introductory Plant Physiology (4) Organismal physiology of plants: water relations, mineral nutrition, morphogenesis, elements of metabolic processes, effects of age, light, natural rhythm, temperature and other environmental factors. Lecture and lab. Not for botany graduate credit. Prerequisite: One year general chemistry and one year biological science.

4000 Tutorial in Botany (2) Individual, independent study under guidance of selected staff. By application only. May be repeated with consent of department.

4030 Mechanisms of Plant Speciation (4) Processes of plant speciation emphasizing population genetics, isolation, drift, hybridization, variation in populations, establishment of population barriers and other aspects of plant speciation. Prerequisite: 3010-20 and Biology 3110.

4120 Plant Anatomy (4) Comparative structure of vascular plants. Prerequisite: 1110-20.

4240 Paleobotany (4) (Same as Geology 4240.)

4310 Plant Ecology (4) Interactions between individuals, species, communities and their environments. Circulation of energy and matter in ecosystems. Weekly field trips or laboratory periods, and at least two weekend field trips. Prerequisite: 3030 or equivalent.

4410-20-30 Undergraduate Research Participation (2, 2) Participation in active research projects under supervision of staff members. Prerequisite: Junior or senior standing, minimum grade average 2.5. 2 hrs of lecture/lab-discussion periods. 2 hrs of lab period. Prerequisite: Senior standing.

4710-20-30 Senior Seminar (1, 1, 1) At least 2 hrs of field work. Prerequisites: 4710-20-30 are required of botany majors. Prerequisite: Senior standing.

GRADUATE

5000 Thesis

5011 Mycology (4)

5012 Morphology and Evolution of Phycocyanines (4)
Chemistry (235)

Professors: D.A. Shirley (Head), Ph.D. Iowa State; N.S. Bowman, Ph.D., Princeton; C.A. Buehler (Emeritus); Ph.D. Ohio State; W.E. Bull, Ph.D. Illinois; C.J. Collins, Ph.D. Northwestern; J.A. Dean, Ph.D. Michigan; J.F. Eastham, Ph.D. California (Berkeley); W.H. Fletcher, Ph.D. Minnesota; C.W. Kleinan, Ph.D. Texas; D.C. Kleinfeld, Ph.D. Princeton; M.H. Lietzke, Ph.D. Wisconsin; G. Mamantov, Ph.D. Louisiana State; A.D. Sparks (Emeritus); Ph.D. Penn State; G.D. O'Kelley, Ph.D. California (Berkeley); G.K. Schweitzer1, Ph.D. Illinois; G. Smith, Ph.D. Virginia; H.A. Smith (Emeritus); Ph.D. Harvard; V.T. Smith (Emeritus); Ph.D. Ohio State; W.A. Van Holde, Ph.D. Johns Hopkins; E.L. Wehrly, Ph.D. Purdue; T.F. Williams1, Ph.D. London (England); J.H. Wood (Emeritus), Ph.D. North Carolina.

Associate Professors: J.E. Bloor, Ph.D. Manchester (England); J.Q. Chambers, Ph.D. Kansas; G.W. Kabalka, Ph.D. Purdue; C.A. Lane, Ph.D. California (Berkeley); J.W. Larson, Ph.D. Purdue; R.M. Magid, Ph.D. Yale; R.M. Pagni, Ph.D. Wisconsin; J.R. Peterson, Ph.D. California (Berkeley).

Assistant Professors: J.L. Adcock, Ph.D. Texas; F.A. Grimm, Ph.D. Cornell; J.F. Kinstle, Ph.D. Akron; J.D. Kovac, Ph.D. Yale; T.M. Martin, Ph.D. Tennessee; F.M. Schell, Ph.D. Indiana; C. Woods, III, Ph.D. North Carolina State.

*Alumni Distinguished Service Professor.

UNDERGRADUATE

For information regarding the Bachelor of Science in Chemistry degree and the cooperative program in chemistry, see page 185.

There are two alternative routes for the student to take in designing a program for a B.A. degree with a major in chemistry.

Concentration A is designed to prepare the student for a career as a professional chemist or for entrance into graduate school in such fields as chemistry, biochemistry, geochemistry, etc. This program has similarities to that leading to the degree of Bachelor of Science in Chemistry, (page 185), but with more opportunity for selection of electives outside the department and outside of science. Unlike the Bachelor of Science in Chemistry degree, the B.A. degree using Concentration A is not approved by the Committee on Training of the American Chemical Society.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1840-50-60 or 1840-50-60 or 1840-60, 2510, 2310-20. The concentration consists of Chemistry 2140, 2149, 3211-21-31 or 3511-21-31 (latter recommended), 3219-29-39 or 3219, 3529-39 (latter recommended), 3410-20-30, 3429 plus at least 10 hours of additional upper-division work in chemistry. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the ten hour requirement.) While not required, Math 2260 is highly recommended as an elective for majors in this concentration.

Concentration B is designed for students who have career objectives in fields other than chemistry, but in fields where chemistry has direct applications, such as medicine, dentistry, pharmacy, law, business and economics. This concentration, supplemented by appropriate courses from other areas, is suitable for students planning careers in these areas. Concentration B is specifically designed to provide more elective hours which may be employed in fields which are related to chemistry.

Concentration B is not appropriate for students intending to become professional chemists.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1840-50-60 or 1840-60, 2510, 2310-20; (b) Geology 1510-20; (c) Biology 1210-20-30; (d) Biology 3110-20 and Microbiology 3000, 3008; (e) Botany 1110-20. The concentration consists of Chemistry 2140, 2149, 3211-21-31 or 3511-21-31 (latter recommended), 3219-29-39 or 3219, 3529-39 (latter recommended), 4910-20-30, 4929 plus at least 10 hours of additional upper-division work in chemistry. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the ten hour requirement.)

A minor in chemistry shall consist of the successful completion of 24 hours of chemistry courses number 2000 and above including Chemistry 2140-49 (4 hours) and at least one of the following sequencesequencies: Chemistry 3211-21-31, 3219-29 (or 3529)-3239 (or 3539) (12 hours) or Chemistry 3410-20-30 (9 hours) or Chemistry 4910-20-30 (9 hours).

Placement in Freshman Sequences: The sequence which meets all requirements of a year of general chemistry and is a prerequisite for upper-division courses is 1110-20-30. The 1500 and 1600 series have more limited applications. The 1500 series emphasizes organic and biochemistry and may be used as a prerequisite only for 2230 and 3810. The 1600 series is for non-science majors and does not provide an adequate background for any additional courses in chemistry.

It is possible to move from one sequence to another as long as a substitution is obtained in advance. For example, a student who finds a need to complete the 1110 series after having completed 1510 may substitute 1510 for 1110 with the approval of the chemistry department and may then take 1120 followed by 1130. However, no single quarter of the 1500 or 1600 sequences may be substituted for 1120 or 1130. Credit may be received for only one of the courses 1110, 1510, or 1610.

In any chemistry course above the freshman level which has Chemistry 1110-20-30 as a prerequisite, 1510-20-30 may be used as a prerequisite with approval of the chemistry department.

Chemistry 1118-28-38 is an honors courses designed for the student who has completed Concentration B and has shown evidence of progress in science. Class size may be limited to promote faculty-student interaction. Selection is based on ACT scores, high school chemistry grade, and if necessary, performance on a placement examination to be given during the first class meeting.

A student receiving a passing grade below B in 1118 will complete the year's work by
taking 1120-30. A student receiving a grade of C or D in 1120 will not be eligible for 1138 and must take 1130 to get the full 12 hours credit.

Beginning students who have had high school chemistry and who have had additional experience, e.g., summer institute study, special research projects, home laboratory) are invited to apply during the summer to the head of the department for permission to take proficiency examination in one or more quarters of freshman chemistry. If a satisfactory grade is made on the examination, credit will be allowed for the quarter (or courses) for which the exam was taken.

1110-20-30 General Chemistry (4, 4, 4) General courses of theoretical and descriptive chemistry. 1120—Modern atomic theory, chemical bonding, stoichiometry and quantitative treatment of gas laws. 1121—Quantitative aspects of solution chemistry, kinetics, chemical equilibria, and thermodynamics. 1130—Descriptive chemistry of non-metallic elements, electrochemistry, and introduction to organic and biochemistry. Must be taken in sequence. 3 hrs and 1 lab.

1118-28-38 Honors: General Chemistry (4, 4, 4) [See explanation above.] 3 hrs and 1 lab.

1410 Chemistry for Nurses (4) Inorganic, organic, and biochemistry. 3 hrs and 1 lab.

1420 Chemistry for Nurses (4) Aromatic compounds and biological chemistry. Prereq: 1410. 3 hrs and 1 lab.

1510-20-30 General Chemistry (4, 4, 4) Introductory course with emphasis on topics relating to living systems: thermodynamics and molecular structure, gas laws, liquid and solid state, solutions, colloids. 1520—Acids and bases, oxidation and reduction, kinetics and equilibria. Introduction to organic chemistry, alkenes, unsaturated and aromatic hydrocarbons. 1530—Structure and reactions of various organic functional groups. Introductory biochemistry—amino acids and carbohydrates, lipids, nucleic acids. Must be taken in sequence. 3 hrs and 1 lab.

1610-20 Chemistry and Society (4, 4, 4) Chemistry for non-science majors emphasizing role of chemistry in dealing with current social concerns. 1610—Basic principles including particle nature of substances and their chemical changes. 1620—Impact and utilization of chemical principles in modern society, with special emphasis in areas of energy, environment, medicine and consumer products. Must be taken in sequence. 3 hrs and 1 lab.

2140 Analytical Chemistry (3) Principles and practice of quantitative measurement with emphasis on techniques of quantitative analysis. Acid-base equilibria, oxidation-reduction systems, complexometric titrimetry, elementary spectrophotometry, potentiometric methods, application of titrimetric analysis. Prereq: 1110-20-30; cor: 2149.

2149 Analytical Chemistry (1) Experiments on topics discussed in 2140. Prereq or cor: 2140. 1 lab.

2230 Elements of Organic Chemistry (4) Brief treatment of the fundamental principles and emphasis on compounds of biological interest. Prereq: One year of general chemistry. Not open to chemistry majors or minors. Cor: 2231 or 2232; may not be received for both Chemistry 2230 and 2231, toward graduation or otherwise.

3000 Searching the Chemical Literature (2) Use of abstracting services, bibliographic references, compendia, books, chemical journals and other sources of chemical information. 2 hrs. Open only to upper-division chemistry majors.

3211-21-31 Organic Chemistry (3, 3, 3) Compounds of carbon and their reactions, reaction mechanisms, spectroscopic and other physical properties. Must be taken in sequence. Prereq: 1110-20-30. Corresponding laboratory (3219-29-39) is coreq for students not having credit for the laboratory. 3219-29-39 Organic Chemistry Laboratory (1, 1, 1) Experiments on topics discussed in 3211-21-31. Corresponding lecture (3211-21-31) is coreq for students not having credit for the lecture.


3429-39 Physical Chemistry Laboratory (1, 1) Gases, liquids, chemical equilibria, solutions, phase equilibria, reaction kinetics and electrochemistry. The corresponding courses (3420 and 3430) are coreq. 1 lab.

3511-21-31 Principles of Organic Chemistry (3, 3, 3) Structure and reactivity of aliphatic and aromatic compounds, physical properties of synthetic utility. Use of spectroscopic and physical techniques to elucidate reaction mechanisms. Recommended for chemistry students planning careers in physical or biological sciences. Must be taken in sequence. Prereq: 1110-20-30. Corresponding lecture (3511-21-31) or 3529-39 is coreq; latter is recommended.

3529-39 Organic Chemistry Laboratory (1, 1) Experiments on topics discussed in 3521-31. Similar to 3229-39 except designed for students who have no prior knowledge of various spectroscopic and chromatographic techniques. Corresponding lecture (3521-31 or 3521-31) is coreq for students not having credit for the lecture.

3810 Radioactivity and Its Applications (3) Radioactive materials in tracer and therapeutic applications. Radioactive decay, detection apparatus and techniques, tracer procedures and safety precautions in agriculture, biology, medicine, nutrition, etc. Not for credit by chemistry or physics majors or minors. Prereq: Math 1550 or equivalent, 1 yr of general chemistry.


4119 Physical Chemistry Laboratory (1) Solutions, phase equilibria, reaction kinetics and spectroscopy. Theoretical and practical aspects of thermodynamics. Prereq: 3410 or 3419.

4160-70 Intermediate Physical Chemistry (3, 3) (Designed for entering graduate students who have had one year of physical chemistry: 4160—The laws of thermodynamics, phase equilibria and solutions, and chemical equilibria. 4170—Gases and kinetic theory, chemical kinetics, molecular spectroscopy, and introduction to chemical statistics.

4210 Advanced Analytical Chemistry (3) Chemical separations including chromatography, ion exchange and solvent extraction, spectrophotometric techniques. Prereq: 2140-49.

4219 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4210. Coreq: 4220.

4220 Advanced Analytical Chemistry (3) Electroanalytical methods of analysis (including polarography, coulometry, polarography, and voltammetry); magnetic resonance methods; mass spectrometry; x-ray absorption and fluorescence techniques. Prereq: 2140-49; 4320 or 4620 recommended.

4229 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4220. Coreq: 4220.

4420 Physical Inorganic Chemistry (3) Theoretical concepts leading to an understanding of inorganic chemistry; quantum theory of the atom, principles of molecular structure, and elementary nuclear chemistry. Prereq: 4320 or 4420.

4430 Intermediate Inorganic Chemistry (3) Application of theoretical concepts to inorganic elements, their chemical states, and their reactions. Prereq: 4420.

4510 Organic Qualitative Analysis (3) Identification of organic compounds and mixtures. Prereq: 3211-21-31, 3219-29-39 or 3219, 3529-39. 3 labs. (Not open to students who have completed 4610.)


4810-20 Advanced Chemical Experimentation (2, 2) Laboratory courses in application of modern experimental techniques to solution of chemical problems. Synthesis and characterization of organic and inorganic compounds with emphasis on independent study using advanced techniques. Prereq: 3231-39 or 3231-3539, 3430-39, 4220. Students who receive credit for 4610 may not also receive credit for 4510.

4640 Electronics for Chemists (4) Electronics in design and construction of chemical instrumentation. 2 hrs and 2 labs. Prereq: Physics 2210.

4710 Research in Chemistry (2) Open to senior major in chemistry with consent of instructor. Written report must be submitted to research director at termination of project. May be repeated. Maximum 6 hrs credit.

4910-20 Biophysical Chemistry (3, 3, 3) Physicochemical principles with applications to biological systems. Must be taken in sequence. Not open to students having 3410-20-30 or 4920; first, second and third laws of thermodynamics; equilibria; 4920—Solution chemistry; electrochemistry; kinetics; nuclear chemistry; 4930—Elementary quantum chemistry; optical and magnetic spectroscopy; light scattering; macromolecular properties. Prereq: 1110-20-30; Math 1540-50 or equivalent.

4929-39 Biophysical Chemistry Laboratory (1, 1) Experiments on topics discussed in 4910-20. Must be taken in sequence. Not open to students taking 3410-20-30-39 sequence. 4920 is coreq or prereq for 4929. 4930 is coreq or prereq for 4939. 1 lab.

GRADUATE
Students majoring in chemistry for the M.S. or Ph.D. degree are required to present a preresquisite one year early a general, analytical, organic, and physical chemistry with a satisfactory result. Students meeting these prerequisites may be admitted with appropriate deficiencies which must be removed without graduate credit.

For students minoring in chemistry, the prerequisite is general principles of chemistry including quantitative analysis.

The Master's Program
Master's degree requirements are found in the Graduate Catalog.

The Doctoral Program
Doctor's degree requirements are found in the Graduate Catalog. The department offers specialization in nine areas for the Ph.D. degree: analytical, energy, environmental, inorganic, organic, physical, theoretical, chemical physics and polymer science.

5000 Thesis
5110-20-30-35 Advanced Organic Chemistry (3, 3, 3)
5129 Advanced Organic Chemistry Laboratory (3)
5140 Introductory Polymer Chemistry (3)
5150 Kinetics of Polymerization (3)
Classics (257)

Professors: H.C. Rutledge (Head), Ph.D. Ohio State; A. Rapp (Emeritus), Ph.D. Illinois.

Associate Professors: M.L. Herbst, M.A. Arkansas; J.E. Shelton, Ph.D. Vanderbilt.

Assistant Professors: G.C. Gesell, Ph.D. North Carolina (Chapel Hill); B.J. Levy, Ph.D. Texas; P.J. Nassen, Ph.D. Ohio State.

Greek
UNDERGRADUATE
A major in Greek consists of 39 hours of language courses numbered above 2000 but including Classics 4220. Nine hours from the following general courses may be substituted for language courses at the discretion of the department: Classics 3210-20, 3310-20, 4010, 4101 may be taken for a maximum of 6 hours.

The Greek minor consists of 24 hours in language courses numbered above 2000 including Classics 4220. Six hours from the following general courses may be substituted: Classics 3210-20, 3310, 3320.

1210-20-30 Beginning Greek (3, 3, 3) Must be taken in sequence.
2610 Xenophon (4)
2620 Homer: Odyssey (4)
2630 Homer: Iliad (4)
2640 Greek New Testament (4) Prereq: 2610 or consent of instructor.
3010 Plato (3)
3020 Herodotus (3)
3030 Euripides (2)
4020 Aeschylus, Sophocles (3)
4030 Lysias (3)
4040 Aristophanes (3)
4050-60-70 Directed Readings in Greek (3, 3, 3)

GRADUATE
Graduate courses in classics include wider reading of Greek or Latin authors in a selected field, more detailed study of one of the great areas of classical literature, and development of background for appreciation of Greek or Roman life and literature.

5000 Thesis
5110-20-30 Greek Epic, Homer (3, 3, 3)
5210-20-30 Greek Drama (3, 3, 3)

Latin
UNDERGRADUATE
A major in Latin consists of 39 hours in language courses numbered above 2000, but including Classics 4220. Nine hours from the following general courses may be substituted for language courses at the discretion of the department: Classics 3210-20-30, 3310, 3320, 4101; 4010 may be taken for a maximum of 6 hours. Greek language courses numbered above 2000 may be substituted for a maximum of 9 hours of Latin courses with consent of department.

The Latin minor consists of 24 hours in language courses numbered above 2000 including Classics 4220. Six hours from the following general courses may be substituted: Classics 3210-20-30, 3310, 3320, 3330.

Placement Examination: Students who transfer to The University of Tennessee from other colleges and students who enter with high school units in Latin should register for the courses in which they would normally be placed on the basis of such credits. During the first week of the quarter a placement test will be given, and students will be advised if a change in registration is indicated by the results.

Proficiency Examinations: Students who have acquired a knowledge of Latin through private study or tutoring should request a proficiency test. A student who earns a grade of B or better in this examination is eligible for credit toward graduation. A student who omits any course in a sequence may receive credit for it by passing the appropriate proficiency examination.

Certification for Teaching Latin in Tennessee. Consult Certification Clerk, Room 212, Claxton Education Building.

1110-20-30 Beginning Latin (3, 3, 3) Must be taken in sequence.
2511-21 Intermediate Latin (4, 4) 2511—Readings from the age of Cicero. 2521—Virgil’s Aeneid. Open to those who have had at least two years of high school Latin, or equivalent.
3140 Ovid (3) Prereq: 3 or 4 years of high school Latin or 2521.
3150 Plautus and Terence (3) Prereq: 3 or 4 years of high school Latin or 2521.
3160 Catullus (2) Prereq: 3 or 4 years of high school Latin or 2521.
3440 Livy (3)
3450 Pliny and Martial (3)
3460 Elegaic Poets (3)
4120 Horace, Satires and Epistles (3)
4140 Cicero and Techniques of Latin Prose Composition (4) Recommended for Latin majors and minors, especially those intending to teach or pursue graduate work. Works of Cicero studied as models for prose composition.
4310 Selected Readings from Latin Literature (3)
4320-30 Selected Readings from Latin Literature (3, 3) May be repeated for credit.
4340 Horace, Odes (3)
4350 Tacitus (3)
4360 Lucretius (3)
4370 Readings in Medieval Latin (3)
GRADUATE
5000 Thesis
5110 Seminar in Caesar (3)
5410-20-30 The Latin Epic. Lucretius, Virgil, Lucan (3, 3, 3)
5510-20-30 Roman Comedy. Plautus, Terence (3, 3, 3)

GENERAL COURSES
2710 Greek Etymology (3) Origin and derivation of words. Greek stems most commonly found in English language with special attention to words in scientific and technical vocabularies.
4510 Selected Readings in Latin Literature in Translation (3) Content varies; may be repeated for credit with consent of department.

GRADUATE

5620 Problems in Old World Archaeology (3)

Comparative Literature.

See Cultural Studies.

Computer Science (266)

Professors: R.T. Gregory (Head), Ph.D. Illinois; F. Donaldson1, Ph.D. Texas; R.J. Plemmons, Ph.D. Auburn; G.R. Sherman, Ph.D. Purdue.

Associate Professors: R.M. Aiken, Ph.D. Northwestern; C.E. Hughes, Ph.D. Pennsylvania State; S.M. Selkow, Ph.D. Georgia Tech.

Assistant Professors: T. Feagin1, Ph.D. Texas; W.S. Havens, M.S. VPI; C.P. Huang, Ph.D. SUNY (Buffalo); S.R. Jordan, Ph.D. Wisconsin; M. Moshef, Ph.D. Ohio State; C.P. Pfleeger, Ph.D. Pennsylvania State; D.W. Straith, Ph.D. Texas; M.G. Thompson, Ph.D. Duke.

*Space Institute

UNDERGRADUATE

Computer science offers an undergraduate major and minor as well as a Master of Science degree (for details, see Graduate Catalog). Information about computer science programs may be obtained from the departmental office, 8 Ayres Hall or from the Liberal Arts Advising Center, 220 Ayres Hall.

Major: Computer Science 1510 is a prerequisite to a major in computer science which consists of 2510, 3155, 3510, 3520, 4510, 4550, and an additional fifteen hours selected from computer science intermediate and advanced courses as listed below. Also required are Math 2840-50-60 (or the honors sequence 2848-58-68) and Statistics 3450.

Minor: A minor in computer science consists of 2510, 3155, 4550, and an additional twelve hours of computer science upper-division courses.

Introductory and Service Courses

1410 Introduction to Business Oriented Programming (3) Current and potential uses of computers as tools in the business environment with emphasis on learning FORTRAN programming. Not for computer science majors: students may not receive credit for both 1410 and 1510. Intended primarily for students in College of Business Administration. Prereq: Math 1560 or Math 1840.

1510 Introduction to Computer Science (4) Computer as a tool of varied uses in modern world; emphasis on learning and using FORTRAN. Problem-solving process; organization and characteristics of digital computers. Survey of application of computers in various disciplines. Not for credit if 2410 previously taken. Students may not receive credit for both 1410 and 1510. Prereq: Mathematics 1560 or Mathematics 1840.


3010 Computers and Society (3) History of computing and computer systems; capabilities of computers; applications in artificial intelligence, humanities, social sciences, sciences and engineering; computing in foreign countries; computer assisted instruction, future advances in computing; careers in computing. Prereq: Consent of instructor.

3510 Introduction to Numerical Algorithms and Programming (3) Basic numerical algorithms for solving systems of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. Introduction to programming in FORTRAN. 3150 and 3155 may not both be taken for credit; students with a knowledge of FORTRAN should take 3155. Prereq or coreq: Math 2860. (Same as Math 3150.)

3515 Introduction to Numerical Algorithms (3) Roots of equations, systems of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. 3150 and 3155 may not both be taken for credit. Students with no knowledge of FORTRAN should take 3150. Prereq: 1510 or consent of instructor. Prereq or coreq: Math 2860. (Same as Math 3155.)

3410 Computer Programming—COBOL (3) Computer programming in business oriented language COBOL. Prereq: 1410 or 1510 or 3150 or consent of instructor.


4310 Computation in Statistical Analysis (3) Use of digital computer in standard statistical analyses, such as frequency tabulations, percentiles, and data analysis. Regression, and analysis of variance. Not for credit for computer science majors. Prereq: Statistics 2100 or equivalent. An elementary knowledge of a procedure-oriented language such as FORTRAN is also assumed.

4330 Independent Study in Computer Science (1-3) Special project in area of student's primary interest. To be directed by computer science faculty, perhaps jointly with student's faculty advisor. Prereq: Consent of instructor. May be repeated. Maximum 9 credit hrs.

Intermediate and Advanced Courses

3510 Computer Organization and Programming I (3) Problem formulation and advanced programming in FORTRAN; operation and control of digital computers. Prereq: 1510, 2510, or 3150 or consent of instructor.


3570 Programming Languages (4) Comparison and analysis of programming languages and their features. Languages to be discussed will include SNOBOL, LISP, APL, and PASCAL. Prereq: 2510.

3715 Discrete Structures (3) Introduction to discrete structures useful in computer science. Sets, logic, relations, functions, proof techniques, graph theory, lattices, Boolean algebras. Prereq: 1510 and Math 2660 or equivalents. (Same as Math 3715.)

4035-45 Introduction to Numerical Linear Algebra (3, 3) Floating-point numbers and arithmetic on modern digital computers; numerical algorithms for solving systems of linear equations; linear least-squares methods and eigenvalue computations. Prereq: 3150 or 3155. (Same as Math 4035-45.)

4225-35 Introduction to Numerical Analysis (3, 3) (Same as Math 4225-35.

4510 Data Structures and Non-numeric Programming (3) Data structures and algorithms for their manipulation. Arrays and orthogonal lists; stacks, queues, rings, doubly-linked lists, trees, dynamic storage allocation; organization of files, programming languages. Prereq: Programming Languages 3570. Prereq or coreq: Knowledge of SNOBOL equivalent to that gained in 3570.
5455 Finite Difference Methods for Partial Differential Equations (3)
5465 Mathematical Aspects of the Finite Element Method (3)
5655-65-75 Numerical Mathematics (3, 3, 3)
5670-80 Advanced Operating Systems (3, 3)
5710 Finite Automata Theory (3)
5790 Computability and Computational Complexity (3)
5795 Theory of Formal Languages (3)
5810 Information Organization and Retrieval (3)
5840-50 Pattern Recognition (3)
5910-20-30 Special Topics in Computer Science (1-3, 1-3)
5940-50 Advanced Small Computer Systems (3, 3)
5970 Independent Study in Computer Science (1-3)

Cultural Studies
Director: Dr. Charles O. Jackson
Basic Staff: S.R. Blanshei, Ph.D. History; J.S. Elliott, Ph.D. Russian; D.M. Fienne, Ph.D. Russian; C.O. Jackson, Ph.D. History; S.B. Kurth, Ph.D. Sociology; H.E. Lewald, Ph.D. Spanish; D.H. Littlejohn, B.A. Spanish Programs; C.J. Mellor, Ph.D. German; M.E. Peel, M.A. History; M.P. Rice, Ph.D. Russian; H.C. Rude, Ph.D. Classics; P.B. Scott, Ph.D. Economics; Z. Shirakawa, M.A. Special Programs; S.E. Young, Ph.D. Music

The ideal curriculum encourages not only proficiency in a given field of knowledge but also the comprehension of similarity and complementarity between areas of intellectual endeavor. One answer to the need for fusion and integration of knowledge is the interdisciplinary program. The College has joined the resources of several departments to offer a cultural studies major with concentrations in American studies, ancient Mediterranean, Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval studies, and European literature studies. Minors are provided in Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval studies, and women's studies.

American Studies (099)
History 2510-20 (or equivalent honors courses) are prerequisite to a concentration in American studies which consists of 36 quarter hours: English 3010-20-30, American Studies 3010 and 4010, and 21 hours of upper-division electives dealing with the American experience. Nine hours of the elective group must be from one of the following disciplines: anthropology, economics, political science, or sociology. A list of acceptable elective courses is published annually by the American Studies Committee. For further information consult the chairman of the American Studies Committee, Dr. Charles Jackson.

3010 Introduction to American Culture (3) Explores dynamics and nature of contemporary American culture.

4010 Topics in American Culture (3) Content varies. May be repeated once.

Asian Studies (145)
The Asian studies concentration consists of 36 quarter hours: Asian Studies 2510-20 plus 36 additional credits from Asian studies or approved departmental courses. The latter should constitute a coherent program, including a minimum of one course (3 or 4 hours) from each of the following three areas: (a) art, Asian culture, literature, and music; (b) economics, geography, history, and political science; (c) anthropology, philosophy, religious studies, and sociology. Students who prefer to use Asian Studies 2510-20 for Triad or elective credit may, with permission of the program chairperson, substitute eight additional upper-division hours in acceptable courses for that required sequence in the concentration.
The Asian studies minor consists of 24 quarter hours: Asian Studies 2510-20 plus 16 additional credits from Asian studies or approved departmental courses. The latter should include a minimum of one course (3 or 4 hours) from each of the following areas: (a) art, Asian culture, literature, and music; (b) economics, geography, history, and political science; (c) anthropology, philosophy, religious studies, and sociology. Students who prefer to use Asian Studies 2510-20 for Triad or elective credit may, with permission of the program chairperson, substitute eight additional upper-division hours in acceptable courses for that required sequence in the minor.
It is strongly recommended that students planning to attend graduate school take an appropriate Asian language through the intermediate level.
Further information may be obtained from the chairperson of the Asian Studies Committee, Dr. Phoebe Marr.

2510-20 Asian Civilization (4, 4) Introduction to Asian civilization by comparative study of development of religion, social institutions, and high culture in India, China, Japan, and the Islamic world.
2510-20-30 Readings in Asian Literature (4, 4, 4) Prereq: Mastery of intermediate-level of Japanese, Chinese, or Arabic and consent of instructor.
4012 Selected Topics in Asian Studies (4) Content varies. May be repeated. Maximum credit 12 hrs.

Asian Language and Literature
ARABIC (127) (See Romance Languages) 1510-20 Spoken Arabic (4, 4) 2110-20-30 Elementary Modern Standard (3, 3, 3) 3510-20 Intermediate Modern Standard (4, 4) 3610 Islamic Literature in English Translation (4) 4101 Foreign Study (1-16) 5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)

CHINESE
Asian Studies 2531-32 Elementary Chinese (4, 4)
Taped language program. Must be taken in sequence.
Asian Studies 3531-32 Intermediate Chinese (4, 4)
Taped language program. Prereq: 2531-32 or equivalent or consent of instructor. Must be taken in sequence.
Asian Studies 4531-32-33-34 Advanced Chinese (4, 4, 4, 4)
Taped language program. Prereq: 2631-32 or equivalent or consent of instructor. Must be taken in sequence.

HEBREW
Asian Studies 2831-32 Elementary Modern Hebrew (4, 4)
Taped language program. Must be taken in sequence.
Asian Studies 3831-32 Intermediate Modern Hebrew (4, 4)
Taped language program. Prereq: 2831-32 or equivalent or consent of instructor. Must be taken in sequence.

JAPANESE
Asian Studies 2631-32 Elementary Japanese (4, 4)
Must be taken in sequence.
Asian Studies 3631-32 Intermediate Japanese (4, 4)
Prereq: 2631-32 or equivalent or consent of instructor. Must be taken in sequence.
Asian Studies 3650-60 Japanese Literature in English Translation (4, 4)

PERSIAN
Asian Studies 2731-32 Elementary Persian (4, 4)
Taped language program. Must be taken in sequence.
Asian Studies 3731-32 Intermediate Persian (4, 4)
Taped language program. Prereq: 2731-32 or equivalent or consent of instructor. Must be taken in sequence.

Approved Area Courses
(a) Art, Asian Culture, Literature, and Music
Art 3775 Art of Indian Asia (4)
Art 3776 Chinese Art (4)
Art 3777 Japanese Art (4)
Art 4875-76-77 Studies in Oriental Art History (4, 4, 4)
Asian Studies 3310 Indian Culture (4)
Asian Studies 3320 Chinese Culture (4)
Asian Studies 3330 Japanese Culture (4)
Asian Studies 3340 Islamic Culture (4)
Arabic 3610 Islamic Literature in English Translation (4)
Asian Studies 3650-60 Japanese Literature in English Translation (4, 4)
Asian Studies 3660 Modern Japanese Literature in English Translation (4)
Asian Studies 4010-20-30 Readings in Asian Literature (4, 4, 4)
Spanish 4050-60-70 Hispano-Arabic Literature and Culture (3, 3, 3)
Music 4260 Introduction to Ethnomusicology (3)
(b) Economics, Geography, History, and Political Science
Economics 4232 The Political Economy of Asian Development (3)
Geography 3870 Geography of Asia (4)
History 3780-90 History of the Middle East (3, 3)
History 3795 Contemporary Middle East (4)
History 3800 North Africa since 1830 (3)
History 3810-20-30 History of East Asia (3, 3, 3)
History 4791 Modernization of the Middle East (3)
History 4792 Historical Writers in Islamic History (3)
History 4811-21 History of Japan (4, 4)
History 4870 Cultural History of China (3)
History 4880 History of Modern China (3)
History 4890 History of Contemporary China (3)
Political Science 3621-22 Politics of Asian States (4, 4)
Political Science 3641 Government and Politics of Middle East and North Africa (4)
Political Science 3795 Contemporary Middle East (4)
(c) Anthropology, Philosophy, Religious Studies, and Sociology
Anthropology 3510 Peoples and Cultures of Mainland Asia (3)
Anthropology 4500 Peoples of China: Chinese Society before 1839 (3)
Anthropology 4510 Peoples of China II: Chinese Society after 1839 (3)
Anthropology 4570 Peoples of Southeast Asia (3)
Anthropology 4590 Peoples of Japan (3)
Philosophy 3650 Philosophy and Religion in India (4)
Philosophy 3660 Buddhist Philosophy and Religion (4)
Philosophy 3671 Religion and Philosophy in China (4)
Religious Studies 3650 Philosophy and Religion in India (4)
Religious Studies 3660 Buddhist Philosophy and Religion (4)
Religious Studies 3671 Religion and Philosophy in China (4)
Religious Studies 3672 Religion and Society in Japan (4)
Religious Studies 3680 Islam (4)
Religious Studies 3760 Eastern Religions and Western Thought (3)
Religious Studies 3770 Zen Buddhism (3)
Religious Studies 4670 Topics in Eastern Religions (4)
Religious Studies 4960 Tradition, Change and Modernity in Asia (4)
Sociology 3672 Religion and Society in Japan (4)
Sociology 4960 Tradition, Change and Modernity in Asia (4)

Black Studies (195)
The concentration in Black studies and the minor in Black studies offer in-class, independent, and off-campus study to foster knowledge of the Black experience through a traditional academic approach as well as experiential learning. Black Studies 2010-20 are prerequisites to the concentration which consists of 36 hours from the Black studies curriculum. A minimum of 24 hours must be in upper-division credit. Every student's program must include some individualized work under Black Studies 4102, 4103, and 4310, the nature of which should be negotiated with the program director. A maximum of 8 hours in 4102 and 4103 combined can be applied to a major and a maximum of 4 hours in 4102 and 4103 combined can be applied to a minor. In addition, courses from at least two other departments must be selected.
For further information consult the coordinator of the Black Studies Committee, Mr. Marvin Peek.

1510-20 Elementary Swahili (4, 4)
Taped language program. Must be taken in sequence.

2010-20 Introduction to Black Studies (4, 4)

3140-50-60 Directed Readings in Black Studies (1, 1, 1)
Designed for students who are interested in doing intensive reading in some area of Black studies which is defined by the student and the instructor. Prereq: 2010 (or 2020) and consent of instructor.

3330 Prejudice and Racism in the United States (4)
(Same as Sociology 3330.)

3340 Sociology of Poverty and Inequality (4)
(Same as Sociology 3340.)

3490 African Religions (4)
(Same as Religious Studies and Anthropology 3490.)

3550 Religion and Racism in America (4)
(Same as Religious Studies 3550.)

3560 Black Religion in America (4)
(Same as Religious Studies 3560.)

3630-40 The Education of Black People (4, 4)
Sequenced to trace, analyze and interpret educational systems established for and by Blacks. Special emphasis will be given to colonial experience and the Washington-DuBois controversy in 3630; 3640 will deal with present urban educational problems of Blacks. Recent proposed remedies and solutions as integration, compensatory programs, decentralization, voucher systems; Black Studies and Freedom Schools will be discussed. Sociology 2010-20, History 1950-60 recommended. Prereq: Consent of instructor.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (4-8) See page 187.

4103 Independent Study (1-8) See page 187.

4200 Senior Seminar on Pan-Africanism (4)
Explores concepts and philosophers of Pan-Africanism and implication of this ideology for various societal institutions.

4300 Resource Materials in Black Studies (4)
Introduction to basic references such as bibliographies, indices, and listings of audiovisuals in African American history, African history, and children's literature. Prereq: 2010 or 2020 or consent of instructor.

4310 Research in Black Studies (4) Deals with Black experience and research process.

4500 Current Issues and Topics in Black Studies (3-4)
Problems, topics and issues in area of Black studies. Content and credit determined by instructor. May be repeated. Maximum credit 12 hrs.

4610 Afro-American Families (3)
(Same as Child and Family Studies 4610.)

4630 Black Women in American Society (4)
Historical and contemporary socio eco-political factors in American society as they relate to the Black woman. History 1950-60 recommended. Prereq: Consent of instructor.

4860 Afro-American Psychology (3)
(Same as Psychology 4860.)
Anthropology 3530 Peoples and Cultures of Africa (3)

Anthropology 3930 Biography of the Races of Man (3)

Art 2725 Black Art (4)

CFS 4310 The Afro-American Family (3)

English 2540 The Literature of Black America (4)

English 4610-40-30 Black Literature (3, 3, 3)

Geography 3830 Geography of Africa (3)

History 1950-60 Afro-American History: An Introduction (4, 4)

History 2950 Introduction to Afro-American History (3)

History 4950-60 The Negro in American History (3, 3)

Music 3350 Introduction to Afro-American Music (4)

Music 4270 Evolution of Jazz (3)

Political Science 3615-16 Black Africa: The Politics of Change and Stability (4, 4)

Political Science 3555 Minority Group Politics in the U.S. (4)

Psychology 4880 Afro-American Psychology (4)

Religious Studies 3550 Religion and Racism in America (4)

Religious Studies 3560 Black Religion in America (4)

Sociology 3330 Race, Class, and Power (4)

Sociology 3340 Sociology of Poverty and Inequality (4)

Sociology 4820 American Minority Ethnic Groups (4)

Speech 4582 Black Rhetoric (4)

Recomendations for the concentration and the minor:
(a) Those with a concentration in Black studies are encouraged to take a second major, with which an individually designed program in Black studies can be correlated.
(b) Students should seek academic advising from the Chairman of Black Studies for courses for the concentration or the minor which relate to career plans, preparation for graduate study, and relationship to the second major.
(c) Those with a concentration and a minor are strongly encouraged to combine classroom and experiential learning through a careful selection of courses, e.g. Human Services 4400 and/or Black Studies 4102.

Comparative Literature (260)

A concentration in comparative literature consists of 36 hours including
Comparative Literature 4010, 4012-22-32, 9 hours of literature in a foreign language in courses numbered 3000 and above, and one classics course selected from Classics 4010, 4230, 4510. The remaining twelve hours should include literature courses, either in English or in a foreign language, numbered 3000 and above, from at least two of the following departments: English, Germanic and Slavic Languages, Religious Studies, Romance Languages (certain courses in Philosophy and Speech and Theatre may be substituted with the approval of the chairperson of the Comparative Literature Program). Students concentrating in comparative literature are strongly encouraged to acquire a working knowledge of a second foreign language, especially if they hope to pursue comparative literature on the graduate level.

A minor in comparative literature consists of 24 hours including
Comparative Literature 4010, two courses from Comparative Literature 4012-22-32, 6 hours of literature in a foreign language in courses numbered 3000 and above, and 9 hours of literature courses numbered 3000 and above, either in English or in a foreign language, from at least two of the following departments: Classics (4010, 4230, 4510), English, Germanic and Slavic Languages, Religious Studies, and Romance Languages (certain courses in Philosophy or Speech and Theatre may be substituted with the approval of the Comparative Literature Program). Minors in comparative literature are strongly encouraged to continue their study of a foreign language beyond the minimum requirements.

For further information, consult the chairman of the Comparative Literature Committee, Dr. Harry C. Rutledge.

2010 Introduction to Comparative Literature (4)

Basic knowledge, techniques, and sources necessary to compare literatures of various cultures, ages, and nations.

4010 Methodology of Comparative Literature (3)

Research and writing of comparative literary studies. Major project will be preparation of seminar paper in comparative literature. Prereq: 2010 and one course from 4012-22-32 or consent of instructor.

4012-22-32 Special Topics in Comparative Literature (3, 3, 3) Content varies; may be repeated for credit.

5012 Comparative Theories of Literature (3)

5022 Approaches in Comparative Literature (3)

5032 Studies in Comparative Literature (3)

Classics 3210-20-30 Greek and Roman Mythology (3, 3, 3)

Classics 4010 Greek Drama in English Translation (3)

Classics 4510 Selected Reading in Latin Literature in Translation (3)

English 3411-12-20-30 Modern Drama (3, 3, 3, 3)

English 3710 Literature of the English Bible (3)

English 3910-20-30-40 Comparative Literature (3, 3, 3, 3)

English 4720 Folklore (3)

English 4730 Popular Ballad (3)

English 4950 Approaches to Literature (3)

English 5860 Introduction to Literary Research (3)

German 3210-20-30 Masterpieces of German Literature in English Translation (3, 3, 3)

German 4030 German Drama in English Translation (3)

German 4040 The Modern German Novel in English Translation (3)

German 4050 The Faust Legend (3)

Russian 3210-20-30 Survey of Russian Literature in English Translation (3, 3, 3)

Roman Languages 4010 Masterpieces of French Literature in English Translation (3)

Roman Languages 4020 Masterpieces of French Drama in English Translation (3)

Roman Languages 4030 Masterpieces of Spanish Literature in English Translation (3)

Roman Languages 4040 Masterpieces of Spanish Drama in English Translation (3)

Roman Languages 4050-60-70 Dante and Medieval Culture (3, 3, 3)

Ancient Mediterranean Civilizations

The concentration in ancient Mediterranean civilizations consists of Classics 2810, Classics 2820, Religious Studies 2811, and 28 additional hours from the following list, distributed in such a way that no more than 20 hours are in any one of the three divisions:

(a) Ancient Near Eastern Cultures: History 3751, 3752; Religious Studies 3110, 3120, 4212.
(b) Greek Culture: Classics 3210, 3220, 3310, 3320, 3340, 3350, 4010, 4220 (where applicable), 4230 (where applicable); History 3760; Philosophy 3111, 4410, 4420; Political Science 3801.
(c) Roman Culture: Classics 3230, 3330, 3340, 4220 (where applicable), 4230 (where applicable), 4510; History 3770; Religious Studies 3311-12, 3330, 4310, 4640.

Courses of variable content, topics courses, reading and research, off-campus, or foreign study in the departments of Art, Classics, History, Philosophy, or Religious Studies can be applied to the three divisions as appropriate.

Students are encouraged to satisfy the Language, Literature, and Arts Triad requirement with Greek, Latin, or Hebrew in either Option I or Option II. Upper-division courses in these languages may be applied to the appropriate division listed above.

For further information, consult Dr. H.C. Rutledge (Classics) or Dr. W.L. Humphreys (Religious Studies).

Latin American Studies (600)

Concentration consists of 36 hours including Spanish 3710-20 or Portuguese 3510-20, History 3870-80-90, Political Science 3625-26, and Geography 3800 or 3790 and 7 hours of acceptable elective courses in any of the participating departments in Latin American studies sequence 2510-20 (4, 4) or Independent Research 4010.

Two years of Spanish or Portuguese or a practical working knowledge acquired independently are a prerequisite.

Minor: Consists of 24 quarter hours selected from Geography 3800 or 3790, History 3870-80-90, Political Science 3625-26, and Spanish 3710-20 or Portuguese 3510-20, and the Latin American studies sequence 2510-20 or Independent Research 4010.

For further information, consult the chairman of the Latin American Studies Committee, Dr. H.E. Lewald.
2510-20 Introduction to Latin American Studies (4, 4) Introduction to societies of Latin America with special emphasis on dominant culture patterns, social changes, and impact of nationalism. 2510—Pre-Colonial and Colonial periods through Independence era; 2420—Latter 19th century and the Modern period.

4010 Independent Research in Latin American Studies (3-9) Directed research in any topic fully related to Latin American studies to be undertaken by a student on campus or normally in a Latin American country. The research must be approved and evaluated by the Latin American Studies Committee and directed by a faculty member involved in the study of the Latin American area. Credit to vary to the scope and length of the project.

4970 Senior Seminar (3-4) Selected topics in Latin American studies. May be repeated with consent of instructor.

**Linguistics (623)**

This concentration offers a broad exposure to the various fields of linguistics (including historical, descriptive and theoretical linguistics) along with an opportunity to study areas where linguistics overlaps with other disciplines such as psychology, sociolinguistics, speech pathology and the like. It is designed to prepare a student for graduate work in linguistics or related areas, or to serve as a general survey of language and linguistics. It provides the additional possibility of emphasizing the teaching of English as a second language for the student interested in employment at the B.A. level. The requirements of this concentration are:

**Corequisites**

(a) A 3000-level sequence or its equivalent of a foreign language. (This can be accomplished by electing Option I of the Language, Literature and Arts section of the Trud requirements. The following languages offer sequences which fulfill Option I: French, German, Greek, Italian, Latin, Russian, Portuguese, Spanish.) By special permission of the Linguistics Committee, certain language-related courses may be substituted for a 3000-level sequence of the foreign language.

(b) Two quarters of a non-Indo-European language to be selected from the following: Religious Studies 3141-51 (Hebrew); Arabic 2510-20; Asian Studies 2531-32 (Chinese); Asian Studies 2631-32 (Japanese).

**Concentration**

The concentration shall consist of 38 hours distributed as follows:

(a) 32 hours composed of: Audiology and Speech Pathology 3050; French, German, Russian, or Spanish 4250-60-70; English 3230, 4430, 4440; Speech 4811; Linguistics 4020-30.

(b) 6 hours of the following, selected in consultation with the Linguistics Committee: Anthropology 3800; Audiology and Speech Pathology 3200, 4650, 5651, 5790; Educational Curriculum and Instruction 3562-63; Special Education and Rehabilitation 5220, 5310-20-30; English 3340, 4450, 4460, 4471, 4481, 5150, 5170, 580; German 4310-20, 4810-20-30, 5710-20-30; Linguistics 4000; Russian 4310-20-30; Philosophy 4630; Psychology 4660, 5660, 5670-30; French 4210-20-30, 5110-20-30; Spanish 4210-20-30, 5110-20-30.

(c) Other hours may be substituted in (b) by approval of the Linguistics Committee.

**Minor**

A minor in linguistics shall consist of 27 credit hours composed of 9 from section (b) of the major selected in consultation with the Linguistics Committee, and 18 hours as follows: Audiology and Speech Pathology 3050; Linguistics 4020-30; English 4430; French, German, Russian, or Spanish 4250-60.

**NOTE:** In addition to the above listed courses for the concentration and the minor there are occasionally offerings in the Honors Series or in graduate seminars which may be substituted for certain requirements subject to written approval of the Linguistics Committee and the Office of the Dean.

For further information consult the chairman of the program, Dr. James Elliott.

4000 Topics in Linguistics (3) Content varies. May be repeated. Maximum 9 hrs. credit.

4020-30 Historical Linguistics, Neogrammarians School, and Growth of Structuralism (3, 3) Traces development of scientific approach to linguistics from Jacob Grimm and Franz Bopp through 19th century. 4030—Traces change in linguistic interest brought about by Saussure's Course and growing impact of anthropology and behaviorism on linguistic studies.

4471-81 English as a Second or Foreign Language (3, 3) (Same as English 4471-81.)

**Medieval Studies (674)**

A concentration in Medieval studies focuses upon culture and society from the collapse of the Roman Empire to the sixteenth century. Such a concentration offers the opportunity to deepen one's self-awareness and broaden one's view of the range of human possibilities by studying a very different and remote culture—its conditions of life, social and political institutions, values and ideals, and modes of perception and expression.

A concentration in Medieval studies consists of Medieval Studies 2010 and 4010 and 28 hours of upper-division courses concerning primarily the Medieval experience, divided among the following three categories: (1) history, philosophy, political science, and religious studies; (2) language and literature; (3) the arts—history of art, architecture, music, and speech and theatre. Courses should not be selected at random but should either form a related pattern (for example, courses in the literature and history of Medieval England or Italy, etc.), or should revolve around a particular discipline, or two closely-related disciplines (for example, courses in the history of art and architecture). A minor in Medieval studies consists of Medieval Studies 2010 and 4010 and 16 additional hours distributed among the categories listed above for the major. Each student's program, major or minor, must be approved in advance by the Medieval Studies Coordinating Committee, chairperson Sarah Blanshei, 1113 McClung Tower.

It is strongly recommended that students selecting the Medieval studies concentration choose a foreign language option for the Triad requirement (Options 1 or 2). Latin is the most appropriate language for students and is essential for those who plan to continue their studies in graduate school. In addition, students planning to go on to graduate school are strongly advised to supplement their Medieval studies concentration with extensive work in one of the traditional disciplines.

2010 Medieval Civilization (4) Introduction to basic themes in medieval experience, approached from interdisciplinary points of view and including philosophy and religion, art and architecture, language and literature, social and political history.

4010 Seminar in Medieval Studies (4) Interdisciplinary treatment of selected topics.

Upper-division courses for the concentration in Medieval studies may be chosen from the list of courses below.

**Category #1**

History, Philosophy, Political Science and Religious Studies.

**History**

3061 History of Western Religious Thought and Institutions (4)

3411 Renaissance (3)

3710 History of Germany (3)

3780 History of Middle East (3)

4011 European History Colloquium (3) (when subject is part of medieval culture and society)

4500 History of Medieval England (3)

4710-20-30 Medieval History (3, 3, 3)

4430 Medieval Philosophy (4)

3802 Studies in Political Thought (4)

3611 History of Western Religious Thought and Institutions (4)

3411 Renaissance and Reformation (4)

3713 Religion in the Middle Ages

4610 Topics in Western Religious Thought and Institutions (4) (when subject is part of medieval culture and society)

**Category #2 Language and Literature**

Classics 4310 Selected Reading from Latin Literature (3) (readings in Latin)

Comparative Literature 4012-22-32 Special Topics in Comparative Literature (3, 3, 3) (when subject is part of medieval culture and society)

Comparative Literature 4050-60-70 Dante and Medieval Culture (3, 3, 3)

4410 Introduction to Study of English Language (3) (no language requirement)

4420 History of English Language (3) (no prerequisites)

4810-20 Chaucer (3, 3) (readings in Middle English)

4350-60-70 Medieval French Literature (3, 5, 3) (readings in French)

4410 French Civilization (3) (readings in French)

3210 Medieval French Literature in English Translation (3)
Urban Studies (985)

A concentration in urban studies consists of 40 quarter hours, including Urban Studies 2500 and 3000, at least 4 hours of Urban Studies 4000, and 28 hours from the urban studies curriculum provided below. The urban studies minor consists of 24 quarter hours, including Urban Studies 2500 and 3000 plus 16 hours from the urban studies curriculum provided below. For further information consult the chairperson of the Urban Studies Committee.

2500 Interdisciplinary Urban Studies (4) Fundamental perspectives of various disciplines toward the city, urbanism as a way of life and urbanization as an ongoing process. Stresses the multidimensional nature of urban studies.

3000 Selected Topics in Urban Studies (4) May be repeated with consent of the committee. Maximum 12 hrs credit.

4000 Directed Field Work (1-18) Participant observation and other directed field research in selected sites and organizations. May be done in a concentration major or as much as a summer, or over the course of an academic year. Minimum of four credits required for a concentration in urban studies. May be repeated. Maximum 16 hrs credit.

Urban Studies Curriculum:
For the concentration and minor, courses may be selected to fill the respective requirements from the following:

Archaeology:
3450 Community Studies in Complex Culture (3)
4440 Urban Anthropology (3)

Architecture:
2000 Man-Environment Systems (4)
3930 Behavioral Approaches to Environmental Design (6)
4900 Aspects of Urban Environment (4)

Geography:
2000 Man, Location, and Behavior (4)
3430 Urban Geography (4)

History:
4670 Cities and Urbanization in American History
4740 The City in Europe (3)

Planning:
4100 Introduction to Planning (3)

Political Science:
3750 The Urban Politic (4)
3780 Urban Policy Process (4)

Real Estate and Urban Development:
3610 Principles of Real Estate and Urban Development (3)
4120 Urban Growth and Land Use (3)
4130 Problems of Urban Development (3)

Sociology:
3410 Urban Environment (4)
3420 Urban Problems (4)
4320 Urban Ecology (4)
4530 Community Organization (4)

Women’s Studies (944)
Minor: Consists of Women’s Studies 2010-20 and 16 hours of appropriate courses numbered 3000 or above. Supporting courses are drawn from several departments and colleges on the UK campus. A list of available courses will be published annually by the Women’s Studies Committee. For further information consult the chairperson of Women’s Studies, Dr. Suzanne Kurth.

2010-20 Women’s Studies (4, 4) Explores basic knowledge and sources necessary to understand current and past societal experiences of women. 2010 utilizes perspective of humanities; 2020 employs that of social sciences.

4000 Topics in Women’s Studies (4)

Cultural Studies (270)

4000 Selected Interdisciplinary Cultural Topics (1-12) Acceptable for credit in any cultural studies concentration or minor with the consent of the director of cultural studies and the respective chairperson. May be repeated for credit up to maximum of 12 hrs.

4101 Foreign Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. See page 187.

4102 Off-Campus Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. See page 187.

4103 Independent Study (1-16) Acceptable for credit in any cultural studies concentration or minor except Black studies. Registration by consent of director of cultural studies and the respective chairperson. See page 187.

GRADUATE

5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)

Ecology (278)

J. Frank McCormick, Director.

Basic Faculty:

The Graduate Program in Ecology offers Master of Science degrees and the Doctor of Philosophy degrees. This interdepartmental program provides advanced courses in contemporary ecology for students from undergraduate programs in basic and applied biology, social sciences, mathematics and engineering. Research opportunities in both fundamental and applied ecology are intended to prepare students for academic careers as well as professional positions in industry or government. The Environmental Sciences Division of the Oak Ridge National Laboratory and the
Tennessee Valley Authority provide advisers and research facilities. The Great Smoky Mountains, Cumberland Plateau, valley and ridge topography, TVA lakes and wild rivers provide locally a spectrum of natural habitats and consequent biological diversity which is truly unique. In addition, faculty research programs provide opportunities for student research elsewhere on this continent and abroad.

ADMISSION

Requirements for admission to this program are: (1) admission to the Graduate School of The University of Tennessee; (2) at least 12 quarter hours of college chemistry, 9 quarter hours of college mathematics, and 4 quarter hours of ecology at the upper-division level. Candidates for the doctoral degree are expected to take the Graduate Record Examination.

Application forms for admission should be obtained from the Graduate School. Inquiries concerning the admission requirements should be addressed to the Director, Graduate Program in Ecology, 608 10th Street, University of Tennessee, Knoxville, Tennessee 37996.

COURSES ACCEPTABLE

IN PROGRAM

Agricultural Biology

4010 Biology of Soil Microorganisms (4)
4510 Freshwater Fishery Biology (4)
4520 Management of Lakes and Ponds (4)

Botany

4310 Plant Ecology (4)
5340 Plant Geography (4)
5350 Analysis of Plant Communities (4)
5510-20-30 Systems Ecology (3, 3, 3)
5830 Field Methods in Plant Ecology (4)

Ecology

5000 Thesis
5100 Special Problems in Ecology (1-3)

5210-20-30 Principles of Ecology (2, 2, 2)
5310 Ecology for Planners and Engineers (3)
5320 Implementation of Environmental Policy (3)
5330 Marine Ecology (3)
6000 Doctoral Research and Dissertation
6100 Special Topics in Ecology (3)
6110 Seminar in Animal Behavior (2)
6120 Seminar in Aquatic Ecology (2)
6130 Seminar in Physiological Ecology (2)
6400 Seminar in Community Ecology (2)
6500 Seminar in Radiation Ecology (2)
6500 Seminar in Systems Ecology (2)

Economics

4260 Economics of Resources (3)

Environmental Engineering

4700 Air Pollution-Air Resources Management (3)

Forestry

4005 Forest Ecosystems (3)
4450 Game Mammals (4)
4460 Game Birds (4)

5210 Seminar in Wildlife Conservation (3)
5220 Seminar in Forest Tree Biology (3)
5240 Seminar in Forest Genetics (3)

Geography

5610 Selected Topics in Climatology (4)

Geology

5290 Quarternary Problems (4)
5829 Experimental Microbial Ecology (3)

Plant and Soil Science

4320 Soil Formation, Morphology, and Classification (4)
5240 Soil Productivity and Management (3)
5250 Pedology (4)
5810 Crop Climatology (4)

5820 Advanced Crop Physiology and Ecology (4)
5750 Ethological Psychology (3)
4240 Animal Ecology (4)
4660-70 Limnology (4, 4)
5570 Animal Populations (3)
5850 Insect Autecology (4)
5860 Geographic Distribution of Animals (4)
5870 Insect Synecology (4)

Economics (283)

See faculty list, page 90.

Economics courses offered in the Department of Economics of the College of Business Administration provide opportunity for a major or minor in liberal arts. See page 90 for description of the courses available.

Requirements for a major in economics consist of: (1) Economics 2110, 2120, and 2130 and (2) a minimum of 33 additional hours in upper-division economics courses. Economics 3110 (or the sequence 3111 and 3112) plus 3120 are required as a part of the upper-division work and should be taken as early as possible in the upper-division program as possible. A minor consists of (1) Economics 2110, 2120, 2130 and (2) 15 additional hours in economics at the upper-division level.

Minors are encouraged to include Economics 3110 and 3120.

English (339)

Professors: J.H. Fisher (Head), Ph.D. Pennsylvania; P.G. Adams, Ph.D. Texas; E.W. Bratton, Ph.D. Illinois; J. Curry, Ph.D. Yale; R.B. Davis (Emeritus), Ph.D. Virginia; R.Y. Drake, Jr., Ph.D. Yale; J.A. Hansen, Ph.D. Yale; R.M. Kelly, Ph.D. Yale; R.H. Knickerbocker (Emeritus), Ph.D. Yale; B.J. Leggett, Ph.D. Florida; F.D. Miller, Ph.D. Virginia; R.E. Parker (Emeritus), Ph.D. California (Berkeley); J.E. Reese (Chancellor), Ph.D. Kentucky; N.J. Sanders, Ph.D. Shakespeare Institute, Stratford-on-Avon; P.L. Soper (Emeritus), Ph.D. Cornell; H.E. Spivey (Emeritus), Ph.D. North Carolina; B.T. Stewart, Ph.D. Northwestern; E.W. Stockton (Emeritus), Ph.D. Harvard; A. Thaler (Emeritus), Ph.D. Harvard; R.H. Walker, M.A. Texas; T.V. Wheeler, Ph.D. North Carolina; J.M. White, M.A.

Cambridge, N. Wright, Ph.D. Yale.


Assistant Professors: J.M. Armstead, Ph.D. Duke; D.R. Cox, Ph.D. Missouri; R.T. Goode, Ph.D. Texas; D.F. Goslee, Ph.D. Yale; N.M. Goslee, Ph.D. Yale; T.J.A. Hefferman, Ph.D. Cambridge; M.A. Lofaro, Ph.D. Maryland; M.P. Richards, Ph.D. Wisconsin.

*Alumni Distinguished Service Professor.
+John C. Hodges Professor.
Instructors:


UNDERGRADUATE

Major: (36-39 hours) Two courses in English at the 2000 level are prerequisite to a major, which consists of the following requirements:

(1) English 2150, which should be taken as soon as possible after the student has elected English as a major.

(2) Upper-division courses in English (26-27 hours)

Nine English courses at the 3000 and 4000 levels should be distributed over a broad spectrum of British and American literature, either (a) by taking 14 hours in the British and American Literature surveys (8 hours in English 4991-92 and 6 hours from English 3010-30-30) and the remaining 12-13 hours in individual author and genre courses or in English linguistics; or (b) by taking 6 hours each from the courses listed below under categories A, B, and C, with the remaining 9 hours arranged to form a coherent program.

Three hours of advanced writing (Category D below) may fulfill a part of either (a) or (b) above.

(3) Additional courses in literature or language (6-9 hours), either (a) 6-8 hours of 3000-level literature in a foreign language; or (b) 6-8 hours of comparative literature or foreign literature in translation, at the 3000-4000 level.

(4) Corequisites—English majors must complete the equivalent of the second (2000-level) year of a foreign language.

Special Programs for the Major—The Director of Undergraduate Studies is empowered to approve the individualized programs developed by students in consultation with their advisors. These programs need not necessarily fulfill all of the requirements listed above.

Honors Program—For students who qualify for this concentration, the English Department offers a program of individualized study in the fourth year, culminating in a senior thesis and comprehensive examination. If these two are passed with grades of B or better the student will be graduated with honors in English.

Classification of Upper-Division English Courses for the Major:

A. The Eighteenth Century: 3510, 3520, 3530, 3710, 3910-20, 4010-20, 4410-20, 4510, 4730, 4850, 4860, 4910-20.


C. Nineteenth and Twentieth Century: 3030, 3070, 3080, 3140, 3150, 3210-20, 3411-12-20-30, 3930, 3940, 4060, 4210-20-30, 4320-30-40, 4620, 4652, 4660, 4680, 4830, 4960.

D. Advanced Writing: 3450, 3460, 3470, 3830, 4960.

Minor: 24 hours, including at least 18 at the upper-division level.

Certification for Teaching English and Speech in Tennessee

Consult Certification Clerk, Room 212, Claxton Education Building.

General Prerequisites

English 1010-20-30 or equivalent are prerequisite to all English courses numbered above 2000.

1010 English Composition (3) Expository writing with emphasis on invention, organization, style, and revision; intensive study of essays for meaning and ways of expressing meaning; conferences on individual writing problems. Coreq: English 1019 for designated students. A, B, C, I, NC, W grading.

1019 Writing Workshop (1) Required concurrently with 1010 of students selected on the basis of either their placement scores and high school record or their performance in English 1010. Specified criteria of selection for 1019 will be published by the English Department to quarter each year. Individual and group instruction in grammar, mechanics, sentence patterns, reading comprehension, precise writing, and paragraph development. Graded S/NC; a student taking 1019 concurrently with 1010 must pass 1010 to receive credit for 1019.

1020 English Composition (3) Analytical writing based on study of great works in literature; practice in documentation; individual conferences. Prereq: 1010-20; any 1030-level course completes a year's work in English composition; no more than one may be taken for credit. 1031—Types of literature; 1032—Language: its forms and functions; 1033—Introduction to technical and technical writing. A, B, C, I, NC, W grading.

1031-32-33 English Composition (3, 3, 3) Application of writing skills to areas of special interest. Study and practice of research writing; individual conferences. Prereq: 1010-20; any 1030-level course completes a year's work in English composition; no more than one may be taken for credit. 1031—Types of literature; 1032—Language: its forms and functions; 1033—Introduction to technical and technical writing. A, B, C, I, NC, W grading.

1018-28-38 Honors: English Composition (3, 3, 3) Open only to those students selected on the basis of placement scores and high school record. Grading scales for work load the same as in regular sequence. 1018—Expository writing based on the study of essays and short stories. 1038—Analytical writing based on dramatic literature and poetry. Study and practice of research writing. Students receiving a grade below B in 1018 will complete a year's work in English composition by taking 1020 and one course on the 1030 level; students receiving a grade of A or B also receive credit and a grade of no less than B for 1028 and may continue into 1038; all students with A's and those with B's and the permission of the Department have the additional option of completing a year's work in English composition with any 2000- or 3000-level writing course. A, B, C, I, NC, W grading.

1211 Written and Oral English for Foreign Students (6) Rapid review of English grammar structures and idioms with intensive oral, aural, and written drill. Required during the first quarter of residence of all foreign students (graduates, undergraduates, visiting students) who are not excused from it on the basis of the English Proficiency Examination required of every new foreign student. A, B, C, I, NC, W grading.

1221 Written and Oral English for Foreign Students (6) Emphasis on the more advanced structures of English grammar and on paragraph writing. Required during the first quarter of residence of all foreign students (graduates, undergraduates, visiting students) who are not excused from it on the basis of the English Proficiency Examination demonstrate need for more advanced structure, but not at the intensive level of 1211. A, B, C, I, NC, W grading.

1261 English Pronunciation for Foreign Students (3) Sounds and intonation patterns of American English and relation of spelling to sound. Designed to improve student's ability to speak and understand English. May be repeated. Maximum 6 hrs credit. S/NC. (Same as Audiology and Speech Pathology 1261.)

1431 English Composition for Foreign Students (3) Composition and reading for students whose native language is not English. Emphasis on paragraph and composition organization with attention to grammar and mechanics. English 1431 replaces English 1010 for undergraduate foreign students. Prereq: 1221 or recommendation based on English Proficiency Examination. A, B, C, I, NC, W grading.

1441 English Composition for Foreign Students (3) For students whose native language is not English, writing based on reading and discussion with attention to use of library and to basic skills of composition. Prereq: written English writing assignments encountered by college students. English 1441 replaces English 1020 for undergraduate foreign students. Prereq: 1431. A, B, C, I, NC, W grading.


2150 Colloquium for English Majors (3) Introduction to methods and objectives of literary study; conferences to plan student's program in major.

2510-20 English Masterpieces (4, 4) 2510—To the mid-eighteenth century. 2520—Since the mid-eighteenth century.

2530 American Masterpieces (4)

2540 The Literature of Black America (4) Poetry, fiction, drama. Emphasis on twentieth century.

2560-70-80 Literature of the Western World (4, 4, 4) 2560—Ancient and medieval. 2570—Renaissance through the eighteenth century. 2580—Nineteenth and twentieth centuries.

2640-50 English Culture (4, 4) 2640—Beginnings to the late eighteenth century. 2650—From the late eighteenth century to the present.

2660 Introduction to Drama (4) Study of selected plays to provide critical techniques necessary for understanding of drama.

2670 Introduction to Poetry (4) Study of selected poems to provide critical techniques necessary for reading of different types of poetry.

2680 Introduction to the Novel (4) Study of selected novels to provide critical tools necessary for judging longer works of fiction.

2710 Introduction to Writing Fiction (3) Fundamental course for those interested in entering creative writing program. Instruction in and application of basic skills of finding the subject, selecting setting and point of view, shaping plot, developing characters.

2720 Introduction to Writing Poetry (3) Further basic course for those entering creative writing program. Study of fundamental elements of poetic composition and discussion of poems by students.
3710 Literature of the English Bible (3) Types of Old Testament literature, including Wisdom literature. (Same as Religious Studies 3710)

3711 Literature of the English Bible (3) Old Testament wisdom literature and types of New Testament literature. (Same as Religious Studies 3711)

3721 Introduction to Folklore (3) Essential terms and concepts of modern folklore—folk-life studies. Emphasis on North American materials: folklore, folksong, myth, legend, proverbs, riddles, superstitions, dance, games, and architecture.

3840-50 Writing of Non-Fiction Prose (3, 3) Strategies of writing on personal and academic subjects. Discussion of student and professional writing. Conferences on individual student's goals and problems, and with course instructor. Instructor's consent. 3840—How to find, develop, and present an idea. 3850—How to convince a reader through logical and emotional appeals.

3860 Special Topics in Writing (3) Original writing integrated with reading, usually taught by professional author. Topics vary. May be repeated. Maximum 9 hrs credit.

3870 Writing the Screenplay and the Television Play (3) Advanced, specialized course in dramatic writing. Completion of English 2710-20-30 is desirable, but with active interest in the medium are invited to seek consent to enroll.

3880 Writing the Detective and Mystery Story (3) Instruction and writing cover entire crime field: suspense, police procedural, private eye, spy, and adventure. Completion of English 2710-20-30 is desirable, but with active interest in the genre are invited to seek consent to enroll.

3890 Writing the Biography, Travel Book, and Other Types of Non-Fiction (3) Special emphasis on individual structure of non-fiction book, its special mood and style, and art of blending fact with opinion. Completion of English 2710-20-30 is desirable, but with active interest in the genre are invited to seek consent to enroll.


3940 Novel of the Contemporary Western World (3) Proust, Joyce, Mann, and others.

4010-20 Shakespeare (3, 3) 4010—Early plays, c. 1560-1601, including Henry IV, Twelfth Night, and Hamlet. 4020—Later plays, 1601-1613, with emphasis upon tragedies and dramatic romances.

4050-60-70 American Novel (3, 3, 3) 4050—From earliest efforts to seek consent to enroll: from Cooper, to Cooper, and to famous figures, c. 1785. 4060—Henry James and Mark Twain through early works of Faulkner and Hemingway. 4070—Early thirty to present.

4011 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (3-12) See page 187.

4103 Independent Study (1-12). See page 187.

4118-28-38 Honors: Senior (0, 0, 0) Admission by consent of department. 4118-28 graded "S".

4140-50 Technical Writing (3, 3) 4140—For students planning careers in physical, life and health sciences, engineering, agriculture, and forestry. Writing of proposals, laboratory and progress reports, abstracts and journal articles. 4150—Writing of scientific feature articles in which data are marshalled and analyzed for human interest.

4210 Tennyson and His Contemporaries (3)

4220 Browning and Arnold (3)

4230 Hardy, Hopkins, and Housman (3) Includes other poets at the turn of the century.


4430 Modern English Grammar (3) New approaches with emphasis on the generative-transformational approach.

4440 Language in Society (3) Methodology and significant discoveries of sociolinguistics in America.

4450 Dialectology (3) Theories and methodologies of dialect research, fieldwork and analysis. Prereq: 3360 or consent of instructor.

4460 Special Topics in English Linguistics (3) May be repeated for credit. Consent of department.

4471-81 English as a Second or Foreign Language (3, 3) 4471—Applied linguistics in teaching and learning of English as second or foreign language. Phonological and grammatical structure of present-day English. Analysis of differences (phonological, grammatical, and lexical) between English and another language. Prereq: Second year of a foreign language. 4481—Materials and methods of language teaching, with emphasis on preparation of structural and content teaching situations. Theory of testing language competence and performance, with emphasis on construction of tests. Team teaching with an experienced member of the staff. Prereq: 4471. (Same as Linguistics 4471-81.)

4510 Introduction to Literary Criticism (3)

4610-20-30 Black Literature (3, 3, 3) 4610—Trends and developments.

4651 Southern Literature from 1585 to 1860 (3) Beginning of writing in the South, especially in its relations to formation of regional or southern tradition in literature.

4652 Southern Literature from 1860 to 1970 (3) Humorists, local colorists, and realists of later nineteenth century and New South; emphasis upon Southern flowering of 1920-1950, recent trends.

4660 Emerson and Thoreau (3)

4690 American Humor through Mark Twain (3)

4721-31-41 Ballad and Folktale (3, 3, 3) 4721—Study of traditional English and Scottish popular ballads and their North American variants; 4731—Study of Native American ballad and folktale; 4741—The folk narrative: functions, categories, and patterns of storytelling.

4850 Milton (3) Emphasis on major poems.

4860 Seventeenth-Century Prose and Poetry (3) Bacon and Donne to Marvell.

4910-20 Chaucer (3, 3) 4910—Early poems and Troilus and Criseyde. 4920—The Canterbury Tales.

4950 Approaches to Literature (3) Basic knowledge and techniques necessary to understand and evaluate various kinds of imaginative literature.

4991-92 Survey of British Literature (4, 4) 4991—From beginnings to eighteenth century. 4992—From eighteenth century to present.

GRADES

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5110-20-30 Tutorial in English (1, 1, 1)

5150 Old English Prose (3)

5170-80 History of the English Language (3, 3)

5210-20-30 Readings in American Literature from Colonial Period to Present (3, 3, 3)

5310 Rhetoric and Composition: Theory and Practice (3)

5410-20-30 Readings in Middle English Literature (3, 3, 3)

5510-20 Readings in Literary Criticism from Plato to Shakespeare (3, 3, 3)
5610-20-30 Readings in English Literature of Nineteenth Century (3, 3, 3)
5710-20-30 Readings in English Literature of Eighteenth Century (3, 3, 3)
5810-20-30 Readings in English Literature of Renaissance (3, 3, 3)
5860 Introduction to Literary Research (3)
5910-20-30 Readings in English and American Literature of Twentieth Century (3, 3, 3)
6000 Doctoral Research and Dissertation
6110-20-30 Studies in Elizabethan Literature (3, 3, 3)
6150 Old English Poetry (3)
6160 Beowulf (3)
6170 Studies in Middle English (3)
6181-82-83 Studies in the English Language (3, 3, 3)
6210-20-30 Studies in American Literature (3, 3, 3)
6241 Studies in Colonial American Literature (3)
6242 Studies in Colonial American Literature (3)
6270-80 Studies in American Fiction (3, 3, 3)
6310-20-30 Studies in Victorian Literature (3, 3, 3)
6410-20-30 Studies in Chaucer (3, 3, 3)
6510-20-30 Studies in Spenser and Milton (3, 3, 3)
6610-20-30 Studies in English Romanticism (3, 3, 3)
6710-20-30 Studies in Eighteenth-Century Literature (3, 3, 3)
6810-20-30 Studies in Drama and Theatre (3, 3, 3)
6910-20-30 Studies in Twentieth-Century Literature (3, 3, 3)

French
See Romance Languages.

Geography (415)

Professors:  S. R. Jumper (Head), Ph.D. Tennessee;  E. H. Hammond, Ph.D. California (Berkley);  R.G. Long, Ph.D. Northwestern;  T.H. Schmudder, Ph.D. Wisconsin.

Associate Professors:  C.S. Aiken, Ph.D. Georgia;  T.L. Bell, Ph.D. Iowa;  L.W. Brinkman, Jr., Ph.D. Wisconsin;  J.B. Rehder, Ph.D. Louisiana State.

Assistant Professors:  J.R. Carter, Ph.D. Georgia;  W.N. Cherry, M.S. Tennessee;  B.A. Ralston, Ph.D. Northwestern.

UNDERGRADUATE

Major: Eight hours in courses numbered at the 1000 or 2000 level are recommended as an introduction to a major which consists of Geography 4100, 4710 and 4990, and an additional 28 hours selected from courses at the 3000 and 4000 levels. At least one course must be selected from each of groups A, B, C, and D below:

a. Physical Geography: 3520, 3530, 4560
b. Economic Geography: 3410, 3430, 3490, 4075, 4610, 4630
c. Cultural Geography: 3450, 3610, 3660, 4075, 4240
d. Regional Geography: 3790, 3800, 3810, 3840, 3870, 3880, 3910, 3920, 3930, 3940

For those pursuing a program leading to professional employment or graduate study in geography, 4210 and/or a senior project under 4103 are strongly recommended.

Minor: Eight hours in courses numbered at the 1000 or 2000 levels are recommended as an introduction to the minor which consists of 24 hours selected from courses at the 3000 and 4000 levels. Students wishing to major or minor in geography are strongly urged to consult with a departmental undergraduate adviser. The availability of course offerings within the structure of the major and by appropriate selection of electives outside the department, each student may develop a coherent program in accordance with specific interests and needs. Such programs might emphasize particular aspects of geography itself or might develop interdisciplinary themes such as natural environment and resources, urban and regional planning or the culture, history or economy of a particular area. A useful technical or vocational specialty program is available which emphasizes cartography and remote sensing.

Asian Studies. See Cultural Studies.
Latin American Studies. See Cultural Studies.
Russian and East European Studies. See Cultural Studies.

1610-20 Introduction to Geography (4, 4) Selected problems or situations of contemporary interest are studied in depth, illustrating geographical points of view and techniques. Not to be taken in sequence. Not open to students who have taken 1110 and 1120, respectively.

1810-20 Geography of the Natural Environment (4, 4) Characteristics and processes of earth's surface and lower atmosphere; their interaction to produce world patterns of distinctive environments significant to man. Must be taken in sequence. 1810 not open to students who have taken 1710.

2110-20-30 Economic Geography (4, 4, 4) The significance of location, pattern, and environment in economic activities. Emphases: 2110-agriculture; 2120—energy, minerals and manufacturing; 2130—transportation and trade. Need not be taken in sequence.

3000 Man, Location, and Behavior (4) Types of human spatial behavior, such as shopping patterns, commuting, residential mobility, trade, and regional consensus, as they relate to distance, natural environment, and culture. Order and regularity in pattern of human use of earth's surface.


3430 Urban Geography (4) Concepts and theories concerning development and significance of systems of cities and internal morphology of cities. Not open to students who have taken 4660.

3450 Rural Geography (4) Geographical appraisal of rural areas of the United States, including small towns and urban fringes. Problems and potentials of rural America.

3490 Geography of Resources (4) Study of factors related to variations in resource availability from time to time and from place to place, with particular emphasis upon energy and mineral resources.

3510 Meteorology (4) Introduction to dynamic atmosphere and resulting weather events. Nature of individual weather elements, their measurement and analysis over time and space.

3520 The Atmospheric System and Man (4) Overview of general circulation system leading to world pattern of climates. Role of climate in agriculture, architecture, human comfort, and economic activity.

3530 The Land-Surface System and Man (4) Nature and regional variations in relationships among surface form, water, vegetation, and surface materials. Man as evaluator and agent of change.

3600 Geography of Population (4) World population pattern; regional socio-economic characteristics and demographic trends; relationship to resource base.

3610 Political Geography (4) Importance of geographic factors for understanding political relationships within and between nations; spatial implications of political decision-making processes; geography of administrative units.

3690 Cultural Geography (4) Basic concepts of culture; methods and background of cultural geography; world patterns of cultural phenomena.

3790 Geography of Middle America (4) Covers Mexico, Central America, and the West Indies. Not open to students who have taken 3740, 3770, or 3780.

3800 Geography of South America (4) Not open to students who have taken 3730, 3750, or 3760.

3810 Geography of Europe (4)

3840 Geography of Australia and Oceania (4) Survey of major physical, economic and social characteristics of Australia, New Zealand, and of impact of western civilization on selected island groups of Southwest Pacific.

3870 Geography of Asia (4) A survey of the physical, cultural and economic characteristics of the countries of Asia, excluding the Soviet Union. Not open to students who have taken 3820, 3890 or 3900.

3880 Geography of the Soviet Union (4)

3910 Regional Geography of United States and Canada (4) Major physical, economic, and social distributions as they relate to geographic character of regions of United States and Canada. Not open to students who have taken 3710 or 3720.

3920 Geography of the American South (4) Geographical appraisal of southeastern United States, including physical environment and human resources. Origin and development of contemporary economic and cultural traits of the area.

3930 Geography of Tennessee (4)

3940 Geography of Appalachian (4) Interrelation of physical, economic, and social patterns to geographic character of the region and its parts, especially southern Appalachian. Appalachia in perspective in the current American scene.

4075 Geography of Transportation (4) Geographic examination of transportation systems, emphasizing transport of people and by public facilities. Relationship of these systems to changing geography of cities and urban hinterlands.

4100 Quantitative Methods in Geography (4) Geographic applications of statistical techniques, point pattern analysis and analysis of areal units. PreReq: Mathematics 3000 or consent of instructor.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4210 Problems in Geographic Method (4) Examples of problems and approach in geographic analysis and synthesis. Emphasis on character of geographic data, area sampling, generalization, classification, regionalization, and questions of scale.

4240 Historical Geography of the United States (4) Survey of changing human geography of United States during four centuries of settlement and development. Emphasis upon changing population patterns, development of agricultural regions, and patterns of urban development. Not open to students who have taken 4250-60.
4510 Principles of Geomorphology (4) (Same as Geology 4510.)

4550 Geography of Soils (4) Soils as physical systems and their relationship to environments. Investigation of specific cases of role of soil in management of environmental systems.

4610 Industrial Geography (4) Factors affecting location of manufacturing activities, with emphasis on the United States. Prereq: 3410 or consent of instructor.

4630 Geography of Agriculture (4)

4710 Cartography (4) Map construction, map reproduction, and practice in map drawing.

4720 Data Mapping (4) Methods of representing spatial distributions by maps and graphs. Mapable data may include phenomena as diverse as birth rates, voting patterns, and air pollution levels. Prereq: Junior standing or consent of instructor.

4740 Remote Sensing: Types and Applications (4) Basic principles and uses of aerial photography and other remote sensing techniques. Emphasis upon value of various types of imagery for geographic interpretation and simple mapping. Prereq: Consent of instructor.

4750 Interactive Computer Graphics (3) (Same as Computer Science 4750 and Electrical Engineering 4750.)

4900 Prosas seminar in Geography (4) Overview of major themes in geography, especially trends over past 20 years. Designed for undergraduate majors and minors; not open to graduate students. Prereq: Completion of at least 12 hrs of major or minor requirements for geography.

GRADUATE

Master's Program

The general requirements for the Master's degree are given in the Graduate Catalog.

Doctoral Program

General requirements for Doctor's degree are given in the Graduate Catalog.

5000 Thesis

5100 Colloquium in Geography (1)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5150 Introduction to Geographical Research (3)

5160 Research Design and Field Problems (4-6)

5170 Geographic Concept and Method (3)

5200 Special Problems in Geography (2-6)

5250 Topics in Historical Geography (3)

5260 Advanced Cultural Geography (3)

5310 Topics in Regional Geography of United States (3)

5320 Topics in the Geography of the American South

5410 Advanced Topics in Economic Geography (3)

5520 Advanced Urban Geography (3, 3)

5550 Topics in Geography of Land-Surface System (3)

5610 Topics in Climatology (3)

5710 Seminar in Geography (3)

5720 Topics in Quantitative Geography (3)

5740 Advanced Topics in Remote Sensing (3)

5915 Regional Geomorphology (4)

6000 Doctoral Research and Dissertation

6110 Seminar in Economic Geography (3)

6220-30 Seminar in Urban Geography (3, 3)

6240-50 Seminar in Historical Geography (3, 3)

6260-70 Seminar in Cultural Geography (3, 3)

6310-20 Seminar in Rural Geography (3, 3)

6410-20 Seminar in Regional Geography of United States (3, 3)

6610-20 Seminar in Regional Geography of Latin America (3, 3)

6710-20 Seminar in Physical Geography (3, 3)

Geological Sciences

Professors: G. Briggs (Head), Ph.D. Wisconsin; H.J. Klepaer, Ph.D. Ohio State; O.C. Kopp, Ph.D. Columbia; R.E. McLaughlin, Ph.D. Tennessee; D.H. Roeder, Ph.D. Goethe University (Germany); L.A. Taylor, Ph.D. Lehigh; K.R. Walker, Ph.D. Yale; J.G. Watts (Emeritus), Ph.D. North Carolina.

Associate Professors: M. Clark, Ph.D. Pennsylvania State; K.C. Misra, Ph.D. Western Ontario.

Assistant Professors: D.W. Byerly, Ph.D. Pennsylvania; F.B. Keller, M.Ph. Yale; H.D. Harvard; W.P. Staub, Ph.D. Iowa State.

The Department of Geological Sciences provides training for (1) those who plan a career as a professional geologist in industry, federal and state surveys, education or other fields which utilize earth scientists; and, (2) those who seek a general knowledge of geology and its relationships to the other sciences, engineering, business, law, and other disciplines.

The requirements set forth below are designed to provide geology majors with a broad base from which qualified students may proceed into advanced study in one or more of the branches of geology or related minor fields. Because a wide range of elective courses is available, it is essential that each student be guided in planning the program by a departmental adviser. A list of advisers is available in the departmental office.

UNDERGRADUATE

Major: Geology 1410, 1420, 1430 are prerequisite to a major which consists of Geology 3180, 3280, 3310, 3360, 3370, and at least 24 hours additionally in upperdivision courses in geology chosen to include at least twelve hours from among the following courses: Geology 3510, 4110, 4115, 4230, 4510, and 4610. Geology 4310 and/or 4440 (or equivalent) are strongly recommended for students planning to become professional geologists.

Because of the interdisciplinary nature of geology and the prerequisites for advanced study, students who major in geology are required to take the following allied science and mathematics courses: Biology 1210-20, Chemistry 1110-20, Mathematics 1840-501, Physics 2210-20 or 2510 and 2310-20. It is recommended that students take additional courses beyond the elementary level in at least one of the above allied fields.

Minor: Geology 1410, 1420, 1430 are prerequisite to a minor which consists of at least twenty-four hours in courses numbered 2000 or above.

Geology (424)

1000 Frontiers in Earth and Planetary Sciences (4)

Recent developments in earth science of interest to the public. Designed for non-majors; treats popular topics such as discoveries made by Apollo missions, earthquake prediction, and drifting of continents.

1410-20 General Geology I, II (4, 4) 1410—Introduction to study of the earth, its composition, structure, and processes that change it. 1420—Emphasizes development of life and physical events through Mesozoic Era. Must be taken in sequence. 3 hrs and 2-2 hr lab or field period.

1430 General Geology III (4) Continuation of 1410-20 sequence emphasizing the advent of human life and its interactions with geological processes and events. Prereq: 1420. 3 hrs and one 2-2 hr lab or field period.

2130 Geological History of the Earth (4) Origin and evolution of continents, atmosphere, oceans and earth's inhabitants with emphasis on physical history of North America. Prereq: 1420. 3 hrs and 1 lab or field period.

2210 History of Life on Earth (4) Chronological account of origin and evolution of life, its environment, and societies through time. Not intended for geology majors. 3 hrs and 1 lab or field period.


2610 Introductory Geology for Engineers (3) Materials and structure of the earth. For College of Engineering students only. 2 lectures and 1 lab or field period.

2710 Introductory Oceanography (4) Introduction to study of oceans including origin and development of ocean basins and physical and biological processes within ocean basins and their contained water and sediment masses. 1410 recommended.

3160 Introduction to Earth Materials (4) Study of minerals and rocks. Laboratory includes both hand specimen and analytical methods of identification. Not available for credit to majors. Prereq: 1410. 2 lectures and 2 labs.

3180 Mineralogy (4) Introduction to crystallography and study of minerals. Laboratory includes hand specimen, chemical and X-ray methods of identification. Prereq: 1410, Chemistry 1110-20 or equivalent. 3 lectures and 1 lab.

3210-20 Invertebrate Paleontology (4, 4) Systematic review of important invertebrate fossil groups. 3210—Protista to Brachiopoda, including sponges, coelenterates and bryozoa. 3220—Phoronida to Hemichordata, including annelids, molluscs, arthropods and echinoderms. May be taken separately or in any order. Prereq: 3260; Biology 1210-20 or consent of instructor. 3 hrs and 1 lab or field period.

3250 Micropaleontology (4) Microscopic remains of animals and plants with special emphasis on stratigraphically important groups. Prereq: 3210 or consent of instructor.

3280 Paleobiology (4) Introduction to principles and materials of paleontology as applied to interpretation of earth history. Prereq: 1420. 3 lectures and 1 lab or field period.

1Mathematical 1840-50 has prerequisites of 2 years high school algebra and one year of trigonometry equivalent. Students who are deficient in these subjects may need to take Mathematics 1010 and/or 1500 prior to enrolling in Mathematics 1840-50. Consult mathematics section of this catalog or the Department of Mathematics for details.
3270 Geological History of Land Organisms (4) Geological history and development of terrestrial biota and ecosystem with special emphasis on fossil record of land plants and vertebrates. Prereq: Biology 1210-20 or consent of instructor. 3 lectures and 1 lab or field period.

3310 Lithology (4) Study of igneous and metamorphic processes and rocks. Laboratory includes hand specimen and microscopic study of important rock types. Prereq: 3180, 2 lectures and 2 labs.

3330 Geology of East Tennessee (4) Lectures and field excursions. Prereq: 12 quarter hrs of geology and consent of instructor.

3360 Stratigraphy-Sedimentation (4) Introductory study of principles and practices and of sedimentary processes and interpretation of depositional environments. Prereq: 1420 and 3180. 3 hrs and 1 lab or field period.

3370 Structural Geology (4) Introductory discussion of structures such as folds, faults, joints, cleavage, and primary structures. Laboratory work includes depth and thickness problems. Structure sections, structure contour maps, etc. Prereq: 1420, Mathematics 1840-50 or equivalent. 3 hrs and 1 lab.

3410 Principles of Ground Water Geology (3) Geologic processes affecting the occurrence and behavior of water. Not open to geology majors. 2 lectures and 1 lab. (Same as Water Resources Development 3410.)

3510 Introductory Environmental Geology (4) Geologic problems involving earth environments and resources, and geologic parameters associated with their control and misuse. Prereq: 1420 or consent of instructor. 2 lectures and 2 lab or field periods.

3610 Quaternary Geology for Engineers (3) Erosional and depositional processes, landforms, groundwater. 2 lectures and 1 lab or field period. Prereq: 2610 or equivalent.

3710 Origin and Evolution of the Continents and Ocean Basins (4) Introductory study of origins and character of rocks exposed in earth's crust with emphasis on modern concepts of continental drift and plate tectonics. Prereq: 1420.

4110 Principles of Economic Geology (4) Formation of mineral deposits. Prereq: 3160, 3370 or equivalent.

4115 Elementary Applied Geophysics (4) Basic principles of electrical, seismic, gravity and magnetic surveying. Recommended: 1420, Physics 2220 or 2230. 3 lectures and 1 lab.

4130 Sedimentology (4) Introduction to physical processes of sedimentation: transport of sediments and formation of sedimentary structures, river flow, waves, tides, and ocean circulation. Prereq: 3510, 3 lectures and 1 lab.

4230 Paleocology (4) Principles of environmental analysis as applied to fossil assemblages and associated lithologies. Prereq: 3260 or consent of instructor. 3 hrs and 1 lab.

4240 Paleobotany (4) Survey of fossil record of plants with particular emphasis on (1) comparative morphology and evolutionary trends in major plant groups and (2) chronological succession and geographical distribution of past floras on earth. Prereq: 1420 or 2210; Botany 3010-20 or consent of instructor. 3 hrs and 1 lab or field period. (Same as Botany 4240.)

4310 Geologic Mapping (4) Interpretation of maps and methods of geologic mapping. 3 lectures and 1 lab or field period. Prereq: 12 quarter hrs of geol.

4370 Tectonic Styles (4) Elements, habitats, and geotectonic causes of basic styles of tectonic deformation are presented on maps, sections, aerial photographs and fabric diagrams. 3 lectures and 1 seminar or lab. Prereq: 3370 or consent of instructor.

4440 Field Geology (8) Five weeks' field course, first term summer quarter. Advanced undergradu-
recognized foreign study programs can readily be transferred to UTK. For qualified students, German 1420 offers German 1410 Foreign Study and Russian 4101 Foreign Study. See page 187. Students should consult the department before registering for the foreign study course.

German

Major: Majors or minors in German should carefully prepare their programs in consultation with a departmental faculty adviser. German 2110-20-30 or the equivalent is a prerequisite to the major. The major shall consist of at least 36 hours of German in courses numbered above 3000, usually including German 3110-20-30 or 3410-20, 3810-20-30, 9 hours of German literature in courses numbered above 3000, excluding 3010-20-30 and courses in English translation.

It is recommended that German majors also take History 1510-20 or 3710-20-30 and 8 hours of sophomore English. Majors are also strongly urged to consider a minor in some other area of the humanities.

German 2110-20-30 or its equivalent is a prerequisite to the minor. The minor shall consist of at least 24 hours of German courses numbered above 3000, which will normally include German 3110-20-30 or 3410-20-30, and 15 additional hours of courses numbered above 3000, excluding 3010-20-30 and courses in English translation.

Russian

Major: Russian majors should carefully prepare their programs in consultation with the departmental faculty adviser. Russian 2510-20 or its equivalent is a prerequisite to the major. Russian 2640-50 is a corequisite to the major. The major itself consists of 36 hours of Russian courses, including Russian 3510-20, 3610-20-30, 9 hours from Russian 3210-20-21-30-40-50-60, and 9 hours of courses numbered above 4000. It is recommended that majors take History 3470-80-90 and 9 hours of sophomore English. Majors are urged to consider a minor in some other area of the humanities.

Minor: Russian 2510-20 or its equivalent is a prerequisite to the minor. The minor itself consists of 27 hours of Russian courses, including 9 hours from Russian 2640-50 and/or 3210-20-21-30-40-50-60 and/or 18 hours to be taken from Russian 3510-20, 3610-20-30 and courses numbered above 4000.

Russian and East European Studies.

See Cultural Studies.

Certification for Teaching German and Russian in Tennessee

Consult Certification Clerk, Room 212, Claxton Education Building.

German (433)

1110-20-30 Elementary German (3, 3, 3) Must be taken in sequence.

1510-30 Elementary German (4, 4) Must be taken in sequence.

1518-2518-28 Honors: Elementary and Intermediate German (5, 5, 5) Honors course for students of superior ability. Freshmen are admitted on the basis of high school average and performance on the American College Testing Program. Upperclassmen must have a B average. A grade of C or above must be achieved in order to continue. This sequence is equivalent to 1510-20 or 1110-20-30 and 2110-20-30 and its completion allows the student to enter all 3000-level German courses.

1530 Elementary German through Individualized Instruction (1-8) Same material as in German 1510-20, but student achievement set at own pace, with a minimum of one credit hr per quarter. With completion of four hrs student has option of transferring to 1520. May be repeated. Maximum credit 8 hrs.

2110-20-30 Intermediate German (3, 3, 3) Must be taken in sequence.

2310-20-30 Elements of German for Upper-Division and Graduate Students (3, 3, 3) Elements of language, elementary and advanced readings. Open to graduate students preparing for language examinations, and upper-division students desiring reading knowledge of the language. Undergraduate credit only. No credit for students having completed 1510-20 or 1110-20-30.

2340 Elementary Dutch (3) Prereq: Reading knowledge of German. Primarily for graduate students in German. No graduate credit allowed.

2310-20-30 Introduction to German Literature (3, 3) Prereq: 2130 or equivalent.

2340-20 Readings in Modern and Contemporary German Literature (3, 3) Prereq: 2130 or equivalent.

2380-20-30 Conversation and Composition (3, 3, 3) Prereq: 2130 or equivalent.

ADVANCED UNDERGRADUATE AND GRADUATE

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-13) See page 187.

4103 Independent Study (1-16) See page 187.

410-20-30 Studies in Classical and Modern Writers (3, 3, 3) Content varies. May be repeated for credit with consent of department. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, or courses in English translation) or equivalent.

4140-50 Selected Topics in German Literature from 1770 to the Present (3, 3) Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, or courses in English translation) or equivalent.

4160 Studies in German Authors (3) Life and works of a single outstanding German literary figure. Content varies. May be repeated for credit. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, or courses in English translation).

4170 Theatrical German (1-3) Performance in one or more German plays. May be repeated for credit with consent of department. Prereq: 2130 or equivalent or consent of instructor.

4210-20-30 Studies in German Literary Types (3, 3, 3) 4210—Lyric poetry. 4220—Drama. 4230—Narrative prose. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, 3210-20-30, 3310) or equivalent.

4250 Introduction to Descriptive Linguistics (3) (Same as Russian, French and Spanish 4250.)

4260 Introduction to Historical and Comparative Linguistics (3) Linguistic change, proto-languages. Phonological and morphological change. Cultural, historical, sociological influences upon the development of language. Semantic change. Lexicography. All these topics copiously illustrated by selection from Indo-European languages. Prereq: 9 hrs of upper-division English, or 9 hrs of upper-division courses in a modern or ancient language (exclusive of German and French). Prereq: 3010-20-30, courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of Indo-European languages, or consent of department. (Same as Russian, French and Spanish 4260.)

4270 Introduction to Germanc Linguistics (3) Phonetics and phonemics of German, German grammar and German vocabulary from a descriptive point of view. Dialects of German. Introduction to study of other Germanic languages.

3130-20 History of German Language (3, 3)

4610-20-30 German Civilization (3, 3, 3) Prereq: 2130 or equivalent.

4618-28-38 Honors: Senior German (3, 3, 3) Intended to give student of special aptitude greater opportunity to do independent study under ordinary courses. Prereq: Senior standing, with a record of A in half of German courses taken as prerequisite to the 3000-level, average of B in remainder, and consent of department.

4610-20-30 Advanced Conversation and Composition (3, 3, 3) Prereq: 3810-20-30 or equivalent or consent of department.

GENERAL COURSES

2410-20-30 Culture of German-Speaking Peoples (3, 3, 3) Studies in culture and life style of German-speaking peoples from their first contact with Romans to the present. Readings are in English language. Students opting for 4 hrs credit will be expected to present an appropriate amount of extra work above that required for 3 hrs.

3210-20-30 German Literature in English Translation (3, 3, 3) No foreign language credit. No change in credit hours. Students who have completed 2410-30-30 may retake in English translation. Students opting for 4 hrs credit will be expected to present an appropriate amount of extra work above that required for 3 hrs.

2420 Old Norse Literature in English Translation (3) Prose readings of sagas of Norwegian kings, great Icelandic family sagas, and Vinland sagas, narrating discovery of America around the year 1000. Mythological and heroic poems of the Edda.

3250 Modern Scandinavian Literature in English Translation (3) Introduction to modern literature of Sweden, Norway, Denmark, and Iceland. Representative readings by such writers as Ibsen, Strindberg, Lagerlöf, Hamsun, Vesaas, Lagerkvist, Bang, Næsø, Luxness.

3260 German Drama in English Translation (3) From Lessing to present. No foreign language credit.

3270 Modern German Novel in English Translation (3) From 1900 to present. Remarque, Hesse, Mann, Kafka, Frisch, Böll, Grass. No foreign language credit.

3280 Goethe's Faust in English Translation (3) In- tensive study of Faust I and II and survey of criticism and interpretations of the work. No foreign language credit.

3130 Dramas of Bertolt Brecht (3-4) Chronological survey of Brecht's dramatic works and theoretical writings in English translation. No foreign language credit.

3200 Novels of Hermann Hesse (3-4) Study and analysis of Hesse's major novels in English translation. No foreign language credit.

330 Dramas of Ibsen and Strindberg (3-4) Study of two principal forerunners of twentieth-century drama. Works are read in English translation. No foreign language credit.

3340 Special Topics in German Literature in English Translation (1-4) Topics and credit hours vary and are announced in advance. Student suggestions for topics are welcomed around the year. No foreign language credit. May be repeated for credit.

4050 The Faust Legend (3) Survey of development of legend from Faust chabook to present, excluding Goethe's Faust. No foreign language credit.

GRADUATE

The Department of Germanic and Slavic Languages offers three advanced degrees. They are Master of Arts (M.A.) in German, Master of Arts in College Teaching
Greek
See Classics.

Hebrew
See Religious Studies.

History (462)

Professors:
L.P. Graf (Head); Ph.D. Harvard; G. Broeker, Ph.D. Minnesota; E.V. Chmielewski, Ph.D. Harvard; R.E. Duncan, Ph.D. California (Berkeley); H.S. Finkel (Emeritus), Ph.D. Princeton; Y.-P. Hao, Ph.D. Harvard; A.G. Haas, Ph.D. Chicago; R.W. Haskins, Ph.D. California (Berkeley); J.W. Hoffman (Emeritus), Ph.D. Chicago; C.O. Jackson (Associate Dean, Liberal Arts College), Ph.D. Emory; M.C. Klein, Ph.D. Columbia; R.G. Landen (Dean, Liberal Arts College), Ph.D. Princeton; R.C. Marius, Ph.D. Yale.

Associate Professors:

Assistant Professors:
S.D. Becker, Ph.D. Case-Western Reserve; S.J. Kleinberg, Ph.D. Pittsburgh; R.B. Rice, Ph.D. Harvard.

*Distinguished Professor.
*Alumni Distinguished Service Professor.

UNDERGRADUATE

Major: History 1501-20 (or honors equivalent), or 1610-20, is prerequisite to a major in Russian Studies or Minor in Russian Studies, including 8 hours of History 2510-20 and 28 hours of upper-division courses chosen so that the student presents a minimum of 8 upper-division hours in two of the three following groups:
(a) European;
(b) United States;
(c) Other areas, e.g. Latin American, Asian, etc. Students may use only two of the three History colloquia (4010, General; 4020, European; 4012, American) toward the 36 hours of the major. Honors Major—Consists of prerequisites to the general major plus 45 hours: 36 hours of courses, including group requirements in the general major and History 4018-28 plus 3008, 3038, 3048.

(a) European: 3061-71; 3140-50-60; 3411-12-13; 3421-22-23; 3431-32-33; 3441-42-43; 3450; 3470-80-90; 3710-20-30; 3780-70; 4011; 4250-60-70; 4260; 4330; 4410-20-30; 4450-60; 4470; 4480; 4490; 4500; 4510-20; 4570; 4710-20-30; 4740; 4770-80.
(b) United States: 3310-20-30; 3610-20; 3630-50-60; 3670; 3860; 3910-20-30; 4012; 4290; 4311-21; 4370; 4610-20-30; 4640-50-60; 4670; 4910-20-30; 4950-60.
(c) Other: 3751-52; 3780-90; 3795; 3810-20-30; 3870-80-90; 4010; 4120-30-40; 4590; 4640; 4870-80-90.

Minor: History 1510-20, (or honors equivalent) or 1610-20, is prerequisite to a minor which consists of 24 hours of courses numbered 2000 or above of which at least 8 hours must be in United States history.

American Studies. See Cultural Studies.
GRADUATE

A student who enrolls in the Graduate School with intention of obtaining an advanced degree in history shall have completed an undergraduate major in history or its equivalent.

The Master's Program

General requirements for the Master of Arts and Master of Arts in College Teaching degrees are found in the Graduate Catalog.

The Doctoral Program

General requirements for the Doctor's degree are found in the Graduate Catalog.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5015 Periods in European History (3)

5016 Periods in American History (3)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5211-12-13-14-15-16-17-18-19 M.A. Reading Courses (3, 3, 3, 3, 3, 3, 3, 3, 3)

5221-22-23-24-25 M.A. Reading Courses (3, 3, 3, 3, 3)

5240 Introduction to Historical Research (3)

5250 European Historiography (3)

5260 American Historiography (3)

5271-72-73 Teaching of College History (0, 0, 3)

5280 Philosophy and Methodology (3)

5290 Quantitative Analysis of Historical Data (3)

5300 Topics in History (3)

5310 Topics in Women's History (3)

5320 Topics in Historical Editing (3)

5360 Topics in American Foreign Relations (3)

5410 Topics in Early Modern European History (3)

5440 Revolution and Restoration in Central Europe, 1786-1850 (3)

5444 Topics in French History (3)

5445 Topics in Nineteenth-Century European History (3)

5450 Topics in Twentieth-Century European History (3)

5480 Topics in Russian History (3)

5510 Topics in Tudor-Stuart England (3)

5520 Topics in Modern English History (3)

5550 Reaction and Reform in England, 1789-1848 (3)

5560 Anglo-Irish Relations (3)

5640 Topics in American Social and Cultural History (3)

5645 Topics in American Urban History (3)

5650 Topics in American Westward Movement (3)

5660 Topics in Negro History (3)

5670 Topics in American Colonial History (3)

5675 Topics in the Early National Period of American History (3)

5680 Topics in Nineteenth-Century American History (3)

5690 Topics in Twentieth-Century American History (3)

5710 History of Crusades (3)

5720 Topics in Medieval History (3)

5740 Topics in European Urban History (4)

5750 Topics in Ancient History (3)

5780 Topics in German National Socialism (3)

5790 Topics in Middle Eastern History (3)

5810 Topics in Andean History (3)

5820 Topics in Mexican History (3)

5850 Topics in Chinese History (3)

5860 Topics in Japanese History (3)

5910-20 Topics in Southern History (3)

6000 Doctoral Research and Dissertation

6210-20-30-40 Directed Readings (3, 3, 3, 3)

6300 Seminar in Special Studies (3)

6310 Seminar in Tennessee History (3)

6350 Seminar in American Diplomatic History (3)

6410-20 Seminar in Western Europe (3, 3)

6444 Seminar in French History (3)

6480 Seminar in Russian History (3)

6510 Seminar in English History (3)

6610 Seminar in American Colonial History (3)

6620 Seminar in Era of American Revolution (3)

6630 Seminar in Early National Period of American History (3)

6635 Seminar in Jacksonian Period (3)

6640 Seminar in Social and Cultural History of the United States (3)

6650 Seminar in American Westward Movement (3)

6710 Seminar in Medieval Institutions (3)

6740 Seminar in the Crusades (3)

6770 Seminar in Central European History (3)

6810 Seminar in Latin American History (3)

6910 Seminar in the Civil War Era (3)

6930 Seminar in Twentieth-Century America (3)

6940 Seminar in History of the South (3)

6960 Seminar in Negro History (3)

Honors Program

Director: Dr. Harry Jacobson

Non-Departmental

The following courses are restricted to students who have been selected to participate. 1118-28-38 are for first-year students invited on the basis of test scores, high school averages, and where appropriate, on University performance. Participation in the 2000-, 3000-, and 4000-

level courses is based on cumulative averages. At present students with an average of 3.25 or greater are eligible.

Honors (509)

1118-28-38 Honors: First Year—Inquiry and Modes of Thought (2-4, 2-4, 2-4) 1118—The Humanities; 1128—The Natural Sciences; 1138—The Social Sciences. May be repeated.

2118-28-38 Honors: Sophomore—Special Problems Seminar (2-4, 2-4, 2-4) 2118—The Humanities; 2128—The Natural Sciences; 2138—The Social Sciences. These seminars focus on selected problems in the respective disciplines. The specific topics will vary from year to year. May be repeated.

3118-28-38 Honors: Junior—Colloquium (2-4, 2-4, 2-4) Small group studies of selected topics. May be repeated.

4101 Honors: Foreign Study (1-16) See page 187 and Director of Special Programs. Primarily for College Scholar Students.

4102 Honors: Off-Campus Study (1-16) See page 187 and Director of Special Programs. Primarily for College Scholar Students.

4103 Honors: Independent Study (1-16) See page 187 and Director of Special Programs. Primarily for College Scholar Students.

4118-28-38 Honors: Senior—Colloquium (2-4, 2-4, 2-4) Small group studies of selected topics. May be repeated.

4998 Honors: College Scholars Studies (2-16) Designed for College Scholars working on their senior thesis, project, or performance. May be repeated for a total of 16 credit hrs.

Human Services (532)

Associate Professor: R.F. Kronick (Director), Ph.D. Tennessee.

Assistant Professors: J.D. McLean, Ph.D. Chicago; F.J. Spicuzza, M.S.W. Tennessee.

Instructors: J.E. Everett, M.S.W. Michigan; N. Wright, M.S.W. Pittsburgh.
develop specific helping skills and to become exposed and involved in the roles and functions of social services; to provide some direct services in a supervised learning situation. For majors only. May be repeated up to 16 hrs required. S/NCG. Prereq: Consent of instructor.

4900 Aspects of Urban Environment (4) (Same as Architecture 4900, Real Estate 4900, Psychology 4900.)

Italian
See Romance Languages.

Japanese
See Cultural Studies (Asian Studies).

Latin
See Classics.

Latin American Studies
See Cultural Studies.

Linguistics
See Cultural Studies.

Mathematics (641)
Professors:
L.K. Barrett (Head), Ph.D. Pennsylvania; G.E. Albert (Emeritus), Ph.D.; Wisconsin; S. Braddock, Ph.D. Iowa; J.H. Curruth, Ph.D. Louisiana State; R.E. Cline, Ph.D. Purdue; R.J. Daverman, Ph.D. Wisconsin; D.J. Dessart, Ph.D. Maryland; E.D. Eaves (Emeritus), Ph.D. Texas; H. Frandsen, Ph.D. Illinois; D.A. Gardner, Ph.D. North Carolina State; R.T. Gregory, Ph.D. Illinois; T.J. Hallam, Ph.D. Missouri; D.B. Hinton, Ph.D. Tennessee; A.S. Householder (Emeritus), Ph.D. Chicago; L.S. Husch, Ph.D. Florida State; H.T. Mathews, Ph.D. Tulane; R.M. McConnel, Ph.D. Duke; D.D. Miller, Ph.D. Michigan; R.J. Plemmons, Ph.D. Auburn; K.C. Reed, Ph.D. Indian Institute of Technology; P.W. Schafwer, Ph.D. Maryland; F.W. Stallman, Ph.D. Giessen (Germany); B.D. Steeman (D.Sc. Dundee (Scotland).

Associate Professors:
J.D. Chandler, Jr., Ph.D. Virginia; C.E. Clark, Ph.D. Louisiana State; D.E. Dobbs, Ph.D. Cornell; M.D. Gunzburg, Ph.D. New York; W.E. Haver, Ph.D. SUNY (Binghamton); G.S. Jordan, Ph.D. Wisconsin; K.R. Kimmel, Ph.D. Ohio State; G.A. Klausen, Ph.D. Nebraska; Y. Kuo, Ph.D. Cincinnati; B.S. Rajput, Ph.D. Illinois; W.H. Row, Jr., Ph.D. Wisconsin; S.M. Serbin, Ph.D. Cornell, J. Smith, Ph.D. California (Kerkeley); K. Soni, Ph.D. Oregon State; R.P. Soni, Ph.D. Oregon State; W.R. Wade, Ph.D. California (Riverside); C.G. Wagner, Ph.D. Duke.

Assistant Professors:

Instructors:
E.S. Carlen, M.A. Alabama; C.G. Dox, M.A. Tennessee; J.S. McLean, M.S. Purdue; D.P. Nash, M.A. Colorado; A.M. Steele, M.Ed. Pittsburgh.

On leave.
Space Institute-Tulahoma.

Visiting.

UNDERRADUATE
Placement Information for Freshman Courses: Students who need more than one year of mathematics should plan to take 1840-50-60 (or 1842-52-62 or 1848-58-68). The prerequisites for 1840 (and 1842) are two years of high school algebra, one year of geometry and one semester of trigonometry or equivalent. Students who present an ACT score below 28 in mathematics are urged to complete 1700 with a grade of C or better before taking 1840 (or 1842). Students who have not had high school trigonometry should take 0150 before (or concurrently with) 1840 (or 1842). Students who present an ACT score of at least 28 in high school algebra and at least 21 in high school average at of at least 3.00 are eligible for the honors course 1848. Prospective mathematics majors who meet these requirements are particularly encouraged to enroll in 1848. Exceptions to the eligibility criteria for 1848 are possible. Interested students should see the department head in Ayres Hall, Room 124.

The prerequisites for 1540 are two years of high school algebra or one year of algebra and one year of geometry. Students who present an ACT score below 18 in mathematics may be admitted to the course and are advised to take Algebra Refresher, Part I, in the Workshops and Non-Credit Programs (or equivalent elsewhere), and make at least B, or to make a passing grade in Algebra Refresher, Part II, in the Workshops and Non-Credit Programs (or equivalent elsewhere).

Students who have taken 2 years of high school algebra and 1 year of high school geometry and who present an ACT score in mathematics of at least 26 (or those who earned at least a grade of B in high school algebra and geometry, and present an ACT score in mathematics of at least 24) are encouraged to omit 1540 and begin with 1550.

Students who have a deficiency in algebra or geometry must remove the deficiency by taking the appropriate course(s) in the Workshops and Non-Credit Programs (or equivalent elsewhere).

A student may receive credit for only one of the following courses: 1500, 1540, 1700. The last one of these courses taken is the one which will count for credit.

Honors Courses: The current practice of the department is to offer honors versions (1848-58-68 and 2848-58-68) of 1840-50-60 and 2840-50-60 in sequence, fall-winter-spring, each year. In addition to these regularly offered honors courses, an honors version of any course in the department whose enrollment has been zero as the last digit may be offered in any quarter. In this case, the last digit will be changed to eight and the title will be preceded by the word "Honors," and the course will be listed on the student's transcript. These honors courses may be offered upon the initiative of interested faculty, students, or the department head (in all cases subject to the approval of the department head).

Proficiency Examinations: Students who have taken calculus in high school are encouraged to inquire at the Mathematics Office, Ayres 121 about the
freedom in determining how they will meet the advanced requirements of the major. In order to offer some guidance in
program planning, the mathematics department has designed several sample programs which majors may wish to
follow. A brief description of these programs appears below; more detailed information about these or any additional
programs which the department may design in the future is available in Ayres 121.

All students who intend to pursue graduate study in mathematics or related sciences are strongly urged to study
French, German, or Russian for at least two years.

Program 1. This program is designed for students who have a general interest in
mathematics and do not plan to become professional mathematicians.
Supplemented by appropriate non-
mathematics electives, such a program
might be followed, for example, by pre-
medical or pre-law students, by students
planning to teach secondary school
mathematics, or by those who plan to
enter business or industry.
Suggested courses: Mathematics 3150,
3050-60, 3790-80, 3330, 4510-20, 4120,
senior seminar, 6 hours of math electives.

Program 2. This program emphasizes pure
mathematics and is designed to prepare
students for graduate work in any of the
mathematical sciences.
Suggested courses: Mathematics 3150,
4510-20-30, 4120, 4515-60, 4250, 3 hours
of math electives. The honors courses
4518-28-38 and 4158-68 are
especially recommended. Since 4158-68
begins only in the fall quarter, students
who wish to enroll in this sequence should
take 4120 during their sophomore or junior
years.

Program 3-A. This program emphasizes
numerical mathematics, and is designed to
prepare the student for employment in
industry. Suggested courses: Mathematics
3150, 4220-30, 4610, 4600-70, 4250,
Computer Science 4410, Mathematics 4990
or Computer Science 4330, senior
seminar, 6 hours of math electives
selected from 4540, 4550, 4620, 4640,
4710.

Program 3-B. This program emphasizes
numerical mathematics and is designed to
prepare the student for graduate work in
numerical mathematics or computer
science. Suggested courses: Mathematics
3150, 4225-35, 4610, 4600-70, 4510-20-30,
4250, Computer Science 4410,
Mathematics 4990 or Computer Science
4330, senior seminar.

Program 4-A. This program emphasizes
operations research, probability, and
mathematical statistics, and is designed to
prepare the student for employment in
business or industry. Suggested courses:
Mathematics 3150, 4540, 4600-70, 4560-70,
7050-60-70, Statistics 3450, Industrial
Engineering 3510-20-30, senior seminar, 3
hours of math electives.

Program 4-B. This program emphasizes
operations research, probability, and
mathematical statistics, and is designed to
prepare the student for graduate work in
one or more of these areas. Suggested
courses: Mathematics 3150, 4600-70, 4650-
60-70, 4510-20-30, 4750-60-70, Industrial
Engineering 3510-20-30, senior seminar.

Program 5. This program emphasizes
actuarial science and is designed to
prepare students for graduate study or
graduate work in actuarial sciences.
Suggested courses: Math 3155, 4225-35,
4120, 3780-90, 4650-60-70, senior seminar
and two courses from 4750-60-70, 4600-70,
Computer Science 3150, 4350, 4520.

Students following this program should
supplement their mathematical training by
selecting electives such as Economics
2110-20-30 or 2118-28-38, Accounting
2110-30; Insurance 3220, 4710-20; Marketing
3110; Statistics 3450; Industrial
Engineering 3510-20-30; Computer Science
3150, 3520, 4550. Students in this program
should also plan to take 3 hours of the Society of Actuaries Examinations I and II.

0150 Trigonometry (6) Plane trigonometry
with emphasis on identities and other analytic aspects
used in calculus. For students who enter with
deficiencies in high school trigonometry. 3 hrs per
week. No college credit.

1020 Mathematics: A Philosophical Approach (4)
Mathematics as a science, art and "language
game"; nature of mathematical truth; strengths
and limitations of the axiomatic method; the
finite and the infinitesimal; mathematical creativity;
ethical problems facing the mathematician-
scientist.

1540 College Algebra (4) Sets, real and complex
number systems, exponents and radicals, funda-
mental algebraic operations, theory of equations,
polynomial inequalities, relations, functions,
graphs. NOTE: students may not receive credit for
both 1540 and 1700. If both are taken, the last one
takes precedence. Prereq: Two years high school alge-
bra or one year algebra and one year geometry.

1550-60 Introductory Calculus—General Mathe-
ematics (4, 4) 1550—Equations of straight lines,
conics, derivatives of algebraic functions, applica-
tions of derivatives to graphs, review of trigono-
metry. This course will prepare students for
1560 calculus and cannot be taken for credit in addi-
tion to 1810-20. Prereq: Two years high school
algebra and one semester of trigonometry or
equivalent.

1700 Precalculus Mathematics (4) Function con-
cept and use of functional notation. Properties of
functions and their graphs. Polynomial, exponen-
tial, logarithmic, and trigonometric functions.
NOTE: students may not receive credit for both
1540 and 1700. If both are taken, the last one
takes precedence. Prereq: Two years high school
algebra, and the equivalent of one-half year of trigonometry or
taking Mathematics 0150 concurrently.
trices, elementary optimization and game theory, applications of linear and calculus in the behavioral and/or managerial sciences. Prerequisite: Two years of high school algebra or one year of algebra and one year of geometry.

2512 Calculus Refresher (4) Functions, graphs, limits, derivatives, mean value theorem, integration and properties of the integral. For students who have had a derivative of algebraic functions, integral rules, differential, continuity; applications of derivatives; Rolle's Theorem, the Mean Value Theorem, maxima and minima; integration applications; definite integral and applications. Fundamental Theorem of integral calculus. Derivatives and integrals of transcendental functions, methods of integration, parametric equations, vectors, differentiation of vectors, scalar and vector products, equations of lines and planes, surfaces. Partial differentiation, directional derivatives, the chain rule, the total differential, maxima and minima; integration of differential equations; polar, cylindrical and spherical coordinates, series, tests for convergence, power series. Must be taken in sequence. Prerequisite: Math 1560 or at least one semester of high school calculus.

2610 Introduction to Differential Equations (2) Variables separable, homogeneous, exact, and linear first order equations. Second order linear equations with constant coefficients. Prerequisite: 1830.

2710-20-30 Calculus (5, 5, 5) For students who have had a year of high school algebra. Prerequisite: Math 1560 or at least one semester of high school calculus.

2840-50-60 Multivariable Calculus and Matrix Algebra (4, 4, 4) 2840-50-60 Differential equations, vectors and parametric equations, solid analytic geometry, dot and cross product of vectors, space curves. Functions of several variables, directional derivatives, partial derivatives, gradient, curves and surfaces, multiple integrals, cylindrical and spherical coordinate systems, integration in 3-space, applications, partial differentiation, multiple integrals, series. Must be taken in sequence. Prerequisite: 1830 or equivalent.

2948-58-68 Honors: Multivariable Calculus and Matrix Algebra (4, 4, 4) Honors course for selected students admitted on basis of performance in 1848-58-68 and 1840-50-60. Prerequisites. If specific courses are listed below as prerequisites, equivalent preparation satisfactory to the instructor will be acceptable. Graduate standing is prerequisite to enrollment in courses numbered above 6000.

Undergraduates working towards a major in mathematics with a view to taking advanced work are strongly recommended to include 4510-20-30 and 4510-60-70 during the junior or senior year.

3000 Elementary Quantitative Methods (4) 1824-22 Finite Mathematics (4, 4) Logic and sets, combinatorics and probability, vectors and matrices, elementary game theory, applications of linear and calculus in the behavioral and/or managerial sciences. Prerequisite: Two years of high school algebra or one year of algebra and one year of geometry.

3040 The Ideas of Calculus (4) Study of basic ideas and theory behind differential and integral calculus designed for students whose course of study does not involve the use of calculus. Emphasis on the historical framework in which calculus was discovered and its influence on subsequent mathematical developments. Prerequisite: Two years of high school algebra. May not be taken for credit by any student who has previously received credit for any college calculus course.

3050 Elementary Probability and Statistical Analysis (3) Combinatorial problems; sample spaces, events; statistical independence; axioms of probability; random variables and their distributions; simple random processes. Prerequisite: 1550-60 or equivalent.

3050 Elementary Statistical Analysis (3) Elements of probability distributions; sampling theory; confidence intervals and statistical tests of hypotheses; least squares and linear regression. Prerequisite: 2050 or consent of instructor.

3090 Polynomials and Rings (3) Elementary introduction to rings and polynomials; axiomatic approach is used to study divisibility and factorization in rings of integers and of polynomials with coefficients from various fields. Prerequisite: 2860 or consent of instructor.

3100 Logic and Sets (3) Elements of mathematical logic; elementary algebra of sets. Primarily for students in the College of Arts and Sciences. Prerequisite: 1 year of college mathematics.

3110 Real Number System (3) Axioms of arithmetic; rational and irrational numbers. Primarily for students in the College of Education. Prerequisite: 1 year of college mathematics.

3150 Introduction to Numerical Algorithms and Programming (3) (Same as Computer Science 3150.)

3155 Introduction to Numerical Algorithms (3) (Same as Computer Science 3155.)

3220 History of Mathematics (3) Survey of development of various branches of mathematics from ancient to modern times. Not acceptable for satisfying requirements for a major or minor in mathematics. Prerequisite: Math 1860 or 2550 or equivalent.

3310 Advanced Euclidean Geometry (3) Triangles and circles; euclidean and non-euclidean concepts. Prerequisite: 1 year of college mathematics.

3320 Non-Euclidean Geometry (3) Foundations of geometry. Elliptic and hyperbolic plane geometry. Prerequisite: 1 year of college mathematics.

3330 Transformational Geometry (3) Fundamental transformations in Euclidean geometry. Classifications of isometries and similarities; symmetries of a polygon; inversions. Prerequisite: One year of college mathematics.

3510 Intermediate Analysis (3) Primarily for students in secondary mathematics education. Course covers elementary calculus from advanced viewpoint with emphasis on proofs of basic theorems. Topics covered include limits of sequences and functions, continuous functions, derivatives, definite integral, and fundamental theorem of integral calculus. Prerequisite: 1550-60 or 1860.

3715 Discrete Structures (3) (Same as Computer Science 3715.)

3720 Theory of Equations (3) Techniques for finding roots of polynomial equations. Topics covered include complex, integral, and rational roots, multiple roots, separation of roots, Sturm's Theorem, Horner's method of approximating roots, and formulas for quadratic, cubic, and quartic equations. Prerequisite: 1 year of college mathematics.

3780-90 Introduction to Combinatorial Theory (3, 3) Introduction to problems of arrangement and selection within discrete systems. Enumeration by recurrence relations and generating functions,
graph theory, finite geometries and finite fields, partitions, block designs. Prereq: Math 2860 or consent of instructor.

3810 How to Prove It (3) Course is designed to improve understanding of nature and methods of mathematical proof by means of practice and participation in seminars in which students construct and evaluate their own proofs. Variable content but will include certain standard topics such as elementary set theory, relations and functions, and mathematical induction. Coreq: 2850 or 2860.

3920-30 Topology of Euclidean Spaces (4, 4) Topics will include topology of line and plane, separation properties, compactness, connectedness, completeness, continuous functions, homeomorphisms, continuity, and topological invariants. Must be taken in sequence. Prereq: 2860 and 3810, or 2890.

3990 Studies in Mathematics (1-4) Credit determined at registration. May be repeated for credit with consent of department; maximum 9 hrs credit. Prereq: Consent of instructor.

4035-45 Introduction to Numerical Linear Algebra (3, 3) (Same as Computer Science 4035-45.)

4050 Matrix Algebra and Applications (3) Matrices, elementary operations, systems of linear equations, vector spaces, determinants, eigenvalues and eigenvectors. A student cannot receive credit for both 2890 and 4050. Prereq: 2850 or 2950 or consent of instructor.

4060-70 Matrix Algebra and Applications (3, 3) Eigenvalues and eigenvectors, singular values and singular vectors; vector spaces, linear transformations, quadratic forms, vector and matrix norms, Jordan canonical form, and related topics. Prereq: 2890 or 4050.

4101 Foreign Study (1-16) See page 187

4102 Off-Campus Study (1-16) See page 187

4120 Linear Algebra (3) Abstract vector spaces, linear transformations, and their matrices, systems of linear equations and determinants, inner products, and diagonalization of symmetric matrices. Prereq: 2860 or 4050.

4150-60 Abstract Algebra (3, 3) Equivalence relations and partitions, properties of integers, elementary theory of groups and rings, polynomial rings, integral domains, divisibility, unique factorization, fields. Must be taken in sequence. Prereq: 2860 or 4050.

4225-35 Introduction to Numerical Analysis (3, 3) Interpolation and approximation, numerical differentiation and integration, roots of equations, systems of linear equations. Prereq: Math 3150 or 3155. (Same as Computer Science 4225-35.)

4250 Elementary Complex Variables (3) Complex numbers Cauchy's theorem, elementary functions, Cauchy's theorem and formula, Taylor and Laurent series, residues and their applications. Prereq: 2860; one 4000-level mathematics course recommended.

4510-30 Introduction to Analysis (3, 3, 3) Real number system, functions, sequences, limits, continuity, uniform continuity, differentiation, integration; functions of several variables, implicit function theorem. Multiple integrals, infinite series, sequences and series of functions, uniform convergence, Taylor series. Should be taken in sequence. Prereq: 2860.

4540 Infinite Series and Functions of Several Variables (3) General theory, power series and Taylor's formula, uniform convergence, Partial differentiation and maxima and minima for functions of several variables. Lagrange multipliers. Prereq: 2860.

4550 Partial Differential Equations (3) Fourier series; Fourier integral; orthogonal functions; the vibrating string; solution by series; heat flow, Bessel functions. Prereq: 2860; 4610 or 4710 recommended.

4610-20-30 Ordinary Differential Equations (3, 3, 3) 4610—Linear first and second order equations. Power series solutions and Legendre polynomials. Regular singular points, Frobenius method, and Bessel equations. Systems of linear differential equations and the matrix exponential. 4620—Numerical methods for ordinary differential equations, Runge-Kutta methods. A-stability, and two point boundary value problems. 4630—Special topics which may include existence and uniqueness, oscillation theory, Liapunov stability, singular perturbations, and asymptotic solutions. Prereq: 4610; 2860 or 4050; 4620; 4050 or 2860; and 3150 or 3155; 4630: 4610 or consent of instructor.

4640 Calculus of Finite Differences (3) Real difference equations and their application to problems in engineering and physics. Prereq or coreq: 4610.

4650-60-70 Introduction to Mathematical Statistics (3, 3, 3) Introduction to probability; discrete and continuous distributions; correlation, regression, and statistical independence; foundations of sampling theory; significance tests. Must be taken in sequence. Prereq: 2860.

4710 Vector Analysis (3) Fundamental operations, base vectors, and cross products, directional derivatives, divergence and curl of vector fields, line and surface integrals, divergence theorem of Gauss, and Stokes theorem. Prereq: 2860.

4750-60-70 Introduction to Probability Theory (3, 3, 3) 4750—Elementary combinatorial analysis, probabilities in discrete sample spaces, conditional probability and stochastic independence, binomial, Poisson, hypergeometric and normal distributions. 4760—Expectation and characteristic function of random variables, infinite sequences of random variables, the weak and strong laws of large numbers, and the central limit theorem. 4770—Markov chains; limiting probabilities; steady-state and stationary distributions; Markov processes; Poisson, birth and death processes; Kolmogorov equations. Prereq: Math 2840-50.

4810 Elementary Number Theory (3) Divisibility; congruences; theorems of Fermat and Wilson, primitive roots, indices, quadratic reciprocity. Prereq: 2860 or consent of instructor.

4910 Senior Seminar (1-2) Credit determined at registration. May be repeated for credit with consent of department; student may offer a maximum of 4 hrs credit from 4910 and 4920 combined. Prereq: Senior standing.

4920 Senior Seminar (1-2) Credit determined at registration. May be repeated for credit with consent of department; student may offer a maximum of 4 hrs credit from 4910 and 4920 combined. Prereq: Senior standing.

4980 Readings in Mathematics (1-3) Open to superior students with consent of department head. Independent study with faculty guidance. May be repeated. Maximum 9 hrs credit.

4990 Studies in Mathematics (1-4) Credit determined at registration. May be repeated for credit with consent of department; maximum 9 hrs credit. Prereq: Recommendation of member of mathematics professional staff and consent of department.

GRADUATE

The Department of Mathematics offers four advanced degrees. In order to become a candidate for any one of these the student must first be admitted to the Graduate School. The Master of Arts and Master of Science degree programs presuppose a bachelor’s degree with a major in mathematics. The Master of Mathematics degree is intended primarily for teachers of high school mathematics. Applicants for admission to this program must take the Graduate Record Examination and must have either (a) certification for teaching secondary mathematics, or (b) successful elementary or secondary school teaching experience. The Doctor of Philosophy degree program presupposes a Bachelor’s or Master’s degree with a strong major in mathematics. This program is intended to train professional mathematicians for a career of teaching and scholarship in colleges and universities or work in industry. Further details on all of these programs are in the Graduate Catalog.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011 Elementary Functions from an Advanced Standpoint for Teachers (3-4)

5012 Differential Geometry for Teachers (3-4)

5013 Geometry for Teachers (3-4)

5014 Analysis for Teachers (3-4)

5015 Probability and Statistical Inference for Teachers (3-4)

5050-60-70 Mathematical Logic (3, 3, 3)

5110-20-30 Theory of Functions of Complex Variables (3, 3, 3)

5150-60-70 Foundations of Analysis (3, 3, 3)

5210-20-30 Theory of Functions of a Real Variable (3, 3, 3)

5240-50-60 Linear Analysis (3, 3, 3)

5270 Stability Theory and Liapunov's Direct Method (3)

5310-20-30 Introduction to Higher Geometry (3, 3, 3)

5340-50-60 Numerical Treatment of Algebraic and Transcendental Equations (3, 3, 3)

5430 Integral Equations (3)

5440 Calculus of Variations (3)

5450-60-70 Introduction to Partial Differential Equations (3, 3, 3)

5455 Finite Difference Methods for Partial Differential Equations (3, 3)

5465 Mathematical Aspects of the Finite Element Method (3)

5480-90 Mathematical Programming (3, 3)

5510-20-30 Introduction to Higher Algebra (3, 3, 3)

6540 Galois Theory (3)

5650-70-80 Theory of Matrices in Numerical Analysis (3, 3, 3)

5590 Theory of Rings (3)

5610-20-30 Mathematical Methods in Physics (3, 3, 3)

5640 Numerical Methods in Physics (3)

5655-65-75 Numerical Mathematics (3, 3, 3)

5710-20-30 Tensor Analysis (3, 3, 3)

5750-60-70 Advanced Mathematical Statistics (3, 3, 3)

5810-20-30 Number Theory (3, 3, 3)

5910-20-30 Elementary Topology (3, 3, 3)

5990 Graduate Reading in Mathematics (1-3)

5991 Seminar Analysis (1-3)

5992 Seminar Topology (1-3)

5993 Seminar Algebra (1-3)

5994 Seminar Foundations (1-3)

5995 Seminar Applied Mathematics (1-3)
2911 Microbes in Action (1) Discussions, demonstrations, and films relating to the subject matter of 2910. Students do not receive credit for 2911 if they have taken 2919. Coreq: 2911 or 2919.

2919 Laboratory in General Microbiology (1) Laboratory exercises designed to accompany 2919. Prereq: or coreq: 2910.

3510 Introduction to Microbiology I: General Introduction (1) Structure and behavior of prokaryotic and eukaryotic microorganisms. Place of microorganisms in the environment. Prereq: Biology 3320. (Same as Zoology 3520.)

3519-29-39 Introduction to Microbiology Laboratory I, II, III (2, 3, 1) Laboratory exercises designed to accompany 3510-20-30 which are coreq for 3519-29-39 respectively. Coreq: 3519 is prereq to 3539.

3520 Introduction to Microbiology II: Immunology (3) Basic principles of inflammation and immunity, immunglobulin structure, complement, hypersensitivity, and cell-mediated immunity. Prereq: Biology 3320. (Same as Zoology 3520.)

3530 Introduction to Microbiology III: Pathogenic Microbiology (3) Disease-producing microorganisms including bacteria, fungi, and viruses. Prereq: 3510.

3810 Food Microbiology (4) Standard methods for examination, cultivation, and identification of bacteria associated with food fermentation and food spoilage. Prereq: 2910 and Chemistry 2230 or 3211. 2 hrs and 2 labs.

3820 Yeasts and Molds (4) Morphology, taxonomy, and physiology of yeasts, actinomycetes, and fungi of industrial importance. Prereq: 2910 and Chemistry 2230 or 3211, or consent of instructor. 2 hrs and 2 labs.

4010 Biology of Soil Microorganisms (4) (Same as Agricultural Biology 4010.)

4101 Foreign Study (1-16) See page 187. No more than 3 hrs may be applied toward a major or minor in microbiology. May be repeated to a total of 16 hrs.

4102 Off-Campus Study (1-16) See page 187. No more than 3 hrs may be applied toward a minor in microbiology. May be repeated to a total of 16 hrs.

4103 Independent Study (1-16) See page 187. No more than 3 hrs may be applied toward a major or minor in microbiology. May be repeated to a total of 16 hrs.

4110 Physiology of Bacteria (2) Modern concepts of bacterial physiology and metabolism including cell structure and function. Prereq: 3510 and 12 hrs of organic chemistry.

4119 Bacterial Physiology Laboratory (2) Prereq: 3519; coreq: 4110.


4140 Microbial Ecology (3) Application of ecological principles to study of microbial communities. Emphasis on functional role of microorganisms in natural environments. Prereq: 3510, one year of organic chemistry, Biology 3130, or consent of instructor.

4270 Advanced Immunology (2) Chemistry of antigens and antibodies, theory of antibody formation, cell cooperation and immune mechanisms, transplantation, abnormalities of the immune system, and autoimmune diseases. Prereq: 3520 or consent of instructor. (Same as Zoology 4270.)

4279 Advanced Immunology Laboratory (2) Laboratory exercises designed to accompany 4270. Prereq or coreq: 4270.

4289 Serological Methods (2) Practical procedures in serology and clinical immunology. Prereq or coreq: 4270.

4320 Pathogenic Bacteriology (2) Disease producing microorganisms including bacteria, rickettsia, and chlamydia. Prereq: 3530.

4329 Pathogenic Bacteriology Laboratory (2) Techniques for isolation, cultivation, and identification of pathogenic bacteria. Prereq: 3530; coreq: 4320.

4330 Medical Mycology (2) Disease causing fungi; cytology, physiology, pathogenesis and immunity; emphasis on methodology of isolation and identification. Prereq: 3530 and 3820.

4339 Medical Mycology Laboratory (2) Prereq: 3519; coreq: 4330.

4420 Molecular Virology (2) Molecular aspects of the replication, assembly, and expression of viruses, with emphasis on bacterial phage. Prereq: 3510.

4430 Medical Virology (2) General virology with emphasis on medical aspects. Prereq: 3530.

4439 Medical Virology Laboratory (2) Laboratory procedures for isolation, handling and culturing of animal viruses. Prereq: 3530; coreq: 4430.

4909 Laboratory Problems in Microbiology (2-6) Involvement in research program of a faculty member through independent study projects. Consent of individual faculty member required. Not more than 3 hrs may be used towards a major in microbiology. May be repeated. Maximum 12 hrs credit.

4910 Seminar in Microbiology (1) May not be applied towards a major in microbiology. Prereq: Senior standing, consent of instructor. S/N:NC.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011-12-13-14-15-16 Mini-course in Microbiology (1, 1, 1, 1, 1, 1, 1)

5130 Topics in Taxonomy (2)

5310 Selected Topics in Microbiological Research (3)

5360 Topics in Immunology and Immunochemistry (4)

5400 Seminar in Microbial Physiology (1)

5410 Seminar in Immunology (1)

5441-42-43-44-45-46 Clinical Microbiology (6, 6, 6, 6, 6, 6)

5450 Seminar in Filamentous Fungi (1)

5510-20-30 Research Problems (3, 3, 3)

5720 Microbial Physiology (3)

5730 Pathogenesis of Infectious Disease (3)

5750 The Oncogenic Viruses (3)

5760 The Bacterial Viruses (3)

5819 Molecular Genetics Laboratory (3)

5820 Microbiology of Foods (3)

5829 Experimental Microbial Ecology (3)

5830 Seminar in History of Microbiology (1)

5850 Seminar in History of Microbiology (1)

5910-20-30 General Seminar (1, 1, 1)

5940 Seminar in Microbial Genetics (1)
6000 Doctoral Research and Dissertation
6140 Concepts of Immunity (3)
6720 Advanced Topics in Microbial Physiology (3)
6730 Advanced Topics in Microbial Pathogenesis (3)
6740 Advances in Virology (3)
6760 Advanced Topics in Microbial Genetics (3)
6810-20-30 Problem Seminar (1, 1, 1)

Medical Technology (669)

Courses in this major are open only to qualified students who have completed the first three years of the Science-Medical Technology Curriculum, described on page 182, and who have been approved by the Pre-Medical Advisory Committee.

4011-12 Microbiology (6, 6) Laboratory work in bacteriology, mycology, and parasitology. Emphasis on pathogenic bacteria and fungi, their sources, methods of culture, techniques of identification, and evaluation of antibiotic sensitivity. Gross and qualitative chemical examination of feces and methods of identification of protozoa and helminth parasites of man.

4021-22 Clinical Chemistry (6, 6) Clinical aspects of biochemical analysis, including overview of principles and instrumentation with emphasis on practical laboratory applications of analytical procedures, specimen collection and handling, significance of results, and quality assurance. Includes blood gas analysis, including radioimmunoassay, and analysis of blood and other body fluids for enzymes, hormones, and other constituents of clinical interest, utilizing both automated and manual techniques.

4031-32 Hematology and Clinical Microscopy (6, 6) Principles, theories, techniques, and instrumentation related to the qualitative and quantitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, quantitative chemical analysis of urine and renal function studies. Emphasis is placed on microscopic identification of cells and the significance and correlation of laboratory data.

4041-42 Immunohematology (4, 4) Theory and practice in blood bank operation. Erythrocyte antigens and their normal and abnormal immunology. Serological techniques used in establishing blood typing, cross-matching, and antibody detection, and preparation of blood components for transfusion. Safety control methods standard for an efficient blood bank are important part of course material.

4043 Clinical Serology and Immunology (2) Performance and interpretation of in vitro and in vivo clinical serological and immunological procedures with emphasis on principles and clinical correlation. Formal lecture series included.

4050 Nuclear Medicine (1) Physical characteristics, detection and use of short half-life radioactive materials. Emphasis placed on in vivo diagnostic medical uses and radiation safety.

4060 Histology (1) Overview of techniques of preparation and interpretation of microscopic evaluation and role of histopathology in clinical diagnosis.

4071 Orientation and Basic Techniques (1) Designed to facilitate transfer of students from campus to hospital community and clinical laboratory. Introduction to medical terminology, ethics, and health team concept. Orientation to basic techniques. Methods of study include procedures for collection and handling of specimens, principles of operation of major laboratory instruments, review of safety procedures and introduction of quality control procedures. Portions of course extend over entire clinical year.

4072 Principles of Supervision and Education in Medical Technology (1) Consists of seminars in basic principles of management, supervision, and education theories and methods. There will be comprehensive examination covering the entire course.

Music (698)

Professors: W. J. Starr (Acting Head), M. M. Eastman; W. Carter, Dr. M. A. Eastman; G. F. Devine; Diploma, Schurz (Chicago); W. Dorn, M. A. Columbia; H. W. Ted, Ph. D. North Carolina; A. G. Holford, M. M. North Western; C. R. Huber; Ph. D. North Carolina; J. J. Mocahem, M. M. North Western; D. L. Neun, M. A. Ball State; D. M. Pederson, Ph. D. Iowa; A. L. Schmied (Emeritus); M. M. North Western; D. Van Vactor (Emeritus); M. M. North Western; E. H. Zambrana, M. M. New England Conservatory.


The Department of Music offers curricula leading to the Bachelor of Music degree which is designed to prepare students for graduate study and for professional positions, and the Bachelor of Arts degree with a major and minor in music, designed for those students whose interests are strong but essentially non-professional. Information regarding requirements for the B.M. degree may be found on page 183. The requirements for a major and minor are as follows:

Major:

(a) Concentration in Applied

Music—consists of Music 2000, 2111-21-31, 2131-23-33, 2310-20-30-40, 27 hours in applied music at the 2000-3000-4000 levels (9 hours each), and junior and senior recitals. Prerequisites are Music 1111-21-31, 1113-23-33, and 3 quarters of study in applied music at the 1000 level.

(b) Concentration in Music History and Literature—consists of Music 2111-21-31, 2131-23-33, 2310-20-30-40, and 27 upper-division hours in music history and literature. Prerequisites are Music 1111-21-31, 1113-23-33, and 1340.

Minor:

(a) Concentration in Applied

Music—consists of Music 2000, 2111-21-31, 2310-20-30-40 and 18 hours in applied music at the 2000-3000-4000 levels (8 hours each). Prerequisites are the same as those for the major.

(b) Concentration in Music History and Literature—consists of Music 2111-21-

31, 2310-20-30-40 and 18 upper-division hours in music history and literature. Prerequisites are the same as those for the major.

The Bachelor of Science in Music Education, designed for preparation for institutional teaching, is administered by the Department of Music Education. See page 108 for requirements.

General

1000 Fundamentals of Music Theory (3) Theory and practice of basic elements of music. 3 hrs.

1010-20-30-40-50-60 Class Piano (1, 1, 1, 1, 1, 1) For music and music education majors only. Must be taken in sequence. Course may be waived by successful completion of Piano Competency Exam. Required courses must be substituted with an equivalent number of quarters of study in Music 1580 or above.

1015 Class Voice (1) For music and music education majors only. May be repeated for credit.

2000 Solo Class (0)

2010 Introduction to Musical Theatre Technology (3) Stage technology unique to lyric stage.


2055-85-75 Diction for Singers (2, 2, 2) Sounds by phonetic symbols. Opera and art songs used for examples. Performance practice.

2071-81-91 Church Service Playing I (1, 1, 1) Practical skills applicable to the use of the organ in church services, including keyboard harmony, improvisation, hymn playing, and accompanying on the organ. Prereq: 1131 and 6 hrs in organ.

3000 Junior Recital (0)

3012-22-32 Song Literature (2, 2, 2) Study of literature from 1750 to present with emphasis on performance practices. 3012—Classical and Romantic German art song; 3022—French and Russian songs; 3032—Late German and contemporary songs. Prereq: 2075 and consent of instructor.

3014-24 Woodwind Literature (2, 2) Prereq: Consent of instructor.

3015 Percussion Literature (1) Prereq: Consent of instructor.

3016 String Literature (2) May be repeated. Maximum 6 hrs credit. Prereq: Consent of instructor.

3025-26-27 Elementary and Intermediate Piano Pedagogy (2, 2, 2) Piano methods and materials for pre-college level student. Collateral laboratory experiences. Prereq: Consent of instructor.

3040-50-60 Advanced Piano Literature (2, 2, 2) Piano music from preclassical period to present. Prereq: Consent of instructor.

3041 Keyboard Harmony (2) Melody harmonization, figured bass realization, and improvisation. Prereq: 1131-33, and keyboard proficiency at the 2000 level.

3052-53 Jazz Improvisation (2, 2) Study and application of principles of improvisation, including nomenclature, chord progression, chord changes, scales, patterns, melodic development, and free form devices. Prereq: Consent of instructor. 2 hrs and 1 lab.

3044-54 Brass Literature (2, 2) Prereq: Consent of instructor.

3070 Opera Production (1-3) Supervised work on opera productions. May be repeated for credit. Prereq: Consent of instructor.

3071-81-91 Church Service Playing II (1, 1, 1) Continuation of Music 2071-81-91, which is prereq.

3112 Instrumentation (3) Basic techniques in scoring for voices; brass, woodwind, and string choir; and percussion. Prereq: 2131 or 2138.

3113 Analysis I (3) Study and practice in analysis of structures of music from smallest structural units to large compound forms. Emphasis on macroanalytic techniques. Prereq: 2131 or 2138 or equivalent.

3114-24 Choral Arranging (3, 3, 3) Analysis of scores and writing of arrangements for choruses. 3114—male and female chorus. 3124—mixed chorus. Prereq: 3112 or consent of instructor.

3221 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. Prereq: 3112 or consent of instructor.

323 Analysis II (3) Continuation of Analysis I with emphasis on micro and linear analytic techniques. Prereq: 3113.

400 Independent Study in Music Theory (1-3) May be repeated for credit. Prereq: Consent of instructor.

410 Foreign Study (1-16) See page 187.

411-21-31-41 Analysis of Music Literature (3, 3, 3, 3) Detailed study of compositions of various periods and styles by historical period with emphasis on harmony, thematic material, form and structure. Traditional and contemporary styles and techniques. Prereq: 4111—16th-1750, 4121—1750-1825, 4131—1825-1900, 4141—1890 to present. Prereq: 3123.

4121 Twentieth-Century Compositional Techniques (3) Styles and compositional devices from Debussy to the present. Emphasis on scores, idioms, and techniques. Prereq: 2311 or equivalent.

4131 Pedagogy of Music Theory (3) Techniques, methods and materials involved in college-level theory programs. Prereq: Consent of instructor.

4141 Stage Band Arranging (3) Analysis of scores and scoring for the stage band. Prereq: 3112 and consent of instructor.

4151 Variation (3) Study and application of variation procedures. Prereq: 3123 or equivalent.

4161 Set Structure in Musical Composition (3) Theory of sets and its application to analysis of music. Prereq: Consent of instructor.

4124 Band Arranging (3) Study and application of techniques employed in scoring for the marching and concert bands. Prereq: 3112 or equivalent.

4134 Band Transcription (3) Technique and application of transcription for keyboard and orchestra music. Prereq: 2120 or equivalent. Prereq: Consent of instructor.

4150 Survey of Music Theory (3) Theory of music with emphasis on harmonic practice of Baroque, Classic, and Romantic periods. Exercises in writing and analysis. Recommended as review course for graduate students. Prereq: Consent of instructor.

MUSIC HISTORY AND LITERATURE

1210-20 Orientation in Music Appreciation (3, 3) 1210—Developing perceptive listening skills through study of materials of music, musical styles, and musical aesthetics. Illustrative examples selected from fourth through the twentieth centuries. 1220—Introduction to masterworks of music from 1600 to present. For non-music majors. Prereq: 1210 for 1220 or consent of instructor.

1340 Introduction to Music Literature (3) Acquisition of basic terms of music and accepted masterworks through chronological approach. For music majors and minors only.

2310-20-30-40 History of Music (3, 3, 3, 3) 2310—to 1600, 2320—1600-1800, 2330—1800-1900, 2340—1900 to present. Requires musical background. Prereq: Consent of instructor.

3210 Orientation in Music: Germany from 1750 (3) Historical study of German composers and their music from death of Bach to present. Prereq: 1210 or consent of instructor.

3211 Orientation in Music: The Twentieth Century (3) Examination and study of serious, popular, folk, and ethnic music of the twentieth century. Prereq: 1210 or consent of instructor.

3212 Orientation in Music: Music for the Theatre (3) Selection of representative music composed for Broadway stage, films, operetta, and opera. Prereq: 1210 or consent of instructor.

3230 The Concerto (3) Survey of literature from seventeenth century to present.

3240 The Symphony (3) Survey of symphonic literature from precursors of classical symphony to present.

3260 Chamber Music (3) Survey of chamber music from 1750 to present.

3271-81 History of Opera (3, 3) Dramatic, vocal and orchestral elements in opera of Italian, French, and German School. 3271—1600-1800. 3281—1800-present.

3340 Oratorio (3) Choral works other than those appropriate for use in church.

3350 Introduction to Afro-American Music (3) History of African music, blues, gospel music and Jazz with emphasis on Black artists and their contributions.

4003-04-05 The Organ and Its Literature (3, 3, 3) The development of the organ and organ literature from the Middle Ages to the present; problems of style and interpretation; technique. Analysis of scores, idioms, and techniques. Prereq or coreq: 2310-20-30-40 and consent of instructor.

4200 Independent Study in Music History and Literature (3) May be repeated for credit. Prereq: Consent of department head.

4205 Survey of Music History (3) History of music with emphasis on genres, style changes, and cultural forces. Covers the Western European tradition from 400-1900. Recommended as a review course for graduate students. Prereq: Consent of instructor.

4210 Music in the Romantic Period (3) Survey of music from Beethoven through post-Romantic in instrumental and vocal styles.

4230 Contemporary Music: 1945 to Present (3) Survey of new and avant-garde music in Europe and America since World War II.

4241 American Music (3) American music from colonial times to present includes both folk and cultivated traditions. Prereq: 1210-20 or equivalent.

4240 Introduction to Ethnomusicology (3) Basic attitudes and techniques of ethnomusicology. Survey of folk cultures of the Pacific, Near East, Asia and Africa.

4270 Evolution of Jazz (3) Study of origin, development and styles of jazz music and its exponents.


4290 Gregorian Chant (3) Chants of Latin rite. Masses and Office examined as functional music as well as by type.

4310 History of Art Song (3) Survey of art song from fifteenth century to 1930.

4315 Wind Chamber Music (3) Study of wind chamber music from 18th through 20th century. Emphasis placed on style, instrumentation, rehearsal techniques, programming and musical significance, both historical and theoretical.
4340-50 Works of Bach (3, 3) Detailed examination of sonatas, chamber, keyboard, and orchestral works; cantatas, motets, Passions and oratorios. 4340—instrumental works; 4350—vocal works.

APPLIED MUSIC
Applied study is classified as Principal or Secondary.

Students studying their principal (major) instrument register for credit appropriate to their program, 2-4 credit hours; students studying a secondary instrument register for 1 hour credit. Study at the principal level receives one hour of private instruction per week or a one-hour class lesson plus a half-hour private lesson. Determination of the mode of instruction rests with the department. Study at the secondary level receives one-half hour private instruction per week or its equivalent in class instruction. Applied music courses do not permit non-credit registration nor may students elect non-conventional grading.

Non-music students will be accepted at the secondary level if they meet audition requirements established by area faculty (piano, voice, violin, etc.) and instruction time is available.

Undergraduate students seeking entrance to applied music courses must be concurrently registered for no less than nine credit hours in academic courses. Graduate students must be concurrently registered for no less than six credit hours in academic courses. Exceptions to these requirements may be made with the approval of the department head if applied music registration is necessary to completion of degree requirements.

Advancement in applied music is measured by proficiency (Jury) examination. Students who do not meet proficiency requirements at any level may be required additional study at that level. Course level and credit hours will be determined by the applied faculty.

All students studying applied music at the principal level are required to register for Music 200 Solo Class. The requirements for this course are to attend scheduled concerts, recitals, master, repertoire, and solo classes and to perform at least once each quarter as partial fulfillment of applied music credit requirements.

Applied Music Fees: $20 per quarter for half-hour lesson (1 credit hour) $40 per quarter for hour lesson (2-4 credit hours)

Computer registration and applied music fee payment must be verified in the Department of Music office no later than the end of the second day of classes of the fall, winter, and spring quarters and the first day of the summer terms in order to be accepted for applied music study.

Applied music fees are not refundable after lessons have been scheduled.

1500-2500 3500-4500-5500 Flute (1-4) May be repeated for credit.
1505-2505 3505-4505-5505 Oboe (1-4) May be repeated for credit.
1510-2510 3510-4510-5510 Bassoon (1-4) May be repeated for credit.
1515-2515 3515-4515-5515 Clarinet (1-4) May be repeated for credit.
1520-2520 3520-4520-5520 Saxophone (1-4) May be repeated for credit.
1525-2525 3525-4525-5525 Horn (1-4) May be repeated for credit.
1530-2530 3530-4530-5530 Trumpet (1-4) May be repeated for credit.
1535-2535 3535-4535-5535 Trombone (1-4) May be repeated for credit.
1540-2540 3540-4540-5540 Baritone (1-4) May be repeated for credit.
1545-2545 3545-4545-5545 Tuba (1-4) May be repeated for credit.
1550-2550 3550-4550-5550 Percussion (1-4) May be repeated for credit.
1555-2555 3555-4555-5555 Voice (1-4) May be repeated for credit.
1560-2560 3560-4560-5560 Violin (1-4) May be repeated for credit.
1565-2565 3565-4565-5565 Viola (1-4) May be repeated for credit.
1570-2570 3570-4570-5570 Cello (1-4) May be repeated for credit.
1575-2575 3575-4575-5575 String Bass (1-4) May be repeated for credit.
1580-2580 3580-4580-5580 Piano (1-4) May be repeated for credit.
1585-2585 3585-4585-5585 Harpsichord (1-4) May be repeated for credit.
1590-2590 3590-4590-5590 Organ (1-4) May be repeated for credit.
1595-2595 3595-4595-5595 Guitar (1-4) May be repeated for credit.
2599-3599 4599-5599 Composition (1-3, 1-3, 1-3) May be repeated for credit. Prereq: Consent of instructor.
3597-4597-5597 Composition with Electronic Media (1-3, 1-3, 1-3) May be repeated for credit. Prereq: 3199 and consent of instructor.

ENSEMBLES
All students studying applied music are required to perform in a major musical organization each quarter. String, woodwind, brass, and percussion students must be enrolled in an instrumental organization; voice students in a choral organization, opera workshop or opera theater. A student's preference for musical organization will be honored whenever possible, but factors considered in making the assignment will include playing ability, specific needs of various organizations, and previous performance experience at the University.

3600-5600 Small Ensemble (1, 1) May be repeated for credit.
3601-5601 Woodwind Choir (1, 1) May be repeated for credit.
3602-5602 Brass Choir (1, 1) May be repeated for credit.
3604-5604 Jazz Ensemble (1, 1) May be repeated for credit.
3606-5606 Trombone Choir (1, 1) May be repeated for credit.
3607-5607 Tuba Ensemble (1, 1) May be repeated for credit.
3610-5610 Percussion Ensemble (1, 1) May be repeated for credit.
3612-5612 Baroque Ensemble (1, 1) May be repeated for credit.
3620-5620 UT Singers (1, 1) May be repeated for credit.
3630-5630 Chamber Singers (1, 1) May be repeated for credit.
3632-5632 Collegium (1, 1) May be repeated for credit.
3634-5634 Saxophone Choir (1, 1) May be repeated for credit.
3640-5640 Opera Theatre (1, 1) May be repeated for credit.
3642-5642 Opera Workshop (1, 1) May be repeated for credit.
3650-5650 Concert Band (1, 1) May be repeated for credit.
3652-5652 Campus Band (1, 1) May be repeated for credit.
3654-5654 Varsity Band (1, 1) May be repeated for credit.
3656-5656 Laboratory Band (1, 1) May be repeated for credit.
3657-5657 Marching Band (1, 1) May be repeated for credit.
3670-5670 Symphony Orchestra (1, 1) May be repeated for credit.
3680-5680 Concert Choir (1, 1) May be repeated for credit.
3682-5682 University Chorus (1, 1) May be repeated for credit.
3684-5684 Campus Chorus (1, 1) May be repeated for credit.
3686-5686 Men's Glee Club (1, 1) May be repeated for credit.
3687-5687 Women's Chorale (1, 1) May be repeated for credit.
3699-5699 Accompanying (1, 1) May be repeated for credit.

GRADUATE
The Department of Music offers the Master of Music degree in performance, composition, music theory, choral conducting, and Suzuki string techniques, and the Master of Arts degree in musicology and music theory. See the Graduate Catalog for admission and degree requirements.

5000 Thesis
5001 Choral Conducting Document (3)
5002 Non-Thesis Graduation Completion (3-15)
5010 Organ Literature Seminar (3)
5012-22-32 Pedagogy of Voice (2, 2, 2)
5020 Piano Literature Seminar (3)
5030 Choral Literature Seminar (3)
5040 Vocal Literature Seminar (3)
5050 Graduate Recital (3)
5051 Opera Performance (3)
5052 Vocal Chamber Music Performance (3)
5053 Choral Conducting Performance (3)
5054 Lecture-Recital (3)
5060 Seminar in Choral Performance (3)
5070 Opera Production (1-3)
5090 Special Topics in Performance (1-3)
5100 Independent Study in Music Theory (1-3)
5111 Advanced Harmony (3)
Organizational Psychology Program
See Graduate School.

Philosophy (745)

Professors:
J.W. Davis (Head); Ph.D. Emory; R.B. Edwards, Ph.D. Emory; R.D. Herrmann, Ph.D. Mainz (Germany); M.H. Moore (Emeritus), Ph.D. Chicago; D. Van de Vate, Ph.D. Yale.

Associate Professors:

Assistant Professors:
J.D. Bennett, Ph.D. Tulane; G.G. Brentnek, Ph.D. Michigan; S.M. Cohen, Ph.D. Northwestern; K.A. Emmett, Ph.D. Ohio State; H.P. Hamlin, Ph.D. Georgia; E.R. Jones III, Ph.D. Chicago; B.G. Latta, Ph.D. Yale; S.J. Reaven, Ph.D. California (Berkeley).

Instructor:
M.L. Osborne, M.A. Bryn Mawr.

Philosophy seeks to understand humans, the world, their relations. It involves (1) use of logical and scientific methods, (2) appreciation of all values, (3) history of ideas, (4) philosophical systems. Philosophy is an appropriate major for students wishing a broad education, and those preparing for careers as writers (whether journalistic or literary), lawyers, ministers, teachers, in various types of political and government service, and in non-technical positions in business and industry.

A major in philosophy implies a balanced program in the humanities, natural and social sciences. Graduate students should read French or German, preferably both; other ancient or modern languages are useful and necessary for some advanced work.

UNDERGRADUATE

Major: 36 hours in courses numbered 2000 and above. Majors should discuss their program with a member of the philosophy faculty.

Minor: 24 hours in courses numbered 2000 and above. It is suggested that minors discuss their programs with a member of the philosophy faculty.

American Studies. See Cultural Studies.
Russian and East European Studies. See Cultural Studies.

1510 Introduction to Philosophy: Human Nature and Values (4)

1520 Introduction to Philosophy: Consciousness and Reality (4) May be taken before 1510.

1600 Topics in Philosophy (4) May be repeated once for credit.

2310 Elementary Ethics (4) Theories of ethical values.

2410 Art and Experience (4) Introduction to various understandings of art.

2510-20 Elementary Logic (4, 4) 2510—Traditional or modern deductive logic, informal fallacies, uses of language, definitions. (3810 is recommended as an introductory course for students with mathematical aptitude.) 2520—Inductive reasoning, elements of scientific method and statistical inference.

3111 Ancient Western Philosophy (4)

3121 Medieval Philosophy (4)

3131 Seventeenth- and Eighteenth-Century Philosophy (4)

3141 Nineteenth- and Early Twentieth-Century Philosophy (4)

3151 Contemporary Philosophy (4) Survey of recent movements in philosophy.

3270 Russian Philosophical and Theological Thought (4) (Same as Russian 3270 and Religious Studies 3270.)

3311-12 American Philosophy (4, 4) 3311—Colonial to late nineteenth century; 3312—Late nineteenth century to present.

3315 American Ideals (4) Ideological variants in American society.

3320 Philosophy of Law (4) Nature, sources, function of law.

3330 Philosophy of History (4) Speculative and critical aspects of philosophy of history.

3410 Philosophical Ideas and Literature (4) Philosophical assumptions and implications in major literary works.

3420 Philosophy of Literature (4) Study of the nature, functions, value and epistemic principles of literary arts.

3430 Concepts of Woman (4) Examination of some of theoretical foundations of feminism and anti-feminism.

3440 Social Ethics (4) Ethical theory as related to politics, economics, education, law, religion and the family.

3510 Existentialism (4)

3550 Marxism as Philosophy (4)

3611 Religious and Philosophical Issues in Medical Ethics (4) (Same as Religious Studies 3611.)

3650 Philosophy and Religion in India (4) (Same as Religious Studies 3650.)

3660 Buddhist Philosophy and Religion (4) (Same as Religious Studies 3660.)

3671 Religion and Philosophy in China (4) (Same as Religious Studies 3671.)

3690 Philosophy of Religion (4) Analysis of basic issues of religion. (Same as Religious Studies 3690.)


3740-50 Conceptual History of Science (4, 4) 3740—The Scientific Revolution: historical evolution of thought in astronomy, mechanics, and philosophy of nature up to Newton. 3750—The development and decline of Newtonian science: historical evolution of thought on the nature of matter and of light, and on that of life. Prereq: Eight hrs. of physical science or consent of instructor.

3770 Introduction to Philosophy of Science (4) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

3810 Introductory Symbolic Logic (4) Techniques for formal analysis of deductive reasoning (propositional logic and quantification theory).

3910 Contemporary Aesthetics (4) Philosophical discussion of contemporary art.

4000 Special Topics (4) A student- or instructor-initiated course to be offered at the convenience of department. Subject matter to be determined by mutual consent of students and instructor with approval of department. Prerequisites to be determined by department. May be repeated for credit.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (4-12) See page 187.

4103 Independent Study (4-12) See page 187.

4111-21 Modern Religious Philosophies (4, 4) (Same as Religious Studies 4111-21.)

4310 Intermediate Ethics (4) Topics in meta-ethics or ethics.

4370-71 Theoretical Issues in Medical Ethics (4, 4) 4370—Prereq: 3210 or 3611 or consent of instructor. 4371—Prereq: 4370 or consent of instructor. (Same as Religious Studies 4370-71.)

4410 Plato (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4420 Aristotle (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4440 Continental Rationalism (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4460 British Empiricism (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4470 Kant (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4480 Advanced Topics in Existentialism and Phenomenology (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4490 Process Philosophy (4) Prereq: Eight hrs. of philosophy or consent of instructor.


4511 Advanced Topics in Logic (4) Prereq: Consent of instructor. May be repeated for credit.

4610 Philosophical Analysis (4) Prereq: Eight hrs. of philosophy or consent of instructor.

4620 Philosophy of Mind (4) Problems of mind and body in relation to consciousness and personal identity. Prereq: 8 hrs. of philosophy or consent of instructor.

4630 Philosophy of Language (4) Prereq: Eight hrs. of philosophy or consent of instructor.
Physics and Astronomy


Associate Professors: C.R. Bingham, Ph.D. Tennessee; W.E. Blass, Ph.D. Michigan State; T.A. Callen, Ph.D. Purdue; R.W. Childers, Ph.D. Vanderbilt; J.R. Connell¹, Ph.D. Colorado State; K.E. Duckett, Ph.D. Tennessee; W.A. Dunnell, Ph.D. Florida; O.C. Elderidge, Ph.D. California (Berkeley); S. Georgiucu, Ph.D. Manchester (England); E.L. Hart, Ph.D. Cornell; P.G. Huray, Ph.D. Tennessee; H.C. Jacobson, Ph.D. Yale; J.W.L. Lewis, Ph.D. Minnesota; R.W. Lide, Ph.D. Michigan; L.R. Painter, Ph.D. Tennessee; D.J. Pegg, Ph.D. New Hampshire; L.L. Riedinger, Ph.D. Vanderbilt; S.Y. Shieh, Ph.D. Maryland; C.C. Shih, Ph.D. Cornell; J.R. Thompson, Ph.D. Duke.

Assistant Professors: H.W. Crater, Ph.D. Yale; M.F. Fair, M.S. Michigan; M.W. Guidry, Ph.D. Tennessee; R.H. Kobl, Ph.D. Ohio State; R.S. Thoe, Ph.D. Connecticut.

Research Associate Professor: L. Adler, Ph.D. Tennessee.

Research Assistant Professor: D.L. McCorkle, Ph.D. Tennessee.

Lecturers: R.L. Becker, Ph.D. Yale; M.H. Garrant.

¹Alumni Distinguished Service Professor.
²Space Institute, Tullahoma.
³Visiting.
⁴Distinguished Professor.

Astronomy (150)

2110-20-30 Introductory Astronomy (4, 4, 4) Surveys astronomical data and theories. 2110-20 concentrates on the solar system. 2130 introduces stellar astronomy including binary and variable stars clusters and nebulae. It is recommended that the courses be taken in sequence. 4 hrs including demonstration lab.

2118-28-38 Honors: Introductory Astronomy (4, 4, 4) Observation and theories of matter and space in the universe. Planets, stars, and the interstellar medium. Must be taken in sequence. 3 hrs lecture-discussion; 2 hrs lab per week. Coreq: Math 1810-20-30 or equivalent.

4110-20-30 Astrophysics (3, 3, 3) Physics of stars and interstellar matter, planets and intergalactic matter; atmospheres, interiors, and evolution; nebulae, quasi-stellar objects, etc. Observational data and their determination. Current developments. Approach will be interdisciplinary. Acceptable for major credit. Prereq: Physics 2330 and consent of instructor.

Physics (773) UNDERGRADUATE

The undergraduate program in physics is designed to give the student a wide background which will permit ready specialization in various areas such as nuclear physics, solid state physics, high energy physics, and molecular physics, etc.

Students planning to major in physics are urged to consult advisers in the Department of Physics prior to registration in freshman year with regard to selection of proper first course in physics.

Major: Physics 1318-28-38 and Mathematics 1840-50-60 are prerequisites to a major in physics which includes the following core courses: Physics 2130-28-38, Mathematics 2840-50-60; Physics 3210-20, either Physics 3710-20-30 or 4110-20-30; 4210-20; and at least six hours from 3510-20-30, 3610-20, 4230-40, 4510-20-30, 4540-50, Physics 1310-20-30 or Basic Engineering 1310-20-30 may be substituted for Physics 1318-28-38 and Physics 2310-20-30 may be substituted for Physics 2318-28-38 as a graduation requirement.

Transfer students from other schools or departments may substitute 2510 and 1330 for 1310-20-30 or 1318-28-38.

A major in physics with a concentration in health physics includes Physics 2310-20 or 2318-28, 3210-20, 3710-20-30, 3740-20-30, 4710-20-30, and Mathematics 2840-50-60. It is suggested that students also take Chemistry 1110-20-30, 3211-21-31, 3219-29-39, and 12 hrs of an approved biological science.

Minor: A minor in physics consists of 24 hours of courses including 2318-28-38 and the remainder from physics core courses numbered 2310-20-30, 3210-20, 3710-20-30, 3740-20-30, 4710-20-30, and provisions in the major statement also apply to the minor.

An Engineering Physics Curriculum is also offered. The program is described on page 152 and listed in tabular form on page 131.

1210-20-30 Introductory Physics (4, 4, 4) General course for students whose major falls outside the physical sciences. Concepts of physics developed by observation of phenomena and logic rather than mathematics analysis. Specific areas covered in the first quarter are mechanics, heat and energy. In the second quarter wave motion, sound, electricity and magnetism, and light are discussed. In the third quarter the main emphasis is on modern physics. It is recommended that the courses be taken in sequence. 1210-20 represents a survey of classical physics and are recommended as an introduction to the discipline for liberal arts non-science majors.

1310-20-30 Fundamentals of Physics: Mechanics and Heat (4, 4, 4) First course in physics for engineers and liberal arts majors in mathematics and the physical sciences. Basic Engineering 1310-20-30 is equivalent for graduation purposes. Must be taken in sequence. Coreq: Mathematics 1840-50-60. 3 hrs lecture, 2 hrs lab.

1318-28-38 Honors: Fundamentals of Physics: Mechanics and Heat (4, 4, 4) Honors course designed for physics and engineering physics majors and for qualified students from other disciplines. Must be taken in sequence. Coreq: Mathematics 1840-50-60. 3 hrs lecture, 2 hrs lab.

1410-20-30 Nature of the Physical World (4, 4, 4) Introductory course on concepts and principles of physical sciences which makes students enables a student to establish a unified picture of the physical universe. In the first two terms the principles of mechanics,
electricity, and wave motion are developed and applied to such varied fields as solar systems, atomic and nuclear structure, radioactivity, radiation, dynamic changes in the atmosphere and in the earth's crust and to stellar and galactic phenomena. In the third term, these principles are applied in more detail to such topics as nuclear energy, cosmology, atmospheric and oceanic phenomena, drifting continents and science and society. May be out of sequence only with consent of instructor. 4 hrs including demonstration lab.

1450 Physics of Athletic Activity (4) Principles of physics, particularly mechanics and heat, are introduced. Discussion of these ideas will emphasize their role in physical activities, particularly sports-related. Course topics include statics, equilibrium, linear and angular motion, momentum, force, work, and energy. 4 hrs lecture-demonstration.

1810 Physics of Music (4) Production, transmission, and reception of sound waves. Frequency, intensity, timbre. Basic acoustics of instruments and voice. 4 hrs lecture and demonstration.

2210-20-30 Elements of Physics (4, 4, 4) 2210—Mechanics, properties of fluids, heat. 2220—Electromagnetism and magnetism, sound waves. 2230—Optics, atomic and nuclear physics, radiation protection. Basic physical principles are applied in routine exercises, clinical, pre-dental, and pre-veterinary programs. Must be taken in sequence. Prereq: Math 1550-1590. 4 hrs lecture and 3 hrs lab.

2240-50-60 Elements of Physics for Architects (4, 4, 4) 2240—Statics, dynamics, properties of fluids; coreq: Math 1550 or 1590. 2250—Heat and thermodynamics, sound and wave motion, optics; coreq: Math 1520 or 1560. 2260—Electricity and magnetism, static and dynamic energy topics. Basic physical principles with applications particularly as applied in architecture. Limited to students in School of Architecture, and should be taken in sequence. 3 hrs lecture. 3 hrs lab.

2310-20-30 Fundamentals of Physics: Electricity, Waves and Optics, Modern Physics (3, 3, 3) Required of all engineering students. 2310—Electricity. 2320—Waves and Optics. 2330—Modern Physics. Must be taken in sequence. Prereq: Math 1520 or 1560. 4 hrs lecture, 2 hrs laboratory-recitation per week.


2510 Mechanics (5) Statics, kinematics, Newton's laws, momentum, energy, rotation. Must be taken in sequence. 3 hrs laboratory-problem sessions. Prereq: Mathematics 1440-50-60 or equivalent. 2510 satisfies prerequisites for physics majors. Physics majors should also take Physics 1330 as a prerequisite to the major.

2520-20-30 Mechanics (3, 3, 3) 3210—Statics, kinematics, and dynamics of a particle; 3220—Statics, kinematics, and dynamics of systems or particles and rigid bodies; 3250—Lagrangian and Hamiltonian equations of motion; 3260—Lagrangian and Hamiltonian equations of motion. Prereq: Math 2320 and Math 2860.

2320 Heat and Thermodynamics (3) Concepts of temperature and heat; laws of thermodynamics; applications of laws to simple physical and chemical problems. Prereq: 2320 or more advanced. 4 hrs lecture.


3510-20-30 Physical Measurements (3, 3, 3) Laboratory measurement of some physical quantities. Theory supplied where necessary. Prereq: 2310-20-30 or 2210-20-30, and calculus; 3510 for 3520 and 3530. 3 labs.

3610-20 Electronics (3, 3) Electronic components and circuit theory and its applications. Prereq: 2310-20-30 or 2210-20-30 and calculus. 3 labs.

3630 Nuclear Electronics Laboratory (3) Elementary circuits of interest in nuclear instrumentation are designed and built, and their characteristics are tested as a function of various parameters. Prereq: 3610-20.

3640-50-60 Health Physics Practicum (3, 3, 3) Instrumentation; legal aspects and practice of applied health physics. Nuclear safety, record keeping and report writing. For students in health physics cooperative program.


3990 Junior Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.


4140 Elementary Nuclear Physics (3) General nuclear processes; nuclear forces, nuclear models, nuclear reactions, nuclear disintegrations and beta-decay, nuclear spin and magnetism. Prereq: 3730 or 4120.

4160 Physical Acoustics (4) Considerations fundamental to detailed investigation of any branch of acoustics; propagation of acoustic waves in the infrasonic, the audible, the ultrasonic, and the hypersonic ranges of frequencies. 3 hrs and 1 lab. Prereq: 3210-20-30.

4210-20-50 Electricity and Magnetism (3, 3, 3) Inter-current low level electrodynamics; steady and alternating current and fields; Magnetism: Maxwell's equations; radiation of electromagnetic waves; reflection and refraction; electromagnetic fields of moving charges. Must be taken in sequence. Prereq: 2320 or 2220 and Math 2830.

4230-40 Modern Optics (4, 4) 4230—Geometrical Optics: Reflection and transmission of light at a dielectric interface; paraxial theory of interfaces, lenses, and mirrors; thin lenses, less systems, ray tracing; polarization; imagery; laser light. 4240—Physical Optics: Mathematics of wave motion, superposition of waves; interference; Fraunhofer and Fresnel diffraction; Fourier optics; holography. Prereq: 4210 or consent of instructor. 3 hrs lecture and 3 hrs lab.

4510-20-30 Atomic Physics Laboratory (3, 3, 3) Experiments: fundamental particle properties, photoelectricity, conduction of electricity through gases, atomic and molecular spectroscopy, X-ray. Prereq or coreq: 3710-20-30. 3 labs.

4540-50 Experimental Nuclear and Radiation Physics (4, 4) Interaction of charged particles and electromagnetic radiation with matter, theory and characteristics of various detectors, principles of counting, nuclear properties. Experiments illustrate recent techniques for investigating the nuclear and nuclear radiation. 1 hr lecture, 6 hrs lab. Prereq: 2330.

4580 Principles of Non-Destructive Testing (3) Detection and characterization of discontinuities in materials by non-destructive physical means. Ultrasonic, electromagnetic, holographic and penetrating radiation techniques are discussed. Prereq: 2910-20-30 or consent of instructor. (Same as Engineering Science and Mechanics 4580.)


4710-20-30 Introduction to Health Physics (3, 3, 3) Radioactivity, interaction of electromagnetic radiation with matter, radiation quantities and units, point kernel and extended sources, X-rays and gamma rays, neutron activation, interaction of charged particles with matter, stopping power, range-energy relations, counting statistics, shielding, dosimetry, waste disposal, criticality, radiation biology and ecology. Prereq: 3730.

4915-28-38-48-58-68-78-85-98 Honors: Research and Independent Study (1 hr each) Designed for close collaboration, provides opportunity for research and independent study with faculty guidance. Special consent of department is required. Maximum 15 hrs. Prereq: 3990.

4990 Senior Seminar (1-3) Topic of current interest. May be repeated for credit with consent of department.

GRADUATE

The Master's Program

General requirements for the Master's Degree are found in the Graduate Catalog. The Doctoral Program

General requirements for the Doctor's degree are found in the Graduate Catalog.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5080 Graduate Research Participation (3)

5110-20-30 Introduction to Theoretical Physics (3, 3, 3)

5210-20-30 Advanced Modern Physics (3, 3, 3)

5240 Electronic Properties of Solids (3)

5250 Electromagnetic Properties of Solids (3)

5310-20-30 Advanced Dynamics (3, 3, 3)

5410-20-30 Electromagnetic Theory (3, 3, 3)

5440 Experimental Methods of Infrared and Raman Spectroscopy (3)

5460 Radiation Chemistry (3)

5610-20-30 Advanced Thermodynamics and Statistical Mechanics (3, 3, 3)

5610-20-30 Mathematical Methods in Physics (3, 3, 3)

5640 Numerical Methods in Physics (3)

5720 Physics of Polyatomic Molecules (3)
and Politics; International Relations; and Political Theory and Methodology. A minor consists of twenty-four hours that must be distributed as follows:

(1) Eight hours at the 2000 level in political science or in political science courses not used for Triad credit but included on the History and Society list.

(2) Sixteen hours in political science courses numbered at 3000 and above. Upper-division courses on the Triad list may be included. These thirty-two hours must include at least one course in each of four areas of the discipline: United States Government and Politics/Public Administration; Comparative Government

state administrators. Attention will be paid to state government’s role in formulating, enacting, and implementing state policy.

3750 The Urban Polity (4) Analysis of political institutions and processes in metropolitan areas.

3760 Urban Policy Process (4) Analysis of urban problems and policies in metropolitan areas.

3880 American Political Thought (4) Examination of role of selected political ideas, doctrines, and themes in America, emphasizing their development and relationship to diverse political interests.

4110 Law and the Administrative Process (4) Power of, procedures of, controls over administrators.

4535-36 Political Attitudes, Opinions and Communication (4, 4) Nature, development, formation and distribution of politically relevant attitudes and opinions; role of leadership, persuasion, and communication in opinion-policy process.

4540-50 Presidency, Congress and Public Policy (4, 4) The Presidency and Congress within framework of policy-making process.

4543-46 The Judicial Process (4, 4) The study of courts as components of political systems, and public policy formation through judicial review and decision making. 2510-20 desirable as preceding courses.

4575 Special Topics in United States Government and Politics (4) May be repeated up to a maximum of 8 hrs credit with consent of department.

4610 Budgetary Process (4) Fiscal planning, budget and expenditure processes in government, their policy and administrative implications.

4620 Public Personnel Administration (3) Development of the merit system in government, career systems, public personnel management functions, organization for personnel management.

4630 Problems in Public Management (3) Selected problems. Emphasis on internal and external communication and information systems in government and public access to information.

4740-50-60 Politics and Elections (3, 3, 3) 4740-50—Structure and function of party system; nominations and campaigns. 4760—Voting behavior of the electorate.

4890 Politics and the Environment (4) Examination of formulation and implementation of public policies relating to physical environment with emphasis upon water and air pollution control.

Comparative Government and Politics

3605 Political Change in Developing Areas (4) Characteristics and problems of political changes with primary focus on developing areas.

3615-16 Dynamics of Black African Politics (4, 4)

3621-22 Politics of Asian States (4, 4)

3625-26 Latin American Government and Politics (4, 4)

3631-32 Government and Politics of the Soviet Union (4, 4)

3635-36 Politics in Western Democracies (4, 4) Political culture, patterns and institutions of Western democratic systems.

3641 Government and Politics of Middle East and North Africa (4)

3795 Contemporary Middle East (4) (Same as History 3795)

4666-66 Policy Making in Democracies (4, 4) Comparative approach to theory and process of making public policies.

4675 Special Topics in Comparative Government and Politics (4) May be repeated up to a maximum of 8 hrs credit with consent of department.
International Relations
3701-02 Introduction to International Relations (4, 4) 3701—Methodology and background. 3702—International processes and institutions including war, diplomacy, law and organization.
3712-22 U.S. Foreign Policy Process (4, 4) Processes whereby U.S. foreign policies are made and implemented, focusing on interaction within federal bureaucracy and roles of the President, Congress, the press, and public opinion.
3790 Contemporary Diplomatic and Military Problems (4) Analysis of current international events.
3796 Contemporary Problems of Soviet Foreign Policy (4)
4711 International Law (4)
4727 Politics of Inter-American Relations (4) Analysis of selected theoretical and policy issues concerning international relations in the Americas with emphasis upon imperialism, intervention, and the Cuban revolution, nationalism, foreign assistance, trade and economic integration.
Political Theory and Methodology
3801 Studies in Ancient Political Thought (4) Classical Greek and Roman political thought.
3802 Studies in Medieval Political Thought (4) From Augustine to Luther: Emphasis on problems and theories of religion and politics.
3803 Studies in Early Modern Political Thought (4) Machiavelli through the Enlightenment.
3804 Studies in 19th- and 20th-Century Political Thought (4) Political theories of industrial and technological societies, 19th and 20th century.
4815 Contemporary Soviet Marxism-Leninism (4) Soviet applications of Marxist-Leninist theory.
4821-32-33 The Systematic Study of Politics (4, 4, 4) Scope, methods and procedures of analysis in political science; intended primarily for seniors intending to pursue graduate work and entering graduate students who have not had such a course.
4875 Special Topics in Political Thought (4) May be repeated up to a maximum of 8 hrs credit with consent of department.
Other
4101 Foreign Study (1-16) See page 187.
4102 Off-Campus Study (1-16) See page 187.
4103 Independent Study (1-16) See page 187.
4975 Proseminar in Political Science (4) Selected research for seniors; primarily for majors. May be repeated up to a maximum of 8 hrs with consent of department.
GRADUATE
The Master's Program
See requirements in the Graduate Catalog.
The Doctoral Program
General requirements for the degree of Doctor of Philosophy are described in the Graduate Catalog.
5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5110-20 Seminar in World Political Theory (3, 3)
5140 Politics, Administration and Community in Non-metropolitan Areas (3)
5150 Internship in Political Science (3-9)
5210-20 Seminar in World Politics (3, 3, 3)
5211 Directed Readings in Political Science (3)
5250 Seminar in African Politics (3)
5270-80 Seminar in Politics of Development (3, 3, 3)
5310-20-30 Seminar in Comparative Government (3, 3, 3, 3)
5340-50-60 Seminar in Latin American Government (3, 3, 3, 3)
5370-80 Seminar in Soviet Politics and Government (3, 3, 3)
5410-20-30 Seminar in Public Law (3, 3, 3)
5440-50 Theory and Analysis of U.S Foreign Policy Processes (4, 4)
5510-20 Seminar in International Organization (3, 3)
5540 Seminar in Comparative Public Administration (3)
5550 Seminar in Administration in Developing Countries (3)
5600 Public Administration (3)
5605 Research Method and Analysis in Public Administration (3)
5610-20 Seminar in Organization Theory (3, 3)
5611-21 Seminar in State-Local Administration (3, 3, 3)
5630 Seminar in Technology and Public Policy (3)
5635-45 Operations Research for Public Administrators (3, 3)
5640-50-60 Seminar in Metropolitan Areas (3, 3, 3, 3)
5641 Seminar in Contemporary Public Policies (3)
5670-80 Seminar in Policy Analysis (3, 3)
5710 Seminar in Politics of Administration (3)
5740 Seminar in Organizational Analysis (3)
5750 Seminar in Public Management (3)
5755 Seminar in Public Management (3)
5760 Seminar in TVA Public Personnel Management Practices (3)
5765-75 Law and the Administrative Process (3, 3, 3)
5770 Practicum in Public Administration (3)
5780 Seminar in Fiscal Management (3)
5785-95 Seminar in Staff Functions (3, 3)
5810 The American Political Process (4)
5820 The American Political Process (4)
5850 Seminar in Comparative State Politics (3)
5910-20-30 Methodology and Bibliography (3, 3, 3)
6000 Doctoral Research and Dissertation
6210 Advanced Studies in International Politics (3)
6310 Advanced Studies in Political Theory (4)
6410 Advanced Studies in International Organizations (3)
6430 Advanced Studies in Jurisprudence (3)
6440 Advanced Studies in Comparative Politics (3)
6510-20-30 Advanced Studies in American Constitutional Law (3, 3, 3)
6610-20-30 Advanced Studies in Public Administration (3, 3, 3)
6710 Directed Research in Political Science (3)
6810-20 Advanced Studies in the Political Process (3, 3)

Psychology (830)

Professors:
W.H. Calhoun (Head), Ph.D. California (Berkeley); G.M. Burghardt, Ph.D. Chicago; J.F. Byrne, Ph.D. Tennessee; E.E. Cureton (Emeritus), Ph.D. Columbia; H.J. Fine, Ph.D. Syracuse; L. Handler, Ph.D. Michigan State; J.F. Lubar, Ph.D. Chicago; E.O. Milton (Director, Learning Research Center), Ph.D. Michigan; K.R. Newton, Ph.D. Tennessee; H.R. Ph.D. Pollio, Ph.D. Michigan; N.L. Rasch, Ph.D. Pennsylvania; F. Samejima, Ph.D. Keio (Japan); R.R. Shizawa, Ph.D. Tennessee; W.S. Verplanck, Ph.D. Brown; R.G. Wahler, Ph.D. Washington; J.A. Wiberley, Ph.D. Syracuse.

Associate Professors:
H.S. Bacon, Ph.D. Tennessee; C.P. Cohen, Ph.D. Kansas; L.F. Droppelman, Ph.D. Catholic; H.R. Friedman, Ph.D. Tennessee; S.J. Handel, Ph.D. Johns Hopkins; M.G. Johnson, Ph.D. Johns Hopkins; J. Kandilakis, Ph.D. Tennessee; A. Kandilakis, Ph.D. Yale; J.C. Malouff, Ph.D. Duke; W.G. Morgan, Jr., Ph.D. Tennessee; W.M. Simmons, M.S.S.W. Tennessee; E.D. Sundstrom, Ph.D. Utah; C.L. Travis, Ph.D. California (Davis).

Assistant Professors:

UNDERGRADUATE
Major (Concentration in General Psychology) Designed to give students a broad and current background in the science and application of psychological methods and principles. It is particularly suited for students who plan careers in areas such as business, law, and journalism, or who for other reasons desire a liberal education concentrating on psychology. Psychology 2500 and two courses from 2520-30-40 and 2518-28 are prerequisite to a major consisting of Psychology 3150 or 4150, at least 4 hours of laboratory, field or practicum courses, and 32 or more hours of upper-division psychology courses. (Concentration in Academic Psychology) Designed to prepare students for advanced work in the scientific, professional, and college level teaching areas of psychology. Prerequisites to the major include Psychology 2500, two courses from 2520-30-40 or 2518-28, Mathematics 1540-50-60 or 1840-50-60, and Biology 1210-20-30. The major consists of Psychology 3150 or 4150, 8 hours of laboratory, field, or practicum courses, and 28 or more hours of upper-division courses, of which 12 hours must be in courses at the 4000 level.
Minor: A minor in psychology shall consist of Psychology 2500 and 20 additional hours from 3000- and 4000-level courses.
Honors Program in Psychology. A two-year (Junior-Senior) program leading to the B.A. degree. Objective of the Honors Program is to enable superior students to accelerate development of grasp of science of psychology. Program encourages independent study.
Eligibility: Selection of participants is determined by departmental
3650 Abnormal Psychology (4) Constitutional and environmental factors in abnormal behavior; neurotic and psychotic reactions; non-technical discussion of diagnostic and therapeutic methods. 2540 recommended.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

Psychology 4103, 4107, and 4109 are courses of independent study and research taken by consent of instructor only. Course requirements, meeting times, and grading procedures are established by agreement between the student and a member of the psychology faculty. For each credit hour, a student may expect to spend from two to three hours per week for the quarter. No more than 24 credit hours may be earned in courses 4103-4107-4110 combined.

4103 Independent Study (1-16) May be repeated. Maximum credit 16 hrs. 4107 Experience in Individualized Instruction (1-6) May be repeated. Maximum credit 12 hrs. Graded by letter grade only. Prereq: Consent of instructor.

4109 Undergraduate Research (1-18) May be repeated for credit to maximum of 18 hrs. Prereq: Consent of instructor.

4120 Topics in Social Psychology (4) Intensive analysis of selected research topics. Prereq: 3120 or Sociology 3130. (Same as Sociology 4120.)

4150 Probability Models in Psychology (4) Introduction to use of probability models in theory of binary test items, differential psychology, comparison of different populations in specific psychological parameters, individual choice behavior, and testing of psychological hypotheses in human and animal behavior; reliability theory and regression theory. Prereq: Math 1560 or 1860 or consent of instructor.

4230 Sensory Processes and Perception (4) Survey of sensory and perceptual processes with emphasis on audition and vision. Prereq: 3150; 2520 recommended.

4220 Laboratory in Sensory Processes and Perception (2) Prereq or coreq: 4230.

4460 Organizational Industrial Psychology (3) (Same as Industrial Management 4460.)

4510 Personality Theories (4) Prereq: 3650 or 4650.

4520 Personality and Social Systems (4) Prereq: 2540.

4610 Group Processes (3) Study and experience of theory and techniques of group processing and facilitation. Those participating in 4610 are expected to continue into 4620 and 4630. Prereq: 3616-26 and consent of instructor.

4620-30 Seminar in Group Processes (3, 3) Didactic and laboratory experience for those qualified for further training as group facilitators. Prereq: 4610 and consent of instructor.

4640 Psychological Tests and Measures (4) Theory and construction of individual and group measures; survey of various methods of assessment of intelligence, personality, special abilities, and educational achievement. Prereq: 3150.

4650 Symbolic Processes (4) Logic of signs and symbols; directed and associative thinking; memory, problem solving, and concept formation; nature, use, and development of language. Prereq: 3210 or consent of instructor.

4660 The Psychology of Language (4) Theories and descriptions of phonology, syntax, and semantics as applied to psychology and related disciplines. 4660 or linguistics background recommended.

4710 Physiological Psychology (4) Nervous system and physiological correlates of behavior. Prereq: One year of biology or Zoology and Psychology 3220.

4719 Physiological Psychology Laboratory (4) Laboratory studies of nervous system and physiological correlates of behavior. Coreq: 4710.

4720 Comparative Animal Behavior (4) Methods and principles. (Same as Zoology 4720.)

4729 Comparative Animal Behavior Laboratory (4) Laboratory and field studies. Coreq: 4720. (Same as Zoology 4729.)

4750 Evolution and Ontogeny of Social Behavior (4) Genetic, evolutionary, ecological, and developmental processes as they apply to social organization and ethology of vertebrates. Prereq: Consent of instructor.

4780 Psychology and Current Issues (4) Research and theory relevant to selected contemporary issues. 4 class hrs per week. Prereq: Consent of instructor.

4830 History and Systems of Psychology (4) Prereq: 9 hrs of upper-division psychology.

4850 Learning Theories (4) Historical and theoretical development of learning models. Prereq: 3210.

4860 Programmed Learning (3) (Same as Education C & I 4860.)

4870 Contemporary Research in Behavior of Women (4) Study of interaction of cultural and biological factors in determining the behavior of women, with emphasis on physiological mechanisms involved.

4880 Afro-American Psychology (4) Review and analysis of psychological literature on Afro-Americans. Prereq: Consent of instructor. (Same as Black Studies 4480.)

4900 Aspects of Urban Environment (4) (Same as Architecture 4900, Human Services 4900, and Real Estate 4900.)

4910 Senior Seminar in General Psychology (4) Integrative review of major problems in psychology. Intensive examination of selected topics. Prereq: Consent of instructor.

4948-58-68 Honors: Reading and Research (4, 4, 4) Honors candidates only.

4978-88-98 Honors: Senior Reading and Research (4, 4, 4) Honors candidates only.

GRADUATE

The Master's Program

See requirements in the Graduate Catalog.

The Doctoral Program

General requirements for the degree of Doctor of Philosophy are described in the Graduate Catalog.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5017 Colloquium in Experimental Psychology (1)

5019-29-39 Laboratory Techniques in Experimental Psychology (3, 3, 3)

5070 Seminar in College Teaching (2)

5079 Practicum in College Teaching (2)

5080 Current Topics in Applied Psychology (3)

5100 Developmental Psychology (3)

5105 Developmental Assessment (3)

5110 Clinical Aspects of Human Sexuality (3)

5112-12-13 Seminar in Current Issues in School Psychology (1, 1, 1)
Religious Studies (863)

Professors: R.S. Luxby (Head), B.D. Colgate (Robchester); D.L. Dungan, Th.D. Harvard; R.V. Norman, Jr. (Associate Vice Chancellor for Academic Affairs), Ph.D. Yale.

Associate Professors: B.L. Daniels (Assistant Dean of the College of Liberal Arts), Ph.D. Duke; W.L. Humphreys, Th.D. Union; D.E. Linge, Ph.D. Vanderbilt; C. Reynolds, Ph.D. Harvard.

Assistant Professors: J. Kim, Ph.D. Chicago; R. Lee, Ph.D. Harvard.


UNDERGRADUATE

Major: Two options are available in religious studies. One religious studies 2000-level course is a prerequisite for either option, and Religious Studies 4850 is required in both options.

The basic option consists of 36 hours of courses at the 3000 level or above (including 4850) with a minimum of 12 hours selected from courses listed below under History and Literature of Religion and a minimum of 12 hours selected from courses listed below under Problematic of Religion. Majors are invited to discuss their programs with a member of the religious studies faculty.

The student-initiated option is to be specified in an individual program defined in consultation between each student and the Department of Religious Studies. At least 36 hours of courses at the 3000 level or above (including 4850) are required for this major. Students whose educational goals would best be served by such a major are encouraged to construct their own plans of study as early as possible. The student-initiated option is recommended for persons who plan to pursue graduate study in religion or a closely related field. Further details are available in the department office, located at 501 McClung Tower, or from any member of the religious studies faculty.

History and Literature of Religion: 3011, 3021, 3061-71, 3110, 3120, 3210-20, 3270, 3311-12, 3330, 3340, 3411-12-13, 3440, 3490, 3510-20, 3550, 3560, 3650, 3860, 3871, 3872, 3880, 3710, 3711, 3713, 3770, 4210, 4310, 4450, 4640, 4670, 4810-20-30.

Problematic of Religion: 3600-10, 3611, 3820, 3890, 3915, 3720, 3740, 3750, 3760, 3780, 4101, 4102, 4103, 4111-21, 4370-71, 4410, 4540, 4610; 4810-20-30, 4850, 4940, 4950, 4960.

Minor: Twenty-four hours of courses at the 3000 level and above. It is suggested that students minoring in religious studies discuss their programs with a member of the department faculty.
2610 Introduction to Religions of the World (4) Introduction to the study of religion through selected historical traditions, East and West.

2611 Introduction to Ancient Near Eastern Religions (4) Introduction to study of religion through selected ancient Near Eastern and Mediterranean traditions.

2612 Issues in Religious Studies (4) Introduction to study of religion through selected religious problems and alternatives.

HISTORY AND LITERATURE OF RELIGION 3101 History of Western Religious Thought and Institutions (4, 4) 3061—First Century to the Thirteenth Century. 3071—Thirteenth Century to 1900. (Same as History 3061-71.)

3110 Ancient Israel's Historical and Religious Traditions (4) Political, religious and cultural history and traditions of ancient Israel from earliest period to Exile.

3120 The Rise of Judaism (4) Political, religious and cultural history and traditions of ancient Israel and early Judaism through 135 A.D. Later literature of Old Testament, Apocrypha, and Dead Sea Scrolls.

3210 Early Greek Mythology (3) (Same as Classics 3110.)

3220 Greek Mythology in the Classical Period (3) (Same as Classics 3220.)

3230 Roman Mythology (3) (Same as Classics 3230.)

3270 Russian Philosophical and Theological Thought (4) (Same as Russian 3270 and Philosophy 3270.)

3311-12 Images of Jesus (4, 4) An introduction to and modern portrayals of Jesus, understood within their cultural milieu. Must be taken in sequence.


3340 Judaism in the Common Era, (3) Survey of literature and traditions of Judaism in the Common Era.

3411-12 Renaissance and Reformation (3, 3) (Same as History 3411-12.)

3440 Religion of Primitive Peoples (3) (Same as Anthropology 3440.)

3490 African Religions (4) Examination of religious and cultural systems of African peoples, including a study of functions of myths, rites, and symbols and an inquiry into how certain political movements in Africa have been and are informed by religious sensibilities. (Same as Anthropology 3490 and Black Studies 3490.)

3510-20 Religion in America (4, 4) Not a survey but a representative profile of religion in America, past and present, organized each quarter around theme or problem. May be taken independently.

3550 Religion and Racism in America (4) Historical and critical survey of role played by religion in supporting and criticizing American racial injustice. (Same as Black Studies 3550.)

3560 Black Religion in America (4) Historical and critical examination of formation and development of black religious thought and institutions in America. (Same as Black Studies 3560.)

3650 Philosophy and Religion in India (4) (Same as Philosophy 3650.)

3660 Buddhist Philosophy and Religion (4) (Same as Philosophy 3660.)

3671 Religion and Philosophy in China (4) (Same as Philosophy 3671.)

3672 Religion and Society in Japan (4) (Same as Sociology 3672.)

3680 Islam (4) Origin and early history, rapid spread of the world faith, development of Muslim theology and culture, interaction with modern cultures.

3710 Literature of English Bible (3) (Same as English 3710.)

3711 Literature of the English Bible (3) (Same as English 3711.)

3713 Religion in the Middle Ages (4) Study of medieval religion and its role in European culture between 590 and 1500.

3770 Zen Buddhism (3) Examination of historical, philosophical, and meditational materials of Zen. Special emphasis upon Zen theories of emptiness, no-mind, sudden enlightenment, and the Koan.

4210 Topics in Ancient Israelite and Ancient Near Eastern Religions (4) Prerequisite: 3110-20 or consent of instructor. May be repeated once for credit.

4310 Jesus and Paul Compared (4) Jesus' teaching and activity in context of first-century Palestinian Judaism; analysis of what Apostle Paul made of the tradition of and about Jesus. 2610 or 2611 recommended.

4450 Topics in African Religion (4) Prerequisite: One of the following: 3510, 3520, 4410, or consent of instructor. May be repeated once for credit.

4640 Topics in Early Christianity and Hellenistic Religions (4) Selected figures, issues, and institutions. Seniors and graduate students only, except by consent of department. Prerequisite: Consent of instructor. May be repeated for credit to a maximum of 12 hrs.

4670 Topics in Eastern Religions (4) Selected figures, issues, and institutions. Seniors and graduate students only, except by consent of department. Prerequisite: 3650-60-70. May be repeated for credit to a maximum of 12 hrs.

4810-20-30 Readings and Research in Religious Studies (3-4, 3-4, 3-4)

PROBLEMATIC OF RELIGION

3011 Phenomenology of Religion (4) Examination of recurrent themes, patterns and histories in history of religions, such as high gods, cultural heroes, initiations and ascensions.

3021 Religious Myth, Symbol, and Ritual (4) Study of interrelations of myths, symbols, and rituals among preliterate peoples through a specific motif, such as solar, lunar, and communal.

3600-10 Religious Ethics (4, 4) Historical and critical survey of religious ethics; basic theories and their application to social problems.

3611 Religious and Philosophical Issues in Medical Ethics (4) Explores ethical issues in medicine such as abortion, euthanasia, human experimentation, fairness in health care delivery and the doctor-patient relationship. (Same as Philosophy 3611.)

3820 Topics in Religious Ethics (4) Examination of particular theoretical issues and social problems from perspectives of religious ethics. May be repeated once for credit.

3890 Philosophy of Religion (4) (Same as Philosophy 3890.)

3715 Religious Thought in the Nineteenth Century (4) Major problems and themes in European and American religious thought between 1800 and the beginning of World War I.

3720 Contemporary Religious Thought (3) Major themes, issues, and thinkers.

3740 Issues in Science and Religion (3) Relation of religion to history, methods, and theories of science.

3750 Theology and Literature (3) Exploration of issues raised for religious inquiry by phenomena of literature. Relation of religious and moral considerations to problems of literary criticism. Relation of religious language to certain forms of human expression (symbol, metaphor, myth, image) identified in study of literature.

3760 Eastern Religions and Western Thought (3) Critical consideration of influences of Hindu and Buddhist philosophies on Western thinkers and movements.

3780 The Literature of Dissent (3) Critique of religious thought in Western thought. Aspects of atheism, rebellion, and revolution in such thinkers as Luther, Spinoza, Nietzsche, Marx, Feuerbach, Marx, Nietzsche, Russell, and Camus.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4111-21 Modern Religious Philosophies (4, 4) Examination of modern religious thinkers and movements. 4111—Nicolas of Cusa to Hume. 4121—Kant and the nineteenth century. Prerequisite: 9 hrs of philosophy other than logic. (Same as Philosophy 4111-21.)

4370-71 Theoretical Issues in Medical Ethics (4, 4) (Same as Philosophy 4370-71.)

4410 American Religious Thought (4) Selected figures, movements and problems in American religious thought from colonial period to present.

4540 Social and Religious Change (4) (Same as Sociology 4540.)

4610 Topics in Western Religious Thought and Institutions (4) Selected figures, issues, and institutions. Seniors and graduate students only, except by consent of department. Prerequisite: 3061-71. May be repeated for credit to a maximum of 12 hrs.

4610-20-30 Readings and Research in Religious Studies (3-4, 3-4, 3-4)

4850 Proseminar in Religious Studies (3) For advanced students in religious studies; staff of department will participate. Specific topics, e.g., nature and function of myth in religions, prophet and thinker and movements. 4850—Philosophy of Western thinkers.

4890 Sociology of Religion (4) 3 hrs as Sociology 4940.

4950 Theory of Religion (4) Elements for construction of a theory of religion drawing on resources from fields of history, anthropology, sociology, psychology, social psychology, sociology of religion, cultural anthropology, theology, and comparative religion.

4960 Tradition, Change and Modernity in Asia (4) Comparative study of processes of religious and social change seen in historical context in Asian societies. Comparative focus of course will vary each year (e.g., China and Japan, India and South Asia, etc.). May be repeated once for credit. (Same as Sociology 4960.)

GRADUATE

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5120-20 Topics in Religion and Society (4, 4)

5510-20 Topics in the History of Religion (4, 4)

5710-20 Topics in Religious Thought (4, 4)

RELATED LANGUAGE STUDIES

310—50 60 Elementary Classical Hebrew (3, 3, 3) 3140—Basic elements of Hebrew, phonology, script, morphology and syntax. 3150—Continued grammar study and selected reading and translation. 3160—Continued reading and translation. Introduction to basic elements of text, literary form, historical, and traditional criticism.
Latin American Studies. See Cultural Studies.

Certification for Teaching French or Spanish in Tennessee
Consult Certification Clerk, Room 212
Claxton Education Building.

Arabic (127)
5150-20 Spoken Arabic (4, 4) Must be taken in sequence. Dialect will vary depending on instructor. Class meetings and 2 laboratory periods.
2110-20-30 Elementary Modern Standard (3, 3, 3) Must be taken in sequence. 3 class meetings and 2 laboratory periods.
3510-20 Intermediate Modern Standard (4, 4)
3610 Islamic Literature in English Translation (4) Survey from origins to modern period of major Islamic philosophers, 3 hours; Arabic and Turkish. Readings include *The Arabian Nights*, *The Rubaiyat of Omar Khayyam* and *Gil- bran’s The Prophet*.
4101 Foreign Study (1-16) See page 187.
GRADUATE
5670-40 Hispano-Arabic Literature and Culture (3, 3, 3)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)

French (405)
Major: Consists of 36 hours in courses numbered 3110 or above. Students whose primary interest is literature must have the following courses (or their equivalent, with consent of the department): 3110-20-30 or 3180-20-30 (aspects or survey of literature, 9 hours); 3410 or 3420 or 3430 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4230 (advanced grammar, 3 hours); 9 hours of literature at the 4000 level; 9 additional hours selected from courses in literature, language, or civilization. Students whose primary interest is language must have the following courses (or their equivalent, with consent of the department): 3110-20-30 or 3180-20-30 (aspects or survey of literature, 9 hours); 3410 or 3420 or 3430 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4230 (advanced grammar, 3 hours); 6 hours selected from courses 3410-20-30 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 4220 or 4230 (advanced grammar, 3 hours); 4250-60-70 (linguistics); 6 hours of literature at the 4000 level; 6 additional hours selected from courses in literature, language, or civilization. With either of the above options, students may substitute Foreign Study (4101) for certain courses; students with special interests, such as comparative literature, may make certain substitutions with consent of the department.
Minor: Consists of 24 hours in courses numbered 3110 or above, including the following: 2110-20-30 or 3180-20-30 (aspects or survey of literature, 9 hours); 3410 (intermediate composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 9 additional hours selected from courses in literature, language, or civilization. Students pursuing a minor are

Romance Languages

Professors:
H.C. Rutledge (Head), Ph.D. Ohio State;
R.A. Venn (Emeritus), A.M. Texas;
P.E. Barrette, Ph.D. California (Berkeley);
C.W. Cobb, Ph.D. Tulane; P.J. Cooper, Ph.D. Columbia, W. Virginia, or Ph.D. North Carolina;
T.B. Irving, Ph.D. Princeton;
H.E. Leland, Ph.D. Minnesota; F.D. Maurino, Ph.D. Columbia;
J.O. Swain (Emeritus), Ph.D. Illinois;
A.M. Vazquez-Bigl, Ph.D. Minnesota;
G. Ebert (Emeritus), Ph.D. Ohio State;

Associate Professors:
W.F. Byess, Ph.D. Wisconsin; R.M.E. DeRykze, Ph.D. Illinois; J.C. Elliott, M.A., Illinois;
W.H. Hefflin, Jr., Ph.D. Florida State;
M.J. Sherman, Ph.D. Kentucky;

Assistant Professors:
E.J. Campion, Ph.D. Yale; M.H. Handelsman, Ph.D. Florida; K.D. Levy, Ph.D. Kentucky;
C.R. Pinsky, Ph.D. California (Berkeley).

Instructors:
C.G. Cox, M.A. Tennessee; M.T. Rabot, Cert. de Litt. Polonais; S.T. Selman, M.A. Tennessee; P.A. Wilson, M.A. Tufts.

Placement Examination: Students who have had two or more years’ work in French, Italian, or Spanish in high school or one year’s work in another college should register in French or Spanish 2110 or 2130. Credit will be given for 2150. During the first week of the quarter a placement test will be given, and students will be advised if a change in registration is indicated.

Proficiency Examinations: Students who have acquired a knowledge of French, Italian, or Spanish through private study, tutoring, residence in foreign countries, etc., may initiate a request for a proficiency test in the Office of the Dean of Admissions and Records. A student earning a grade of C or better on such a test will receive credit for two-thirds of the number of courses. Superior students are encouraged to proceed as rapidly as their achievement permits.

Note to Majors and Minors in French, Italian, or Spanish and Minors in Portuguese: Students who have completed nine hours of upper-division courses in French, Italian, or Spanish literature at The University of Tennessee, or equivalent work at other institutions, may either (1) have a minimum grade point average of 2.0 in French, Italian, or Spanish before being accepted for a major’s program, or (2) qualify by demonstrating, during the first week of the quarter, not less than a minimum ability equivalent to a grade of middle C on the current examination in French or Spanish 2130 or French, Italian, or Spanish.

All majors must take upper-division courses under more than one instructor, and must have an acceptable pronunciation and an adequate reading knowledge of the language.
through the Renaissance: Life of St. Alexis, Song of Roland, Romance of the Rose, Rabelais, Du Bellay, 3220—The Classical Period and the Age of Reason: The great dramatists, La Princesse de Cleves, Voltaire, Rousseau. 3230—The Nineteenth and Twentieth Centuries: Balzac, Flaubert, Proust, Camus. No change in credit hrs after add deadline. Option of 4 hrs credit must present appropriate amount of extra work above that required for 3 hrs.

3240 Women in French Culture (4) Influential role of women in shaping French history and culture. Feminists (George Sand); royal mistresses (Mme. de Maletenon); intellectuals (Mme. de Stael); actresses (Sarah Bernhardt); scientists (Marie Curie) will be among the important fig-
ures studied.

3250 Masterpieces of French Fiction in English Translation (4) Among works studied are Rom

3410-20-30 Intermediate Composition and Con
erstation (3, 3, 3) Grammatical analysis of mod-
er French prose; review of grammatical princi-
ples and their application in translations from English to French, both written and oral; exer-
cises in free composition. Prereq: 2130 or 2520.

3110-20-30 Aspects of French Literature (3, 3, 3) Studies (sketchy and partial) of various peri-
ods of the literature; emphasis upon the genres (poetry, novel, drama) varies. Prereq: 2130, 2520 or equivalent. Recommended for literature majors.

3810-20-30 Survey of French Literature (3, 3, 3) Chronological study of various genres (poetry, novel, drama) by periods, from medieval period to the present. May be taken in place of 3110-20-30. Prereq: 2130, 2520 or equivalent.

4010 Masterpieces of French Literature in En
glish Translation (3) No foreign language credit.

4020 Masterpieces of French Drama in English Trans
ation (3) No foreign language credit.

4101 Foreign Study (1-16) See page 187.

4110-20-30 French Literature of the Seventeenth Century (3, 3, 3) Prereq: 2130, 2520 or equiva-

lent.

4150 Theatrical French (1-3) Performance in one or more French plays. May be repeated for credit with consent of instructor. Prereq: 2130, 2520 or equivalent and consent of the instructor.

4160-70-80 Advanced Conversation (2, 2, 2) Inten-
sive training in prepared and spontaneous con-
ersations. Subjects range from travel and current events to literature and aspects of national culture. Prereq: Completion of 9 hrs of courses on 3000 level.

4210-20-30 Phonetics and Advanced Grammar (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4250 Introduction to Descriptive Linguistics (3) Phonetics and phonemics, morphology and syn-
tax. Types of languages, linguistic groups, dia-
lactic and dialect geography. Application of de-
scriptive linguistics—field linguistics, dialectal study; its practical use in learing languages and in language teaching. Introduction to transforma-
tional grammar. Prereq: 9 hrs of upper-division English or 9 hrs of upper-division courses in a modern or ancient language (exclusive of Ger-
man and French 3010-20-30, courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of these lan-
guages), or consent of department. (Same as Spanish, German, and Russian 4250.)

4260 Introduction to Historical and Comparative Linguistics (3) (Same as Spanish, German and Russian 4260.)

4270 Romance Linguistics (3) Development of classical Latin through vulgar Latin into major Romance languages. (Same as Spanish 4270.)

4310-20-30 French Literature of Eighteenth Cen-
tury (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4350-60-70 Medieval French Literature (3, 3, 3) Medieval works in modern French texts. Prereq: 2130, 2520 or equivalent.

4410-20-30 French Civilization (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4510-20-30 French Literature of Nineteenth Cen-
tury (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4610-20-30 Readings in French Literature (3, 3, 3)

4618-28 Honors: Readings in French Literature (3, 3) For students who have completed 3130 or equivalent and have at least 3.0 on all university work. No credit for grade less than B.

4645-50-60 French Literature of Sixteenth Cen-
tury (3, 3, 3) Prereq: 2130, 2520 or equivalent.

4710-20-30 French Literature of Twentieth Cen-
tury (3, 3, 3) Prereq: 2130, 2520 or equivalent.

GRADUATE

The Master's Program

See Graduate Catalog for requirements.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5011 Techniques in Literary Analysis (3)

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5110-20-30 Old French (3, 3, 3)

5121 College Teaching of Romance Languages (3)

5151-61-71 Bibliography and Methods of Re-
search (1, 1, 1)

5210-20-30 French Literature of Sixteenth Cen-
tury (3, 3, 3)

5310-20-30 French Directed Readings (3, 3, 3)

5530-60-70 The Philosophes (18th Century) (3, 3, 3)

5410-30-30 The French Novel (3, 3, 3)

5450-60 Lyric Poetry of Nineteenth Century (3, 3)

5470 Baudelaire and the Symbolists (3)

5510-20-30 The French Drama (3, 3, 3)

5610-20-30 Trends in Contemporary French Liter-
ature (3, 3, 3)

5650-60 Advanced Syntax and Stylistics (3, 3)

5670 Problems in Romance Linguistics (3)

5710-20-30 Seminar in French Literature (3, 3, 3)

5910 Literary Criticism: Foundations of Romance
Criticism (3)

Italian (584)

UNDERGRADUATE

Major: Consists of 36 hours in courses numbered 3110 or above, to include the follow-
ing (or equivalents, with consent of the department): 3410-20-30 (advanced gram-
mar, composition and conversation, 9 hours); 3110-20-30 or 3510-20 (aspects of Italian
literature, at least 8 hours); 9 hours of literature at the 4000 level; 10 additional hours
selected from courses in literature, language, or civilization. Students may substi-
tute Foreign Study (4101) for certain courses; students with special interests, such as comparative literature, may make

4150-20-30 Elementary Italian (4, 4) Must be taken in sequence. 4 class meetings and 2 labora-
tory periods.

4210-20 Intermediate Italian (4, 4) Must be taken in sequence. 4 class meetings and 2 labora-
tory periods.

4260-20 Panorama of Italian Culture (4, 4) 2610—
Survey of Italian culture from Roman era through the Renaissance. 2620—Survey of Italian culture in the 18th, 19th, 20th centuries.

3000 Italian Transition (3) Development of lin-
guistic skills necessary for satisfactory work in courses above 3000. Recommended for students who feel they would benefit from additional training beyond 2520 in basic skills of reading, speaking, and writing Italian.

3110-20-30 Aspects of Italian Literature (3, 3, 3) Prereq: 2520 or equivalent. Recommended for lit-

erature majors.

3210-20 Civilization and Culture (3, 3, 3) Pre-

4250 or equivalent.

3310-20 Italian Literature in English Transla
tion (3-4, 3-4) 3310—Sicilian School, the Fi-
orentine School, Dante, Petrarch, Boccaccio,
Machiavelli, Ariosto, Tasso. 3320—From the
Baroque through nineteenth century, commedia
del'arte, Vico Leopardi. 3330—Twentieth cen-
tury, Carducci, Pirandello, Quasimodo, D'Annun-
zio, Croce, Moravia. No change in credit hrs af-

4250 or equivalent. Recommended for litera-
ture majors.

4010 Italian Drama in English Translation (3, 3, 3) 4010—La commedia dell'arte and major works of Machiavelli, Metastasio, Alfieri, Gol
doni. 4020—Twentieth-century theatre: operatic drama, the Grottesco, Pirandello, De Filippo, Fratì. No change in credit hrs after add deadline. Option of 4 hrs credit must present appropriate amount of extra work above that required for 3 hrs.

3410-20 Advanced Grammar, Composition, and Con-
versation (3, 3, 3) Laboratory work, drills, and tapes. Prereq: 2520 or equivalent.

3510-20 Aspects of Italian Literature (4, 4) Pre-

4250 or equivalent. Recommended for litera-
ture majors.

4010-20-30 Undergraduate English Literature and Ex-
pressions of the Italian People (3-4, 3-4) Prereq: 2520 or equivalent. Recommended for litera-
ture majors.

4101 Foreign Study (1-16) See page 187.

4160-70-80 Advanced Conversation (2, 2, 2) In-

tensive training in prepared and spontaneous con-
ersations. Subjects range from travel and current events to literature and aspects of na-
tional culture. Prereq: Completion of 9 hrs of courses on 3000 level.

4220 Petrarch (3) Prereq: 3130, 3520 or equiva-

lent.

4230 Boccaccio (3) Prereq: 3130, 3520 or equiva-

lent.
4330 History of Italian Language (3) Prereq: 3130, 3520 or equivalent.
4410-20-30 Literature of the Rinascimento (3, 3, 3) From Pulci to Tasso, the Quattrocento and the Cinquecento. Prereq: 3130, 3520 or equivalent.

4530 The Modern Novel (3) Prereq: 2520 or equivalent.
4540 The Modern Theatre (3) Prereq: 2520 or equivalent.

4610 Contemporary Theatre (3) Prereq: 2520 or equivalent.
4620 Contemporary Poetry (3) Prereq: 2520 or equivalent.
4630 Contemporary Prose (3) Prereq: 2520 or equivalent.

GRADUATE See Graduate Catalog for requirements.

5011 Techniques in Literary Analysis (2)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5151-61-72 Bibliography and Methods of Research (1, 1, 1)

5160-20-30 Readings in Italian Literature (3, 3, 3)
5170-20-30 Seminar in Italian Literature (3, 3, 3)

Portuguese (811)

UNDERGRADUATE

Minor: A minor only is offered in Portuguese, consisting of 8 hours in the 3510-20 sequence (aspects of Portuguese literature) and 18 hours in the 4310-20-30 sequence (directed readings in Brazilian and Portuguese literature, a course of variable content which may be repeated for credit).

Students may substitute Foreign Study (4101) for any of the above courses.

1510-20 Elementary Portuguese (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.
2510-30 Intermediate Portuguese (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.
3510-20 Aspects of Portuguese Literature (4, 4) Prereq: 2520 or equivalent. Recommended for literary majors.
4101 Foreign Study (1-16) See page 187.
4310-20-30 Directed Readings in Brazilian and Portuguese Literature (3, 3, 3) May be repeated with consent of instructor.

GRADUATE

5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)

Spanish (924)

UNDERGRADUATE

Major: Consists of 36 hours in courses numbered 3310 or above. Students whose primary interest is literature must have a minimum of 8 hours chosen from the following sequences: 3310-20-30, 3510-20, or 3610-20 (aspects of Spanish American literature, or aspects or survey of Spanish literature, 8 hours); 3410 plus 3420 or 3430 (composition and conversation, 6 hours); 4210 (phonetics, 3 hours); 9 hours of literature at the 4000 level; 3 hours of civilization; sufficient additional hours selected from courses in literature, language, or civilization to fulfill the major requirement. Students whose primary interest is civilization must have a minimum of 8 hours of civilization; sufficient additional hours selected from the following sequences: 3310-20-30, 3510-20, or 3610-20 (aspects of Spanish American literature, or aspects or survey of Spanish language, literature, or culture: composition and conversation, 3 hours); 4210 (phonetics, 3 hours); 9 hours selected from courses 3420-30 (composition and conversation), 4220-30 (advanced grammar), or 4250-60 (dramatic interpretation); 3 hours of civilization; sufficient hours selected from courses in literature, language, or civilization to fulfill the major requirement. With either of the above options, students may substitute Foreign Study (4101) for certain courses; students with special interests, such as comparative literature, may make certain substitutions with consent of the department.

Minor: Consists of 24 hours in courses numbered 3310 or above, including a minimum of 8 hours chosen from the following sequences: 3310-20-30, 3510-20, or 3610-20 (aspects of Spanish American literature, or aspects or survey of Spanish language, 8 hours); 3410 (composition and conversation, 3 hours); 4210 (phonetics, 3 hours); sufficient additional hours selected from courses in literature, language, or civilization to fulfill the minor requirements. Students pursuing a minor are strongly advised to consult with a departmental adviser.

Courses which are the equivalents of the foregoing may be substituted with consent of the department; but courses in Spanish literature in English translation may not be counted toward either a major or a minor.

1110-20-30 Elementary Spanish (3, 3, 3) This sequence strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hrs and 2 labs.

1510-20 Elementary Spanish (4, 4) Must be taken in sequence. 4 class meetings and 2 laboratory periods.

1518-28 Honors: Elementary Spanish (4, 4) Honors course for students of superior ability. 1518 not open to students who have taken Spanish in high school. Freshmen are admitted on the basis of a diagnostic test or conference with the instructor, high school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. This class will cover the normal Spanish program for the first year, but will be enriched whenever possible. Students will be expected to spend only the normal amount of time in preparation. Those who find the course too difficult may easily transfer to a regular class. Potential majors and minors in Spanish are urged to take this course. Students who pass 1510 with a grade of B or higher may take 1520 instead of 1520.

2110-20-30 Intermediate Spanish (3, 3, 3) This sequence strongly recommended for students intending to take upper-division courses in Spanish. Must be taken in sequence. 3 hrs and 2 labs.

2510-28 Honors: Intermediate Spanish (4, 4) Honors course for students of superior ability in Spanish. Incoming freshmen are admitted on the basis of a diagnostic test, high school average, and performance on the ACT. This class will be held to a maximum of 15 so that each student may receive more attention. Students will have an enriched program with continuing emphasis upon speaking ability and with special emphasis on reading, including literary selections. Must be taken in sequence. Students who earn an A or B in 2528 automatically receive credit for Spanish 3310. Prereq: Spanish 1110-20-30, 1510-20, 1518-28, or equivalent.

2610-20 Panorama of Hispanic Culture (4, 4) 2610—Peninsular Spain from Roman invasion through the 16th century, including Colonial period in Latin America. 2620—Highlights of 20th-century culture in both Latin America and Spain.

3000 Spanish Transition (3) Development of linguistic skills necessary for satisfactory work in courses above 3000. Recommended for students who feel they would benefit from additional training beyond 2130 or 2520 in basic skills of reading, speaking, and listening Spanish.

3010-20-30 Spanish and Spanish American Literature in English Translation (3-4, 3-4, 3-4) 3010—Masterpieces of Classical Spanish Literature; Cervantes, realism and the picturesque novel, religious mystics, Golden Age Theatre.

3020—Masterpieces of Twentieth-Century Spanish Literature: Unamuno, Lorca, Baroja, Ortega. 3030—Contemporary Spanish American Fiction: Marquez, Borges, Fuentes, Asturias. No change in credit hours after add deadline. Option of 4 hrs credit must present an appropriate amount of extra work above that required for 3 hrs.

3310-20-30 Aspects of Spanish American Literature (3, 3, 3) Study (not usually chronological) of various periods of the literature; emphasis upon the genres (poetry, novel, drama) varies. May be taken in place of 3510-20 or 3610-20. Prereq: 2130, 2520 or equivalent.

3410-20-30 Intermediate Composition and Conversation (3, 3, 3) Not offered for graduate credit.

3510-20 Aspects of Spanish Literature (4, 4) Study (not usually chronological) of various periods of the literature; emphasis upon the genres (poetry, novel, drama) varies. Prereq: 2130, 2520 or equivalent. Recommended for literature majors.

3610-20 Survey of Spanish Literature (4, 4) Chronological study of the various genres (poetry, novel, drama) by periods from the medieval period to the present. May be taken in place of 3310-20-30 or 3510-20. Prereq: 2130, 2520 or equivalent.

4030 Masterpieces of Spanish Literature in English Translation (3) No foreign language credit.

4040 Spanish Drama in English Translation (3) No foreign language credit.

4050-80-70 Hispano-Arabic Literature and Culture (3, 3, 3)

4101 Foreign Study (1-16) See page 187.

4110-20-30 Spanish Literature of the Golden Age (3, 3, 3) The picturesque novel; Cervantes, the Comedia.

4150 Theatrical Spanish (1-3) Performance in one or more Spanish plays. May be repeated for credit with consent of instructor. Prereq: 2130, 2520, or equivalent and consent of instructor.

4160-70-80 Advanced Conversation (2, 2, 2) Intensive training in prepared and spontaneous conversations. Subjects range from travel and current events to literature and aspects of national culture. Prereq: Completion of 9 hrs of courses on 3000 level.
5632 The Spanish American Short Story (3)
5633 Twentieth-Century Latin American Theatre and Film (3)
5640 Latin American Women Writers (3)
5650-60 Advanced Syntax and Stylistics (3, 3)
5670 Problems in Romance Linguistics (3)
5810-20-30 Spanish Lyric Poetry (3, 3, 3)
5910 Literary Criticism: Foundations of Romance Criticism (3)
6000 Doctoral Research and Dissertation
6210-20-30 Seminar in Spanish Literature (3, 3, 3)
6310-20-30 Seminar in Latin American Literature (3, 3, 3)

Russian
See Germanic and Slavic Languages.

Sociology

Professors:
D.R. Ploch (Head); Ph.D. North Carolina; J.A. Black, Ph.D. Iowa; D.D. Champion, Ph.D. Purdue; W.E. Cole (Emeritus), Ph.D. Cornell; L. Ebersele (Vice Chancellor for Planning and Administration), Ph.D. Pennsylvania; W.B. Jones (Emeritus), Ph.D. Vanderbilt; J.B. Knox (Emeritus), Ph.D. Harvard; S.E. Wallace, Ph.D. Minnesota.

Associate Professors:

Assistant Professors:
S. Kurth, Ph.D. Illinois (Chicago); S.E. Norland, Ph.D. Iowa; T.J. Weirath, Ph.D. Wisconsin (Madison).

Instructor:
D. Harris, M.A. Tennessee.

Sociology (915)

Sociology of Social Problems (4)
3010 Collective Behavior (4) Processual analysis of such collective phenomena as crowd behavior, social epidemics, fads, fashions, popular crazes, and mass movements. Nature of the public, functional analyses of public opinion; problems of democracy as viewed from standpoint of organizing collective action.
3030 Political Sociology (3) Sociological analysis of American political system. Attention given to consideration of concept of power, elitist-pluralist controversy, end-of-ideology debate, and related topics.
3130 Social Psychology (4) Social basis of human behavior; socialization; social status and social roles; personality; social adjustment.
3140 Deviance and the Social Order (4) Examination of relations between deviance and social order. Various types of social deviance considered, with focus on their structure, social factors related to process of becoming deviant, and consequences of deviant conduct.
3150 Sociology of Sex Roles (4) Sociological examination of the structure of current American sex roles, utilizing both theoretical and empirical approaches; e.g., role theory and bargaining. Development and effects of organized reactions to sex role expectations and social movements such as feminism are considered.
3160 Sociology of Medicine (4) Introduction to sociological approach to study of health and medicine. Emphasis on relationship of demographic characteristics to the prevalence of disease, organization of health care facilities and staff relationships.
3220 The Family (4) Origin and ethnicity of the family; background of modern American family; the normal family; social changes and the family; social pathology of the family; reorganization and future of the family system.
3230 Sociology of Mass Communication (4) Sociological dimensions of mass communication and mass media, nature of mass communications organizations as social institutions, and effects of mass communication on social behavior are examined.
3330 Prejudice and Racism in the United States (4) (Same as Black Studies 3330.)
3340 Sociology of Poverty and Inequality (3) Factors contributing to condition of poverty and social consequences of being poor. (Same as Black Studies 3340.)
3350 Social Stratification (4) Study of economic class, prestige, style life, and power hierarchies; causes and consequences of structured social inequality.
3410 Urban Environment (4) Introduction to urban environment includes: emergence of the city; cities of the New World; rise of metropolitan America; urban society; social worlds within urban environment.
3420 Urban Problems (4) Crises and the urban conscience; urban problems and interventions; housing, urban renewal and neighborhood conservation; the urban poor, the dispossessed and alienated; planning for urban youth; the urban elderly; the social and physical planning process; new towns.
3510 Juvenile Delinquency (4) Critical assessment of nature of the delinquency problem, major sociological causes and their implications for control, administration of juvenile justice.
3510 Sociology of Occupations (4) Introduction to occupations and their relation to the individual and society; technology and occupations; unequal rewards and occupations; social organization and occupations.
3620 Occupations as Organizations (4) Occupations as interest groupings; their impact on work settings and the wider community.
3672 Religion and Society in Japan (4) (Same as Religious Studies 3672.)

3690 Sociology of Aging (4) The aged as social minority and subculture in society; role changes in marriage and age; consequences of increased proportion of aged in terms of employment, welfare, retirement, and political power.

3810 Sociological Theory (4) Survey and analysis of development of sociological theory from time of Comte to present.

3810 Introduction to Social Research (4) Scientific method applied to social phenomena; formulating testing hypotheses; techniques for collecting data; measuring social variables; interpreting research findings. Lectures and laboratory.

3920 Elementary Statistical Methods (4) Statistics used in social research; elementary descriptive techniques; measures of central tendency, dispersion; elementary statistical inference; tests of significance for parametric and non-parametric data.

4000 Special Topics (4) Student-generated course offered at convenience of department upon student initiative. Scope of subject matter determined by instructor, subject to consent of department. Elective credit only. Prerequisite determined by department.

4030 Society and Law (4) General treatment of social relations and consequences of law and legal process. Particular emphasis is placed on problems of law and social change, and on structure and function of legal sanctions. Some attention is paid to law and law-like phenomena in formal organizations and primitive societies.

4050 Sociology of Sport (4) Social organization and meaning of sport. Topics to be considered are the differences between sport and play and games, social stratification and sport, sport as an occupation, place of sport in mass culture, sport subcultures, and reciprocal influences of sport and cultural milieu.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4110 Population Problems (4) Demographic factors and social structure; trends in fertility, mortality, population growth, migration, distribution, and composition; population policy.

4120 Topics in Social Psychology (4) (Same as Psychology 4120.)

4130 Sociology of Punishment and Corrections (4) Traces development of correctional movement, develops a critical sociological perspective on contemporary correctional programs, and provides overview of evaluative research in corrections.

4310 Criminology (4)

4330 Urban Ecology (4) Examination of public, private, collective, and individual space. Classical school of ecology, its neoclassical rewriters, social area analysis, and cognitive symbolic ecology emphasized.

4410 Educational Sociology (3) (Same as Education C.1 & 1410.)

4530 Community Organization (4) Structure; function; change; development and important community studies are reviewed and discussed. Emphasis on sociological analysis, not on implementation of change.

4540 Social and Religious Change (4) Critical review of historical and contemporary theories and methods employed in study of social change. Attention given to both macro and micro group change. (Same as Religious Studies 4540.)

4560 Formal Organization (4) Analysis of bureaucratic process, division of labor, delegation of authority, channelled communication under system of rationality.

4820 American Minority Groups (4) Minority groups and structure in American society; analysis of intergroup relations with attention given to both past and present relationships of selected groups to broader society.

4930 Social Movements (4) Development, organization, and function of social movements; attention is given to ideology, leadership and organization of political, religious and other types of social movements.

4940 Sociology of Religion (4) Intersocietal relationships of society, culture, and religion. (Same as Religious Studies 4940.)

4960 Tradition, Change and Modernity in Asia (4) (Same as Religious Studies 4960.)

4988 Honors: Sociology (4) Intensive study and research under faculty direction, including writing of senior thesis. Course credit may be split into two quarters. Candidacy is open only to majors who have shown a marked capability for independent study and have grade point averages of at least 3.0 in the College of Liberal Arts and 3.2 in the department. Prerequisite: Senior standing.

GRADUATE Standards for graduate majors and minors are prescribed by the Graduate School and by the department. Students who do not have adequate preparation in sociology may be required to take additional courses at the undergraduate level prerequisite to graduate study.

The Master's Program
The general requirements for the Master's degree are given in the Graduate Catalog. A detailed statement of requirements is given in the department's graduate manual.

The Doctoral Program
General requirements for a degree of Doctor of Philosophy are described in the Graduate Catalog. A detailed statement of requirements is given in the department's graduate manual.

5000 Thesis

5040 Methodological Issues in Social Research (3)

5050 Seminar in Political Sociology (3)

5080-70 Special Social Investigation (3, 3)

5200 Seminar in Collective Behavior and Social Movements (3)

5210, 5420-30 Social Theory (3, 3, 3)

5220 Social Control (3)

5230 Seminar in Sociology of Medicine (3)

5240 Theory and Research in Human Migration (3)

5250 Selected Topics in Migration Research (3)

5310 Seminar in Methods of Sociological Research (3)

5320-30 Social Statistics (3, 3)

5520 Crime, Law, and Social Control (3)

5530 Seminar in Community (3)

5550 Seminar on Community Power (3)

5560-70 Field Research in Deviance (3, 3)

5580 Sociology of Mental Disorders (3)

5590 Social Differentiation and Stratification (3)

5610-20-30 Seminar in Occupations (3, 3, 3)

5640 Social Structure and Personality (3)

5670 Social Organization (3)

5720 Small Group Theory and Research (3)

5730 Seminar in Research Problems in Inter-group Relations (3)

5810 Seminar in Race and Culture (3)

5910 Urban and Regional Sociology (3)

5920 Seminar in Social Attitudes (3)

5940 Delinquency and the Social Structure (3)

5950 Seminar in Population Theory (3)

5960 Demographic Techniques (3)

5970 Sociology of Development and Modernization (3)

6000 Doctoral Research and Dissertation

6040 Experimental Research (3)

6050 Experimental Methods in Sociology and Social Psychology (3)

6070 Problems in Field Research (3)

6080 Research Problems in the Study of Social Groups (3)

6090-6100 Survey Design and Analysis (3, 3)

6120 Selected Topics in Deviance and Law (3)

6130 Seminar in Mass Behavior and Related Topics (3)

6140 Advanced Reading in Sociological Theory (4)

6150 Advanced Reading in Sociological Methods (4)

6160 Advanced Special Social Investigation (4)

6170 Cross-cultural Aspects of Human Fertility (3)

6180 Theory and Method in Human Ecology (3)

6190 Advanced Special Social Investigation (4)

6510 Advanced Issues in Criminological Theory (3)

6520 Sociology of Deviance (3)

6530 Sociology of Law (3)

6540 Readings in Criminology and Deviance (3)

6550 Advanced Studies in Community (3)

6610 Seminar in Formal Organization (3)

6710 Seminar in Class and Status (3)

6810 Advanced Studies in Social Psychology (3)

6840-50 Social Change (3, 3)

6940 Advanced Studies in Urban Sociology (3)

Spanish
See Romance Languages.

Speech and Theatre

Associate Professors: R.L. Conville, Ph.D., Louisiana State; R.C. Field, M.A., Miami (Ohio); R.W. Glenn, Ph.D., Northwestern; A.J. Harris, Ed.D., Tennessee; R.R. Mashburn, M.A., Tennessee.
Speech (943)
1211 Introduction to Rhetoric and Public Address (4) Major theories of communication from Plato to present; methods for describing and evaluating public address.
1221 Introduction to Speech Communication (4) Fundamental theories and practices with particular reference to interpersonal communication, persuasion, semantics, psycholinguistics; legal and ethical dimensions of communication.
2021 Voice and Diction (3) Voice production; attention to individual speech problems.
2311 Public Speaking (4) Basic principles of speech preparation and delivery.
2331 Argumentation and Debate (4) Recommended: 2311
2341 Deliberation in Assemblies (4) Various techniques for coming to collective decisions; parliamentary procedure.
2351 Interpersonal Communication (4) Communication theory in its application to informal, face-to-face interactions.
2410-20 Intercultural Forensics (1, 1, 1) Supervised work in tournament debate and individual events. Prereq: Consent of instructor.
3011 Persuasion (4) Persuasive theory: logical, sociological, and cultural dimensions.
3012 Persuasion: Projects (2) Material presented in Speech 3011 is applied to on and off-campus projects. Emphasis on analysis of the persuasive situation, application of the relevant communication principles, and understanding and evaluating the results. May be repeated for credit.
3021 Group Communication (4) Communication theory in its application to small groups, especially discussion groups; communication barriers, non-verbal communication, business communication.
3031 Non-Verbal Communication (4) Exploration of non-verbal communication from human communication perspective; origins and research, usage and coding of non-verbal behavior, research strategies and theoretical approaches.
3410-20 Intercultural Forensics (1, 1, 1) Continuation of 2410-20. Prereq: Consent of instructor.
3541 Rhetorical Theory and Criticism (4) Survey of Western rhetorical theory; contemporary approaches to criticism of public address. Recommended: 1211.
3551 Persuasive Speaking (4) Speech forms; principles and practice of speech composition.
4222 Advanced Argumentation and Debate (4) Prereq: 2331 or consent of instructor.
461 Quantitative Research Methods in Speech Communication (4) Designing experiments; planning field studies; using statistical analysis.
4551 Southern Oratory (4) Historical and critical study of public address in the South.
4550 Rhetoric of the Women's Rights Movement (4) Historical and critical study of public address in campaign for women's rights from the 1830s to present.
4571 British Oratory (4) Historical and critical study of British public address.
4582 Public Discussion of Race (4) History and criticism of racial advocacy in America.
4591 Persuasive Uses of Imaginative Literature (4) Topics in social and political uses of novels, plays, and poems.
4811 Advanced Phonetics (4) Phonetic aspects of contemporary dialects of the English language. Prereq: Consent of instructor.
4911-21 History of American Public Address (4, 4) Colonial period to 1865. 4921—1866 to present.
4999 Colloquium in Speech Communication (1) May be repeated for credit.
GRADUATE
5140 Communications Theory (3)
5210 Topics in Group and Interpersonal Communications (3)
5220 Quantitative Projects in Speech Communications (3)
5430 Studies in Tennessee Oratory (3)
5440 Organizational Communication (3)
5450 Studies in Collection and Use of Recorded Discourse (3)
5550-60-70 Studies in Persuasion (3, 3, 3)
5750-60-70 Studies in Rhetoric (3, 3, 3)
5911 Directing the Forensic Program (4)

Theatre (976)
1310 Introduction to Theatre (4) Theatre as experience; materials and techniques.
1320-30 Fundamentals of Play Production (3, 3) 1320—Play analysis. 1330—Arts of performance (acting and directing) and physical production (design and stagecraft).
2111-21 Acting (4, 4) 2111—Realism: readings, improvisations, and scene study. 2121—Extended Realism: voice and movement for the stage, basic rehearsal techniques. Prereq: Consent of instructor for 2121.
2211-21 Stagecraft (4, 4) 2211—Techniques of scenery construction. 2221—Fundamental methods of stage lighting. Crew assignments on major productions.
2321 Basic Stage Costuming (4) History and its application to the stage; basic techniques in costume construction.
3121-22 Advanced Acting (4, 4) Historical styles of acting, 3121—Renaissance, 3122—Seventeenth and eighteenth centuries. Prereq: Consent of instructor.
3151-52 Major Productions (1-4, 1-4) Supervised work on departmental productions. Available only to majors or with consent of department. Prereq: Consent of instructor.
3153 Outdoor Repertory Productions (4) Supervised work on productions at Hunter Hills Theatre. Available only to members of summer company by consent of instructor.
3221-22 Introduction to Scene Design (4, 4) Descriptive drawing as an approach to three-dimensional design; theatrical graphic standards; problems in stage design with reference to lighting, movement, scale, and style. Prereq: 2211-21 or consent of instructor. Must be taken in sequence.
3262-63 History of the American Theatre (3, 3) Development of the theater in America. 3262—From its beginnings to 1900. 3263—From 1900 to present.
3231-22 Introduction to Lighting Design (4, 4) Techniques of stage lighting; elementary theory; problems in basic lighting practice. Must be taken in sequence. Prereq: 2211-21 and consent of instructor.
3451-52 Play Directing (4, 4) Must be taken in sequence. Prereq: 2211.
4170-30-30 Film History and Theory (3, 3, 3) Analysis of cinematic forms and styles. 4170: Narration, 4180: Exposition and persuasion, 4180: Experimental forms; films and other media.

4640 Group Performance of Literature (4) Oral interpretive techniques of choral reading, readers theatre and chamber theatre.

GRADUATE
5000 Thesis
5002 Non-Thesis Graduation Completion (3-15)
5110 Introduction to Graduate Research in Speech and Theatre (3)
5120 Directed Reading and Research (3)

Statistics
See faculty list page 95.

Liberal arts students may major or minor in statistics under the supervision of the faculty of the statistics department in the College of Business Administration. The major is designed to prepare students for graduate studies in statistics or for professional work in various applications of statistical methods, including applications in the natural and social sciences, business, and industry. It is highly recommended that a student majoring in statistics have a minor in an area of application.

Major:
(a) Required courses: 27 hours to consist of Mathematics 2840-50-60; Statistics 3450-60, 4750; Computer Science 4310; Statistics 3550 or Mathematics 4650 or 4750.
(b) Statistics electives: 12 hours from upper-division statistics courses not listed in part (a) above.
(c) Electives: 12 hours to be selected from no more than two of the following groups: Computer Science 3150, 3510, 3520, 4320; Industrial Engineering 3430, 3510, 3520, 3530, 4590; Industrial Management 4610, 4620; Mathematics 3780-90, 4680-70, 4510-20-30 (or 4518-28-38), 4690-70.

Minor:
(a) Required courses: 21 hours to consist of Mathematics 2840-50-60; Statistics 3450-60; Computer Science 4310.
(b) Statistics electives: 9 hours from upper-division statistics courses not in part (a) of the minor.

University Studies (984)

(Speech and Theatre (945))

1411 Introduction to Cinema (4) Development of motion pictures as a medium; film aesthetics; analysis and criticism of selected films.
2031 Introduction to Oral Interpretation (4) Art of reading aloud; development of interpretive techniques and their application to selected passages of prose, poetry and drama.
3591 Oral Interpretation of Prose Literature (4) Prereq: 2031 or consent of instructor.
3661 Oral Interpretation of Poetry (4) Prereq: 2031 or consent of instructor.
3671 Oral Interpretation of Drama (4) Prereq: 2031 or consent of instructor.
4101 Foreign Study (1-16) See page 187.
4102 Off-Campus Study (1-16) May be repeated for major credit to maximum of 12 hrs. See page 187.
4103 Independent Study (1-16) May be repeated for major credit to maximum of 8 hrs. See page 187.

Women's Studies
See Cultural Studies.

Zoology (995)

Professors:
J. C. Daniel, Jr. (Head), Ph.D. Colorado; D. L. Bunting, II, Ph.D. Oklahoma State; J. G. Carlson, Ph.D. Pennsylvania; A. C. Cole, Emeritus, Ph.D. Ohio State; R. C. Fraser, Ph.D. Minnesota; N. Gengoian, Ph.D. Wisconsin; R. F. Greil, Ph.D. Tennessee; B. Hochman, Ph.D. California (Berkeley); J. C. Howell, Ph.D. Cornell; K. W. Jeon, Ph.D. London (England); A. W. Jones, Ph.D. Virginia; J. N. Liles, Ph.D. Ohio State; L. E. Roth, (Visiting Professor for Graduate Studies), Ph.D. Chicago; C. A. Shivers, Ph.D. Michigan State; J. T. Tanner, Ph.D. Cornell; S. R. Tipton (Emeritus), Ph.D. Duke; G. L. Whitson, Ph.D. Iowa.

Associate Professors:
H. M. Ambrose III, Ph.D. Cornell; R. M. Bagby, Ph.D. Illinois; K. D. Burnham, Ph.D. Iowa; D. A. Etnier, Ph.D. Minnesota; J. R. Kennedy, Ph.D. Iowa; M. C. Whiteside, Ph.D. Indiana.

Assistant Professors:
P. R. Coutois, Ph.D. Illinois; A. C. Echternacht, Ph.D. Kansas; D. J. Fox, Ph.D. Johns Hopkins; M. A. Handel, Ph.D. Kansas State; A. M. Jungreis, Ph.D. Minnesota; J. W. MacCabe, Ph.D. California (Davis); M. L. Pan, Ph.D. Pennsylvania; S. E. Riether, Ph.D. Wisconsin; G. L. Vaughan, Ph.D. Duke.

*All Distinction Eligible Service Professor.

UNDERGRADUATE
Prerequisites to upper-division courses: Biology 1210-20-30 is a prerequisite for all upper-division courses, with the exception of 3960 and 4960. Additional prerequisites are included with course descriptions. Courses numbered in the 4000s are no more advanced than those in the 3000s except as may be indicated by prerequisites.

Major: Consists of Biology 3110, 3120, 3130; 18 hours of upper-division zoology courses (except 3010-20-30), and 3 quarters of chemistry or biochemistry at the 2000 level or above. Of the 18 hours of upper-division zoology courses, a minimum of 6 hours must be at the 4000 level, including at least one laboratory or field course. Prerequisites to this major are: Biology 1210-20-30 or Zoology 1118-28 (Zoology 2920-30 may be substituted for Zoology 1118 or Biology 1220), and Chemistry 1110-20-30. Corequisites are Mathematics 1841-51, or 1840-50 or 1550-60 (Mathematics 1841-51 is the recommended choice); and a year sequence in physics (except 1410-20-30).

Note: Students majoring in zoology are advised to exercise care in fulfilling the Science and Mathematics Triad requirements. Mathematics 1840-50 or 1540-50-60 and Chemistry 1110-20-30 or equivalent (20 or 21 hours altogether) must be completed by all majors.

Minor: Consists of 24 hours of zoology, or zoology and biology, courses. (Zoology courses must be at the upper-division level; but 2000-level biology courses may be used, e.g., biology 2110, 2120, 2130.) Prerequisites to this minor are Biology
3220 Physiology of Reproduction (3) (Same as Animal Science 3220.)

3230 Histology (4) Study of animal tissues. Prereq: Biology 3100. 2 hrs and 2 labs.

3410 Bioethics (3) Relationship between biological discoveries and human values. Open discussion of selected dilemmas arising from new knowledge about medicine, behavior, resources, and technology.

3520 Introduction to Microbiology II: Immunology (2) (Same as Microbiology 3520.)

3920 Hormones and Endocrine Function in the Human (4) Basic course in human endocrinology with emphasis on the practical diagnosis of hormone levels for analysis of glandular function and treatment of endocrine abnormalities. 3 lectures and 1 discussion. Prereq: A course in physiology.

4007-4010-11-12-13-14-15-16-17 Minicourse in Zoology (2, 2, 2, 2, 2, 2, 2, 2) Selected, advanced topics in zoology, concentrated in time and subject. Formal listing for actual topics offered. Prereq: As posted. May be repeated for credit.

4050 Developmental Biology (4) Experimental morphogenesis, fertilization, cellular interactions, hormonal effects and related topics with examples drawn primarily from invertebrates and vertebrates. Prereq: Anatomy and Physiology 1120-20-30 or consent of instructor. 4 hrs and 3 lab.

4110-20-30 Undergraduate Research Participation (2, 2, 2) Experience in active research projects under supervision of staff members. Prereq: Junior or senior standing and prior consent of instructor.

4140 Practicum in Zoology (1-3) Participation in practical application of zoology in community institutions, government organizations and industry. Approximately 1 credit per week. Prereq: Biology 3110, 3120, 3130 and senior standing.

4190 Mammalogy (4) Classification, evolution, distribution, reproduction, populations, and behavior. 2 hrs and 2 lab or field periods. (Not open to students with credit for 3190.)

4200 Ichthyology (5) Classification, collection and identification, distribution, life histories, and economic importance of fishes. Prereq: Biology 2130, or consent of instructor. 2 hrs and 2 lab or field periods. (Not open to students with credit for former 3200.)

4210 Cell Physiology (5) Development of modern concepts in cell physiology from point of view of information and control which examines kinetics and integration of cellular activities. Prereq: Cell biology or any physiology, and organic chemistry. Biochemistry recommended. 3 lectures and 1 lab.

4240 Animal Ecology (4) Environmental factors determining distribution and numbers of animals; intra-specific relations; problems and methods. Prereq: Biology 3130. 2 hrs and 2 labs.

4250 Comparative Animal Physiology I (3) Environmental mechanisms and their relation to ability of animals to survive in diverse physical environments. Prereq: Biology 3130-30, 2 years of chemistry. 3 hrs.

4259 Comparative Animal Physiology Laboratory I (1 Coreq) Coreq: 4250. 1 hr.

4260 Comparative Animal Physiology II (3) Sensory, effector and integrative physiology. Prereq: 3200.

4268 Comparative Animal Physiology Laboratory II (1) Prereq: 3080 and consent of instructor; coreq: 4260.

4270 Advanced Immunology (2) (Same as Microbiology 4270.)

4280 Comparative Endocrinology (5) Comparative analysis of the morphology and physiology of endocrine glands in vertebrates and invertebrates. Their role and interaction in maintenance of the organism and species. Prereq: 3080 or 3920. 3 hrs and 1 (3-1) lab.

4290 Herpetology (4) Classification, distribution, life histories, collection and identification of amphibians and reptiles, primarily of local species. 2 hrs and 2 lab or field periods. (Not open to students with credit for 3210.)

4300 Ornithology (4) Morphology, physiology, behavior, reproduction, populations, evolution, field identification. 2 hrs and 2 labs or field periods. (Not open to students with credit in 3310.)

4310 Nuclear Cytology (4) Chromosome structure and behavior in mitosis and meiosis. 1 hr lecture and 3 labs. Prereq: Biology 3110.

4320 Microtechnique (4) 3320 recommended. 2 hrs and 2 labs.

4330 General Cytology (4) Study of cellular organization at the light and electron microscopic levels and the functioning of these organelles. Prereq: Biology 3120.

4369 General Genetic Laboratory (2) Mainly Drosophilia experiments designed to illustrate basic principles of inheritance. Prereq: Biology 3110. 2 labs.

4380 Organic Evolution (3) Modern concepts of animal evolution. Prereq: Biology 3110.


4410 General Parasitology (4) Morphology, taxonomy, and ecology of parasitic worms and protozoa, with emphasis on host-parasite relationship. 3 hrs and 2 labs. Prereq: Biology 3130 or consent of instructor.

4430 Medical Entomology (4) Distinctive morphological features, distribution, life histories, and control of arthropods that parasitize man or serve as vectors of human pathogens. Prereq: Agricultural Biology 3210 or Biology 3130. (Not open to students with credit for 3430.)

4450 Protozoology (4) Morphology, taxonomy, and physiology of protozoa with emphasis on fundamental biological concepts. Recommended: Biology 3120. 2 hrs and 2 labs.

4610-20 Comparative Animal Pathology (2, 2) Abnormal morphological changes and their causes. 4610—Cell and tissue changes. 4620—Organ, organ system, and organism changes. Recommended: 3080, 3220, 3300.

4619-29 Comparative Animal Pathology (2, 2) 4619—Cell and tissue changes. 4629—Organ, organ system, and organism changes. Coreq: 4610-20.

4660-70 Limnology (4, 4) Effects of origin, age and location on fish populations and their physical and chemical nature. 4660—Lake communities, productivity and pollution. Prereq: Chemistry 1110-20; 3130, 3140, 3150, 3160, 3170 and Physics 1210-20-30 recommended. 2 hrs and 2 labs (4660); 3 hrs and 1 lab (4670). Must be taken in sequence, except with consent of instructor. Not open to students with credit in 3650 or 4650.

4700 Arachnology (4) Biology of spiders, mites, scorpions, and relatives. Prereq: 3110 or 3150. 2 hrs and 2 labs.

4720 Comparative Animal Behavior (4) Methods and principles. (Same as Psychology 4720.)

4729 Comparative Animal Behavior Laboratory (4) Laboratory and field studies. Coreq: 4720 (Same as Psychology 4729.)

4810-20-30 Insect Morphology and Taxonomy (4, 4, 4) 4810—General morphology, general and specialized forms. 4820—Taxonomy of major orders. 4830—Taxonomy of minor orders and immature forms. Prereq for 4820-30: 3110, or consent of instructor. 2 hrs and 2 labs.

4940 Physiology of Exercise (4) Functions of body in muscular work; physiological aspects of fatigue, training, and physical fitness. Prereq: 2920-30 or 3080. 3 hrs and 1 lab. (Not open to students with credit for 3940.)
GRADUATE
5000 Thesis
5080 Graduate Research Participation (3)
5110-20-30 Special Problems (2, 2, 2)
5150 Zoological Bibliography (1)
5180 Fresh-Water Invertebrates (4)
5210 Plant Parasitic Nematodes (4)
5220-30-40 Advanced Vertebrate Physiology (4, 4, 4)
5260 Physiology of Hormones (4)
5270 Advanced Neuromuscular Physiology (5)
5280 Insect Physiology (4)
5290 Quaternary Problems (4)
5310-20 Seminar in Teaching of College Zoology (2, 2)
5350 Biometry (3)
5410 Advanced Parasitology (4)
5430 Advanced Medical Entomology (3)
5550 Advanced Ornithology (4)
5570 Animal Populations (3)
5610-20 Foundations of Radiation Biology (4, 4)
5630 Methods of Experimentation with Laboratory Mammals (3)
5680 Physiology of Development (3)
5670 Cellular Immunology (4)
5760 General Vertebrate Neuroanatomy (3)
5780 Radiation Physiology (4)
5790 Transport of Ions Across Epithelia (4)
5820 Methods of Taxonomy (4)
5840 Aquatic Insects (4)
5880 Geographic Distribution of Animals (4)
5870 Insect Synecology (4)
6000 Doctoral Research and Dissertation
6110 Seminar in Cellular Biology (2)
6140 Seminar in Immunobiology (2)
6210 Seminar in Physiology (2)
6310 Seminar in Cytology (2)
6350 Seminar in Developmental Biology (2)
6410 Seminar in Parasitology (2)
6510 Seminar in Genetics (2)
6610 Seminar in Ornithology (2)
6650 Seminar in Aquatic Biology (2)
6710 Seminar in Ecology (2)
6810 Seminar in Entomology (2)
6910 Seminar in Radiation Biology (2)
College of Nursing

Sylvia E. Hart, Dean
Barbara M. Reid, Associate Dean
Dorothy B. Stephens, Assistant Dean

The College of Nursing at The University of Tennessee, Knoxville, was established in July, 1971, in response to a long-recognized and well-established need for nurses prepared at the collegiate level and as a part of a statewide comprehensive plan approved for The University of Tennessee system by its Board of Trustees and for the state by the Tennessee Higher Education Commission.

The undergraduate program offered by the College of Nursing is fully accredited by the National League for Nursing. It combines the unique resources of the University with those of several cooperating health agencies in a manner which enables both faculty and students to become aware of and responsive to an evolving dynamic culture, rapid scientific and technological advances and changing concepts of health, of human beings and of society.

The baccalaureate nursing program has as its central focus and frame of reference human beings, society and health. It is based on the belief that nursing has equal concern for the prevention of illness, the promotion of health, and the care of the sick.

General education courses, Nursing courses and electives are organized in a manner designed to promote creative thinking and innovative approaches at both the theoretical and practical levels. General education courses are incorporated into the nursing curriculum at both lower- and upper-division levels. Certain aspects of general education, primarily in the natural and behavioral sciences, are prerequisite to any courses in the nursing major. Other supporting courses are taken concurrently with Nursing courses.

Since nursing is a humanistic science and an art, Nursing courses provide theoretical content which draws heavily from the theories and principles of related sciences and disciplines. This content is organized, integrated and synthesized in a manner which promotes a comprehensive understanding of the life process from conception through senescence. In nursing practice, this knowledge and understanding is combined with intellectual judgments, practical skills and human compassion. Opportunities to develop this kind of expertise in a variety of settings and situations are integral components of all Nursing courses.

A broad base of general education, a thorough study of human behavior, emphasis on health maintenance and promotion, and a strong family and community orientation are essential components of baccalaureate education in nursing. It is these characteristics which differentiate it from other types of basic nursing education.

Because of the expanding role of the professional nurse, the increasing complexity of health care delivery and the ever changing health needs of society, the goals of the program are to prepare graduates who are able to:
1. Assume beginning leadership positions in nursing in a variety of settings.
2. Work collaboratively with other health professionals.
3. Function as socially conscious and contributing citizens.
4. Pursue advanced education on either a formal or an informal basis.

GENERAL REQUIREMENTS:
In order to obtain a Bachelor of Science in Nursing Degree, 12 quarters of full-time study or their equivalent are required. Students may enroll in Nursing courses following successful completion of 90 quarter hour credits in prescribed general education courses. These courses may be taken at The University of Tennessee or at any accredited junior or senior college or community college. One hundred eighty-nine quarter hour credits must be successfully completed in order to be awarded the Bachelor of Science in Nursing Degree.

NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the College of Nursing.

GRADING POLICY:
The Satisfactory-No Credit option is not permitted for any Nursing course.

The minimum grade requirement for all courses in the nursing curriculum, other than electives, is a C; a course in which a grade of D or F is achieved may be repeated once. If a grade of D or F is achieved on the second attempt, the student will be required to withdraw from the program.

Any student who achieves a grade of D or F for more than two clinical Nursing courses will be required to withdraw from the program even if previous courses in which the grades of D or F were achieved have been repeated and a grade of C or better has removed the D or F. Clinical courses are: 3010, 3150, 3210, 3330, 4220, 4250, 4420, 4560, 4760.

If a student receives an Incomplete (I) in a required Nursing course the Incomplete must be removed before the student may enroll in any other required Nursing courses.

If a student's clinical laboratory performance for any Nursing course is deemed unsatisfactory, the grade for that course will be an F regardless of any grades related to the theoretical component of the course. If the unsatisfactory clinical performance is characterized by dangerous, inappropriate or irresponsible behavior, behavior which actually or potentially places the patient's or family's welfare in jeopardy, the student will be required to withdraw from the program.

ADMISSION AND PROGRESSION PROCEDURES
1) Nursing students must achieve a course grade of C or better in all required lower-division courses, exclusive of electives.
2) When the student has completed all required lower-division courses, having
met the above stated grade requirement, a petition for admission to upper-division courses must be made to the Progression Committee in the College of Nursing. The Progression Committee will review the record of each student who has submitted a petition in order to verify that the student has successfully completed all lower-division requirements. The College of Nursing will then notify, in writing, those students who are eligible to begin upper-division Nursing courses.

Undergraduate admission to upper-division courses must be submitted to the Progression Committee during the spring quarter which immediately precedes the fall quarter in which they expect to enter the upper division. The deadline for submitting a petition is the drop deadline date for each spring quarter.

3) Students who expect to enroll in The University of Tennessee, Knoxville College of Nursing, once they have completed lower-division requirements elsewhere, should contact the Associate Dean for Undergraduate Nursing (LTH) of the College of Nursing as soon as they begin their lower-division courses. Transfer students who believe they have met lower-division requirements should submit a petition for upper-division courses as soon as they are admitted to the University. If the number of students qualified to begin upper-division Nursing courses exceeds the number that can be accommodated during the following fall quarter, the cumulative grade point average will be utilized to select those students who may enroll in upper-division Nursing courses. Qualified students not selected are eligible to reapply for progress during the next review period.

4) Transfer students who have been accepted by the University must complete all course requirements identified in the College of Nursing curriculum. Transcripts will be evaluated on an individual basis. Students are free to take proficiency or challenge examinations in order to determine whether it is necessary for them to enroll in a course or whether they have met those course requirements in another way.

5) Registered nurses seeking a baccalaureate degree in nursing must also apply for admission to the University and must be accepted on the same basis as others. They must complete all prerequisites and all required courses identified in the baccalaureate curriculum. They may also take challenge or proficiency examinations in required courses whenever these are appropriate and available.

Registered nurses who have completed Chemistry 1410-20 with a grade of C or better, within ten years prior to their admission to the College of Nursing, have satisfied the chemistry requirement.

For registered nurses the following courses may be substituted for those required in the nursing curriculum if a grade of C or better was achieved and if the courses were taken within ten years prior to admission to the College of Nursing: Microbiology 2110 for Microbiology 2610; Nutrition 1230 for Nutrition 3020.

Registered nurses must successfully complete Nursing 4440, 4660, 4670, 4760, and 4860. They may challenge up to a maximum of 40 hours of other required clinical Nursing courses and they will receive credit for Nursing 3110 (Pharmacology II) if they take or have taken the NLN Pharmacology Achievement Test and achieve a score at or above the 50th percentile.

COURSE LOAD

The maximum credit hours per quarter allowed for any student without special permission is 18.

BACHELOR OF SCIENCE IN NURSING CURRICULUM

The following curriculum leads to the Bachelor of Science in Nursing degree. A minimum of 189 quarter hours of credit is required.

**Freshman**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 1510-20</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 1510-20-30</td>
<td>4</td>
</tr>
<tr>
<td>Psychology 1510</td>
<td>4</td>
</tr>
<tr>
<td>Math 1540</td>
<td>4</td>
</tr>
<tr>
<td>Sociology electives</td>
<td>4</td>
</tr>
<tr>
<td>'Electives'</td>
<td>4</td>
</tr>
</tbody>
</table>

**Sophomore**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoology 2920-30</td>
<td>4</td>
</tr>
<tr>
<td>Microbiology 2910-19</td>
<td>4</td>
</tr>
<tr>
<td>Anthropology electives</td>
<td>4</td>
</tr>
<tr>
<td>Biology 3110</td>
<td>4</td>
</tr>
<tr>
<td>CFS 2110</td>
<td>3</td>
</tr>
<tr>
<td>Nutrition 3020</td>
<td>3</td>
</tr>
<tr>
<td>'Electives'</td>
<td>5</td>
</tr>
</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 3010, 3110, 3410</td>
<td>16</td>
</tr>
<tr>
<td>Nursing 3210-20</td>
<td>8</td>
</tr>
<tr>
<td>Psychology 3560, 3510</td>
<td>4</td>
</tr>
<tr>
<td>'Electives'</td>
<td>4</td>
</tr>
<tr>
<td>Philosophy 3611</td>
<td>3</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 4110</td>
<td>10</td>
</tr>
<tr>
<td>Nursing 4230, 4560</td>
<td>16</td>
</tr>
<tr>
<td>Nursing 4440, 4660, 4760, 4860</td>
<td>15</td>
</tr>
<tr>
<td>'Electives'</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL:** 189 hours

At least 14 of the elective hours must be in humanities courses.

Nursing (720)

**Professor:** S.E. Hart (Dean), Ph.D. New York.

**Associate Professors:** D.H. Goodfellow, M.S.N. SUNY (Buffalo); K.J. Kant, Ph.D. Illinois; J.N. Mzingo, M.S.N. Emory; B.M. Reid, M.S.N. Columbia.

**Assistant Professors:** M.T. Boynton, M.S.N. Emory; K.P. Conlon, M.S.N. SUNY (Buffalo); C.H. Davidson, M.S.N. Florida; M.W. Davis, M.S.N. Emory; R.B. Dosssett, M.S.N. Tennessee; G.A. Evans, B.S.N. East Tennessee State; M.M. Fenske, M.N. Florida; N.R. Helm, M.S.N. Medical College of Georgia; V.D. Hendricks, M.S.W. Tennessee; M.L. Jolly, M.S. Columbia; M.F. Kollar, M.N. Vanderbilt; V.M. Kramer, M.S. Colorado; B.W. Lowe, M.S. Tennessee; P.R. MacMorran, M.S.N. Vanderbilt; D.R. Odle, M.S.N. Emory; H.E. Overton, M.P.H. Tennessee; M.A. Pierce, M.P.H. Tennessee; E.J. Rice, M.S.N. Emory; B.J. Riley, M.S. Ohio State; D.H. Stoffner, M.S. Tennessee; S.L. Supp, M.S.N. Pennsylvania; J.W. Wagner, M.S.N. Yale.

**Instructors:** P.G. Droppeleman, M.S. Tennessee; N.B. Helms, B.S.N. Mercy College; S.M. Hodson, M.S.N. Tennessee.

Lecturer: D.B. Stephens, M.S. Tennessee.

2710 Family Health Promotion (4) (Same as Nutrition 2710)

3010 Nursing Process (8) Theory and documented laboratory experiences necessary for beginning development of basic professional nursing skills; history of development of traditional and expanding professional nursing role; philosophy of health and nursing; the health-illness continuum; determinants and indices of health and illness. 5 lectures, 3 labs. Preq: Lower-division courses with grade of C or better; coreq: 3110, 3410. For nursing majors only.


3210 Acute Care Nursing I (8) Content and clinical laboratory experience related to nursing care of patients whose health problems require hospitalization. Physiological and behavioral deviations which underlie or are associated with more common, relatively uncomplicated acute illnesses of children and adults are stressed. Clinical laboratory experiences are provided to enable students to apply knowledge and skill to the care of patients in acute care settings as well as to the provision of continuity of care for these conditions. 5 hrs. 3 labs. Preq: 3010, 3110, 3410. For nursing majors only.

3220 Acute Care Nursing II (10) Analysis of physiological and behavioral deviations which underlie or are associated with more complex and critical illnesses. Laboratory experiences provide opportunities for students to develop knowledge and skill to care of acutely ill patients as well as to provision of continuity of care for these patients and their families. 5 hrs. 5 labs. Preq: 3210. For nursing majors only.

3410 Children and Health (4) Theory and laboratory experiences related to systematic, comprehensive assessment of children and adolescents at various levels of health-illness. Emphasis on normal growth and development, interactions of relationships with parents, children and health workers, responses to illness, and hospitalization. Coreq: 3010, 3110.

3710 Individual and Family Health Problems (4) (Same as Nutrition 3710)

4110 Family Health Nursing (10) Nursing needs of families in health and in crisis. Emphasis on provision of comprehensive care to families in the child bearing and child rearing phases of family development. Application of theories of human growth and development, family dynamics, and crisis intervention. Laboratory experience to develop skills necessary to provide quality nursing care to families experiencing normal pregnancy and childbirth or health problems such as complications of childbirth, congenital anomalies and other high-risk birth, disturbed parent-child relationships, and gynecologic disturbances. 5 hrs, 5 labs. Preq: All 3000-level Nursing courses or their equivalent. For nursing majors only.

4230 Psychosocial and Long Term Nursing (10) Nursing needs of clients whose primary health problems are of a developmental, behavioral or long term nature requiring knowledge in health promotion and rehabilitation. Laboratory experiences in a variety of psychiatic, extended care and out-patient clinics. 5 lectures, 5 labs. Preq: All 3000-level Nursing courses or their equivalent. For nursing majors only.

4330 Nursing in the Specialties (2-4) Application of specialized knowledge and skills in various areas of nursing, and nursing sciences to solution of nursing problems. Includes exploration of nursing intervention needed to meet the physiological and/or behavioral deviations. Specific topics to be determined by faculty and students.
May be repeated with consent of instructor. Maximum credit 12 hrs. Prereq: Consent of instructor.

4350 Oncology Nursing (3) In-depth exploration of the cancer problem, medical and nursing intervention. Relates cellular kinetics to theories of carcinogenesis and metastasis, and examines treatment modalities and nursing intervention employed in all phases of the disease. Interdisciplinary approach analyzed. Prereq: Nursing 4230, R. N. status or consent of instructor.

4420 Long Term Nursing (6) Nursing needs of patients with long term congenital, developmental, or other chronic health problems. Focus on development of knowledge and skills needed to achieve total patient and family involvement in rehabilitative process. 3 hrs, 3 labs. Prereq: All 3000-level Nursing courses or their equivalent and Nursing 4220 and 4250. For nursing majors only.

4440 Scientific Inquiry in Nursing (3) Introduction to language of research, types of research design, methodological approaches, sampling, data analysis and significance of findings. Evaluation of existing and ongoing nursing research studies. Prereq: 10 hrs of 4000-level Nursing courses. For nursing majors only.

4560 Nursing in the Community (6) Content and laboratory experiences with focus on health patterns, needs and problems of the community. Particular emphasis on the health assessment of small and large groups, comparison of variations in health needs and patterns within and between communities, involvement in preventive and promotive community health programs at the national, state and local levels. 3 hrs, 3 labs. Prereq: All 3000-level Nursing courses. For nursing majors only.

4660 Professional Nursing Seminar (3) Critical examination of legislative, legal, ethical, social and educational issues and trends which have immediate or long-range implications for professional nursing practice. Prereq: 10 hrs of 4000-level Nursing courses. For nursing majors only.

4760 Management of Health Care (6) Theories of administration, supervision, organization, management and leadership as they apply to the delivery of health care services. Emphasis on role of the nurse in health care management and delivery. Laboratory experiences to develop skills necessary to function as an effective member of the health team. 2 hrs, 1 lab. Prereq: 10 hrs of 4000-level Nursing courses. For nursing majors only.

4770 Comprehensive Health Assessment (4) Principles and theories underlying health screening of children and adults, including health history, interviewing and physical examination. Practicum included; 2 hrs and 2 labs. (4 hrs each). Prereq: All 3000-level Nursing courses or their equivalent or consent of instructor.

4880 Independent Study in Nursing (3) In-depth study of some aspect of nursing in which student has developed special interest. Study is pursued independently utilizing guidelines developed by the student with appropriate faculty guidance, supervision and evaluation. May be repeated with consent of instructor. Maximum credit 9 hrs. Prereq: 10 hrs of 4000-level Nursing courses. For nursing majors only.

GRADUATE

5010 Applied and Pathophysiology (4)
5020 Current Health Issues (2)
5110 Geriatrics and Gerontology (5)
5120 The Acutely Ill Adult I (6)
5130 The Acutely Ill Adult II (6)
5140 The Acutely Ill Child I (6)
5150 The Acutely Ill Child II (6)
5160 Emergency and Intensive Care Nursing (3)
5170 Readings in Applied Physiology (5)

5210 Nursing Research Methods (4)
5220 Principles of Health Maintenance (3)
5240 Management of Common Health Problems (4)
5250 Chronic Health Problems (4)
5260 Advanced Family Health Care (4)
5310 Secondary Care Nursing Field Work I (9)
5320 Secondary Care Nursing Field Work II (9)
5330 Secondary Care Nursing Seminar I (2)
5340 Secondary Care Nursing Seminar II (2)
5410 Principles of Community Mental Health I (3)
5420 Principles of Community Mental Health II (3)
5430 The Adult and Mental Health (3)
5550 Nurse Practitioner Field Work I (9)
5560 Nurse Practitioner Field Work II (9)
5630 Teaching Practicum (5)
5650 Nurse Practitioner Seminar I (2)
5660 Nurse Practitioner Seminar II (2)
5730 Management Practicum (5)
Independent Departments

Department of Air Force Aerospace Studies

Air Force ROTC Program

Professor of Air Force Aerospace Studies: Colonel J.E. Hiteshew (Head), M.A. East Carolina.

Assistant Professors:

GENERAL INFORMATION

Any student may enroll voluntarily in Air Force ROTC at the same time as registration for other undergraduate courses. There is no active duty obligation resulting from enrollment in the first two years of AFROTC classes unless the student is on AFROTC scholarship.

AIR FORCE ROTC SCHOLARSHIP PROGRAM

Scholarships are available to qualified students who enroll in the four-year cadet program. These scholarships cover full tuition, all fees, and reimbursement for all required books. In addition, cadets are paid $100.00 per month during the entire period of the scholarship. Scholarships are awarded to cadets on a competitive basis for two through four years at all levels of the Air Force ROTC program, including college freshmen, sophomores, and juniors. High school seniors should contact the Professor of Air Force Aerospace Studies on campus early in the academic year.

PURPOSE OF THE AIR FORCE ROTC

The Air Force ROTC Program is designed to qualify for commissions those college men and women who desire to serve in the United States Air Force. The program provides education that will develop skills and attitudes vital to the professional Air Force officer. Upon graduation from the University and the Department of Air Force Aerospace Studies, students are commissioned second lieutenants in the United States Air Force Reserve. Opportunities exist throughout the initial period of active duty for the graduate to receive a Regular Commission in the Air Force and to pursue commissioned service as a career.

UNIVERSITY CREDITS

The following credits are granted for Air Force Aerospace Studies work and are credited toward a degree in some colleges. See respective PAS for further information.

Aerospace Studies 1000 series (Freshman) — 6 quarter hours per year
Aerospace Studies 2000 series (Sophomore) — 6 quarter hours per year
Field Training Academics ( Sophomore) — 6 quarter hours
Aerospace Studies 3000 series (Junior) — 9 quarter hours per year
Flight Instruction Ground School — 3 quarter hours
Aerospace Studies 4000 series (Senior) — 9 quarter hours per year.

COURSES AVAILABLE

The first two years (freshman and sophomore) of the Air Force curriculum are known as the General Military Course. The last two years of the curriculum (junior and senior) are known as the Professional Officer Course.

Flight training is offered free of charge to qualified pilot candidates who are senior AFROTC cadets. The cadet receives twenty-five hours of flight instruction. University credit is granted for the Ground School portion of the Flight Instruction Program.

Field Training is offered at Air Force bases across the country. Normally, this is the cadet's first extended exposure to an Air Force environment. It is here that the cadet receives junior officer and leadership development training. Also at this time, the Air Force has an opportunity to personally evaluate each cadet as a potential member of its officer corps.

Four-year ROTC members are required to complete a four-week session and two-year applicants attend a six-week session, adding two intensive weeks of academics comparable to the academics taught in Aerospace Studies 1000 and 2000 courses. Credit is granted for this two-week period, provided the student registers for credit, attends five one-hour pretraining sessions before attending Field Training, and attends two one-hour seminars conducted during the fall quarter following completion of Field Training.

ELIGIBILITY FOR THE PROFESSIONAL OFFICER COURSE (FOR PURPOSE OF EARNING A COMMISSION)

(Junior and Senior Years)

All cadets enrolled in the Professional Officer Course (junior and senior years) of the Air Force ROTC (for purpose of earning a commission) must:

a. Have either completed the General Military Course (freshman and sophomore years), or the off-campus, six-week Field Training, or have the required amount of prior military service.

b. Have two academic years of college remaining (either graduate or undergraduate).

c. Execute a written agreement with the government to complete the program, contingent upon remaining qualified and in school, and attend the off-campus, four-week Field Training between the sophomore and junior years and accept an Air Force Reserve Commission, if tendered.

d. Be selected by the Professor of Air Force Aerospace Studies and the President of the University or the duly authorized representative.

e. Meet certain specified age, mental, and physical requirements.

EXEMPTIONS FOR PREVIOUS ROTC, PREVIOUS ACTIVE MILITARY SERVICE, OR CERTAIN CIVIL AIR PATROL AWARDS

A student may request exemption from portions of the General Military Course on the following bases: (1) previous honorable active military service in any branch of the Armed Services; (2) at least
two years of high school ROTC; or (3) holding certain awards in the Civil Air Patrol. Exemption will be on an individual basis, and no University credit is given for those hours or portions of the General Military Course received.

PAY AND ENTITLEMENTS

All cadets enrolled in AFROTC are furnished textbooks and uniforms by the government through the Air Force Material Control Clerk, University of Tennessee. Enrollees are required to deposit $35 as security to the University against loss or damage of uniforms or equipment for which the University is accountable to the government. At the completion of AFROTC, or when the student withdraws from the program, with the exception of a nominal fee covering the cost of shoes the deposit is returned to the student provided proper clearance for uniforms and equipment is obtained. Professional Officer Course cadets receive a subsistence allowance of $100 per month, not to exceed 20 months. In addition they are paid mileage to and from Field Training, plus pay commensurate with active duty rates. A four-week Field Training is normally required between the sophomore and junior years for those students enrolled in the four-year program. A six-week camp is required for two-year applicants.

ACTIVE DUTY COMMITMENTS

Commissioned graduates going into non-flying duties will be required to serve four years of active duty. Those graduates going into flying assignments will be required to serve five years active duty after completion of flight training.

CONDUCT, ORGANIZATION, AND ADMINISTRATION

Air Force Regulations provide for the following: "For the effective conduct of instruction at civilian colleges and universities, subject to coordination with general institutional regulations and arrangements and the approval of the head of the institution, the Professor of Air Force Aerospace Studies will be empowered to draft the rules and orders, relating to the organization, control, and training of the members of the AFROTC and the appointment, promotion, and reduction of Cadet Officers and Cadet Non-Commissioned Officers."

The Department of Air Force Aerospace Studies sponsors the following organizations:

2. Angel Flight National auxiliary of the Angel Flight Society. Composed of selected coeds who are interested in enhancing the esprit, morale, and appearance of the Air Force ROTC Cadet Corps.
3. Sabre Team. Provides interested cadets an opportunity to serve as honor guard for all official Cadet Corps functions.
4. Air Commando Flight. Provides opportunity for additional military training for those cadets volunteering to participate.

Curriculum

Air Force Aerospace Studies (094)

1210-20-30 Air Force Aerospace Studies (2, 2, 2) Surveys the missions, functions, and organization of the Air Force. Emphasis on the Air Force Commands, the environment in which the Air Force operates and how the Air Force works with the Army and Navy, providing foundation upon which study of the Armed Forces and the Air Force can build. 1 hr and 1 hr lab (Leadership Laboratory).

2210-20-30 Air Force Aerospace Studies (2, 2, 2) Introduction to study of air power. Course is developed from a historical perspective starting before the Wright Brothers and continuing into the 1970s. 1 hr and 1 hr lab (Leadership Laboratory).

2240 Field Training (Academic Program) (1-6) Role of United States military forces in contemporary world, with particular attention to United States Air Force, its organization and mission, various component forces of U.S. military power, organization of America's defense structure, policies of major powers, and elements and processes in making of defense policy. Condiments Field Training bases in the country. Approximately 60 class hrs.

3210-20-30 Air Force Aerospace Studies (3, 3, 3) Air Force leadership at junior officer level, including foreign, all professional, and legal aspects, with attention to communicative skills. Military management functions, principles, and techniques are covered. 3 hrs and lab (Leadership Laboratory).

3240 Flight Instruction Ground School (Private Pilot) (3) Part of Air Force ROTC Flight Instruction Program and provides students to operate safely as a pilot. A secondary objective is to enable student to pass FAA private pilot's written examination. Thirty quarter hrs of classroom instruction. Seven subject areas covered are: Preflight Facts—Acquaints students with factors affecting flight; Meteorology—Involves student in learning weather phenomena affecting flight, weather information, and services available to pilots; Flight Computer; Navigation and Radio Navigation—Covers the requirements to plan a cross-country, use of appropriate maps, charts, logs and regulations that must be known to operate safely and legally.

3250 Flight Instruction Ground School (Instructor) (3) Consists of audio-visual aids and discussion covering Federal Aviation Agency (FAA) Instrument Flight Rules, Exam-O-Grants, Advanced Meteorology, planning and use of instrument charts, and general instruction of instrument flying techniques and applications. Emphasizes safety in operation of small aircraft and provides necessary instruction for the FAA written examination for the instrument pilot's license. Prereq. 3240 or an FAA Private license.

3255 Commercial Pilot (3) Audio and visual presentation, supplemented with discussion, of following topics: Advanced Flight Computer; Advanced Meteorology; Advanced VFR Navigation and Radio; Commercial Pilot Federal Aviation Regulations and Exams; Oxygen, Altitude, and the Body; Weight and Balance; and Oxygen Systems. Course provides necessary instruction to take Federal Aviation Agency (FAA) written examination for Commercial Pilot's License.

4210-20-30 Air Force Aerospace Studies (3, 3, 3) Role and functions of professional officer in a democratic society; socialization process, public attitudes, and value orientations associated with professional military service; requisites for maintaining national security forces; decision-making processes of Department of Defense; political, economic, and social constraints affecting formulation of U.S. defense policy; impact of technological and international developments upon strategic perspectives, and development of communicative skills. 3 hrs and 1 lab (Leadership Laboratory).

Department of Military Science

Army Reserve Officers' Training Corps

Professor of Military Science: Colonel Daniel H. Bauer (Head), M.A. Illinois.

UNIVERSITY ROTC PROGRAM

The University of Tennessee offers a voluntary ROTC program leading to appointment as an officer in the United States Army.

PURPOSE AND OBJECTIVE

The purpose is to provide professional education which will prepare students for appointment as commissioned officers in the Regular Army or the United States Army Reserve.

Objectives of the program are to:

1. Provide students with an understanding of the fundamental concepts and principles of military art and science; to develop in them a basic understanding of associated professional knowledge, a strong sense of personal integrity, honor, and individual responsibility, and an appreciation of the requirements of national security; and to establish a sound basis for the students' future professional development.

2. Develop young men and women for training from all geographical, economic, and social strata of our society as well as from the many educational disciplines required for the modern Army. The program insures that men and women educated in a liberal and broad spectrum of American institutions of higher learning are commissioned annually into the officer corps.

ARMY ROTC SCHOLARSHIP PROGRAM

The Army ROTC scholarship program offers financial assistance to qualified young men and women in the Army ROTC program who are interested in the Army as a career. Each scholarship provides for free tuition, textbooks, and laboratory fees in addition to a subsistence allowance of $100 per month for the period that the scholarship is in effect. Scholarships may be awarded for either one, two, three or four years. High school seniors should contact their guidance counselors early in November or December of their senior year to apply for the four-year scholarship. One-, two-, and three-year scholarship applicants should contact the Professor of Military Science for further information.

Certain other privately financed scholarships and grants are available to ROTC cadets.

UNIVERSITY CREDIT

The University of Tennessee grants the following credit for military science:

Military Science I—3 quarter hours (MS 1110)
Military Science II—6 quarter hours (MS 2110-20)
Military Science III—12 quarter hours (MS 3110-20-30)
Military Science IV—12 quarter hours (MS 4110-20-30)
Army ROTC Summer Studies—6 quarter hours (MS 4000)

BASIC ACADEMIC REQUIREMENTS FOR APPOINTMENT AS SECOND LIEUTENANT

Academic prerequisites for appointment as Second Lieutenant in the United States Army through the ROTC Program at The University of Tennessee, Knoxville, include the following minimum requirements. The sequence and selection of courses not specified will be determined by the adviser in concert with the head of the Department of Military Science. In cases where a student is pursuing a discipline which is narrowly restricted (excluding Military Science Core Curriculum) with few elective options, any conflict in scheduling or course selection will be resolved in favor of academic degree requirements.

MILITARY SCIENCE CORE CURRICULUM

<table>
<thead>
<tr>
<th>Basic Military Studies</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS 1110 Fundamentals of Military Organization and Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MS 2110-20 Applied Leadership and Management</td>
<td>3, 3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advanced Military Studies</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS 3110-20-30 Advanced Leadership and Management</td>
<td>4, 4, 4</td>
<td>12</td>
</tr>
<tr>
<td>MS 4000 Army ROTC Summer Studies</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>MS 4110-20-30 Seminar in Leadership and Management</td>
<td>4, 4, 4</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL: 39 hours</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Substitution

The following courses may be substituted for military courses with permission of adviser and ROTC department head:

- Industrial Management 4460, History 4380 for MS 4130.
- Certain other upper-division courses may be substituted with permission of PMS.

OTHER ACADEMIC COURSES

Since each degree field at UT is designed to provide a well-balanced education in diversified fields, no specific hour requirement is levied for courses outside the Military Science Core Curriculum.

Freshman and Sophomore Years

The University requirements for subjects in the field of communications (English grammar, composition, speech, etc.); physical, natural and biological sciences; humanities; social sciences; and applied sciences (engineering, mathematics, computer science, etc.) will satisfy the Army's desire for its officers to have a well-rounded liberal education.

Junior and Senior Years

The cadet is expected to pursue at least one quarter of upper-division work in each of two different divisional course areas (other than major) as follows:

- Mathematics, computer sciences, natural sciences, anthropology, economics, political science and international relations, history, psychology, sociology, foreign languages, management, urban studies, mass communications, or accounting.

Students seeking an Army commission are permitted to substitute military studies for non-technical electives, social studies, and/or humanities to satisfy degree requirements. This substitution is at the sole discretion of the deans of the separate schools and colleges.

ENROLLMENT AND CONTINUANCE REQUIREMENT

The general requirements for enrollment and continuance in the ROTC program are:

1. **Basic Course—MS I and II**
   - a. Be a citizen of the United States.
   - b. Be physically qualified.
   - c. Be not less than fourteen years of age and have not reached twenty-three years of age at the time of enrollment.

2. **Advanced Course—MS III and IV**
   - All cadets applying for enrollment in the Advanced Course Army ROTC who seek a Commission must:
     - a. Have either completed the Basic Course, or an off-campus six-week Field Training Course, or have the required amount of prior military service.
     - b. Have two academic years of college remaining (either graduate or undergraduate).
     - c. Be enrolled as a full-time student, either at UT or at a nearby institution in a cooperative program.
     - d. Meet military screening and physical requirements.

Regularly enrolled students who meet the academic prerequisites and do not desire a commission may take individual courses as electives with the permission of the department head and academic adviser.

ADVANCED MILITARY STANDING FOR MILITARY TRAINING

On the basis of previous honorable active military service in any branch of the Armed Services, or participation in the Junior ROTC Program at Secondary Schools, a student may request exemption from portions of the Basic Course. Exemption allowed will be determined by the academic adviser.

PROFICIENCY EXAMINATIONS

Students may apply for proficiency examinations in Military Science 1110, 2110 and 2120. These examinations are offered mainly for graduates of the 6 weeks of intensive training at the Basic Camp at Fort Knox, Kentucky. A student applying for a proficiency examination should present evidence that he or she has developed those abilities and attitudes expected of a student who has taken the course involved. The application must be approved by the department head.

EMOLUMENTS

All students enrolled in the Army ROTC program are furnished texts by the Army through the Military Property Officer at UT. Students enrolled in the ROTC Advanced Course receive uniforms and equipment plus an allowance of $100 per month during the academic year. While attending the ROTC summer studies, each cadet receives approximately $480 plus meals, clothing, and requisite special equipment.

COURSES AVAILABLE

The curriculum of the Army ROTC program is designed to qualify the cadet for appointment as an officer. Selection for appointment to the various branches of the Army is based upon:

- a. The personal interests of the cadet.
- b. The major course of study.
- c. Academic accomplishment.
- d. Leadership potential.
- e. The needs of the Service.

Under this system a cadet may be commissioned in any branch for which he or she is qualified and in which a need for officers exists. After graduation and commissioning, the officer will attend a service school for further specialized military training which will qualify him or her for the branch to which he or she is assigned.

Curriculum

Military Science (688)

1110 Fundamentals of Leadership and Management (3) Development of American military institutions, policies, experiences and traditions in peace and war from colonial times to present. Historical examples of effective and ineffective leadership and application of principles of war. Practical exercise in leadership development.


2120 Applied Leadership and Management (3) Contemporary world scene and impact on the military. Planning, preparation, and presentation of briefings and continued development of leadership skills through practical exercise. Discussion of ROTC Advanced Course. Prerequisite: 2110.

3110-20-30 Advanced Leadership and Management (4, 4, 4) Applied leadership to include operation of the military team, electronic communications, land navigation, small unit leadership and internal defense/development. Two field trips. Leadership Laboratory: Philosophy of organization and operation of military in tactical and administrative roles. Prerequisites: 2110-30.

4000 Army ROTC Summer Camp (6) Six-week encampment (forty-four hours of instruction are scheduled each week) is a prerequisite to commissioning and normally scheduled upon completion of 3130. Camp is conducted at an Army installation with instruction presented by ROTC faculty from colleges and universities. Course of instruction is an extension of leadership and management curricula. Prerequisite: 3130.

4110 Theory and Dynamics of the Military Team (4) Organization and management of division military team, development and function of military staff, and coordination and planning of the military team. Leadership Laboratory: Staff and Tactical Planning, presentation of briefings, preparation, execution and supervision of plans. Prerequisite: 4000 or consent of instructor.

4120-30 Seminar in Leadership and Management (4, 4) Analysis of selected leadership and management problems involved in unit administration, military justice, Army Readiness Program, and officer assisted relationships. Leadership Laboratory: Prerequisite: 4110.
Division of Continuing Education

Vice President for Continuing Education:
Charles H. Weaver, Ph.D. Wisconsin
Assistant Vice President for Continuing Education:
C.W. Hartsell, Ed.D. Tennessee

The Division of Continuing Education is responsible for the operation of all statewide continuing education programs, both on campus and off campus. The Division is concerned with policies and programs required for effective offering of educational opportunities, including attainment of college-level degrees, to qualified students of all ages and walks of life who pursue knowledge outside the traditional on-campus setting. All continuing education programs of the University are coordinated through the Division.

Information concerning continuing education programs of the various campuses is set forth in the respective catalogs. Information on continuing education programs of The University of Tennessee, Knoxville, is given on page of this catalog.

Joint University Center (UT/MSU)
Coordinator:
J.A. Rhodes, Jr., Ph.D. Georgia State.

The Joint University Center is administered cooperatively by The University of Tennessee and Memphis State University, and the Division has coordinative and developmental responsibilities only.

Center for Extended Learning
Director:

Associate Directors:

CLEP Open Center: Administers College Level Examination Program tests each month.

College Credit for High School Seniors: Coordinated in cooperation with the State Board of Education.

Conferences: For specific clientele statewide.

Independent Reading: The student should contact the academic department for the desired reading course and then register for credit through the CEL.

Independent Study: Extends instructional services of the University from all campuses to the citizens of the state. Courses may be started at any time.

College Credit Courses: The same courses with the same instructors as in resident classes, offering full degree credit.

College Entrance Courses: To remove entrance deficiencies or to complete high school requirements.

Non-Credit Courses and Certificate Programs: In areas of general interest and in technical, business, and professional fields.

Statewide Media Programs: Courses for credit by cable and open-circuit television, radio, and newspapers.

Undergraduate Cooperative Education Program: For students desiring to work alternate quarters while going to school.

For information on enrollment, costs, books, and credit, write: Center for Extended Learning, 447 Comm. & Univ. Ext. Bldg., The University of Tennessee, Knoxville, Tennessee 37916. Telephone: (615) 974-5135.

Head Start State Training Office
Director:
L.C. Biggs, M.S. Wisconsin.

Assistant Director & Coordinator, Supplementary Training Program:
Y.H. Gaylon, M.S. Tennessee.

Coordinator:
R.B. Popp, M.S. Tennessee.

Training Officers:
B.A. Nye, M.S. Tennessee; S.L. Hunter, M.S. Georgia State; R.J. Hamilton, B.S. Tennessee Tech; R. Neely, M.S. Tennessee; C. Doster, M.S. Memphis State; D. Griffin, M.S. Tennessee; L. Horn, B.S. Tennessee.

Research Associate, Competency Program:
W.J. Moore, M.S. Tennessee.

The State Training Office of Head Start is a program of services to the twenty area Head Start programs in Tennessee. The services include organizing training programs for personnel of the various local programs, development of special workshops, publication of a newsletter, and organizational work with parent of children in the Head Start program. This office provides training through the coordination of Head Start Supplementary Training and the State Training Office grants.

Library Services
Director:
D.J. Harkness, M.S. Columbia.

This is a statewide service, administered by the system Division, and has four major facets.

Package Library and Book Services provide material for use by clubwomen, teachers, librarians, and other individuals in preparing talks and papers and in doing special study and reference work. Books from the Extension Library and the University Library are loaned to individuals within the state and to students taking courses by correspondence. Study club
outlines, bibliographies, suggestions for club yearbooks, reading lists, and information-reference services are provided.

**Club Program Service** includes a series of program manuals on historical, literary, and bibliographical subjects designed to help clubwomen, teachers, and librarians in their work and individuals in their reading and study in informal adult education.

**Drama Loan Service** makes it possible for directors of drama in schools, colleges, universities, Little Theatres, and church drama groups to borrow copies of one-act and three-act plays and material for special days for reading and examination. Information on sets, costumes, and the original Broadway productions, along with material on playwrights, actors, and actresses, is also available.

**School Program Service** includes aids to teachers, librarians, and directors of speech and drama through package libraries, drama loans, and production aids.

**Publications**

Publications are a direct means of extending to Tennesseans the information resulting from studies by University departments and various extension materials designed for general enrichment of civic, cultural, and economic understanding. The University of Tennessee Continuing Education Series is used as an outlet for these materials. A list of available titles, most of them free to Tennessee residents, may be had upon request.

**Radio Services**

**Director:**
R.A. Shirley, M.A. Tennessee.

**Associate Director:**
N.L. Dryer, B.M. Indiana.

**Assistant Directors:**
G.D. Francis, B.S. Syracuse; S.D. Williamson, Jr., B.M. Tennessee.

**Staff:**
J.C. Adkins, M.S. Tennessee; M.J. Bell, B.A. North Carolina; J.A. Chasten; W.G. Hauser, B.A. New Mexico; D. Lineback; R.W. Stagg.

This department conducts an extensive statewide program of adult education and information by radio, offering hundreds of different cultural and educational experiences. Its activities may be grouped into three categories.

1. **WUOT**, the University’s 100,000-watt stereo FM station, operating nineteen hours a day every day of the year, with a high quality and varied program of music, public affairs, discussion, drama, and documentaries from local, state, national, and international sources. The station is a member of the National Public Radio Network.

2. A network of over 150 Tennessee radio stations which provide without charge the time for over 22,000 quarter-hour programs on subjects of public interest, with production, duplication on audio tape, and distribution accomplished by the department. Its close contact with all broadcasting, and its staff and facilities, equip the department ideally for work with the other campuses in the production, duplication, and distribution of audio materials for educational use. It will upon request assist all of the campuses in communications development.

3. A technical service which includes highspeed duplication of reel-to-reel or cassette audio tapes for University departments, recording conferences and workshops, audio consulting, and educational radio consulting.

**Teaching Materials Center**

**Director:**
J.T. Benton, M.S. Tennessee.

This department provides educational films for the public schools, colleges, churches, civic clubs, and other interested organizations on a wide variety of subjects, ranging from agriculture to technical material on the space age, and also films for industrial use. Film councils throughout the state encourage the use of these materials for forum discussions and general adult education. An advisory service on effective film use is also provided by the department. Films, equipment, and other services are made available to the academic faculty for classroom instruction and experimentation and educational films are provided for the students both on and off campus for student teaching, previews, and special projects.

**Television Services**

**Director:**
F.A. Lester, M.A. Tennessee.

**Assistant Directors:**

**Producers:**
S.H. Gordon, M.S. Tennessee; W.P. Wilson, B.S. Tennessee.

Television services include the complex closed-circuit administration and production work which results in many lower-division resident classes being taught to some 8000 students by television on the campus; the production of 196 half-hour programs each year on WSJK-TV, the State Department of Education station in East Tennessee; and instruction for three resident courses in broadcasting for the College of Communications. The department jointly administers an off-campus secondary school accelerated entrance program by television tape and the Video Tape Electrowriter Remote Mode program of professional development studies.
The University Library

Donald R. Hunt, Director
Gene M. Abel, Associate Director/Public Services
Susan Brynteson, Associate Director/Technical Services
George W. Shipman, Associate Director/Administrative Services

Professors:
Donald R. Hunt (Director), M.A.L.S. Michigan;
G.M. Abel, M.S. Chicago; R.J. Bassett, A.M.L.S. Michigan; O.H. Branch, B.A.L.S. Emory;
J.H. Dobson, M.S. Columbia; E.E. Goehring (Emeritus), B.S.L.S. Columbia; L.B. Vandiver,
M.A. Florida State.

Associate Professors:
K.M. Cottam, M.S.L.S. Pratt; M.F. Crawford,
M.S.L.S. Kentucky; H.S. Garrett, M.A. Peabody;
D.W. Jeff, M.S.L.S. Florida State; A.W. LeClercq,
M.L.S. Emory; A.E. Mitchell, M.A.L.S. Peabody;
A.M. Nicholls, M.S. Florida State; G.K. Phillips,
M.L.N. Emory; T.T. Rogero, M.S. Florida State;
M.J. Sharp, M.L. Emory; G.W. Shipman,
M.A.L.S. Michigan; R.H. Suries, M.L.L.
Washington; B.C. Wolfe, Jr., J.D. Kentucky.

Assistant Professors:
P.S. Bayne, M.S.L.S. North Carolina;
C.S. Carver, M.L.S. Peabody; M.D. Davis,
M.S.L.S. North Carolina; D.C. Ellingen, M.L.S.
Oregon; F.H. Felder, M.S.L.S. Atlanta;
D.K. Freeman, M.L.S. Indiana; C.J. Henderson,
M.S.L.S. Atlanta; S.B. Holland, A.B.L.S. North Carolina;
J. Maddox, M.L.S. Emory;
A.H. Mitchell, M.S.L.S. Tennessee; D.A. Nitecki,
M.S. Drexel; F.O. Painter, M.L.S. Peabody;
L.L. Phillips, M.L.S. Rutgers; V.C. Reeves,
M.S.L.S. North Carolina; G.C. Scales, M.S.L.S.
Case Western Reserve; C.T. Schmidt, M.S.L.S.
Drexel; K.M. Tihart, M.L.N. Emory.

Instructors:
J.W. Granade, M.S.L.S. North Carolina;
R.J. Hoyt, M.S. Illinois; D.C. Picquet, M.S.L.S.
Tennessee; D.A. Ralkes, M.L.S. Rutgers;
N.H. Wiest, M.S. Drexel; N.B. Watkins, M.L.S.
Tennessee; J.H. Worley, M.S.L.S. Tennessee.

The UTK Library, as the premier library of the state, seeks to acquire and service all necessary recorded information, both print and non-print, that meets the needs of the University's teaching, research, and service programs.

The books, periodicals, non-print and any other materials contained in the 6 UTK Library units are available to all students, faculty and staff of The University of Tennessee, Knoxville. Included among the holdings are 1,332,782 books, 1,054,340 microforms, 4,347 audiotapes, 1,251 slide carousels, 570 videotapes, 6,288 phonodiscs, 1.9 million manuscripts, and various ephemeral materials. More than 20,000 periodical and other serial titles are received annually.

The library in its 6 locations is open to all students and faculty, regardless of their fields of study. The James D. Hoskins Library at 1401 West Cumberland is the main library where administrative and technical services offices are located. The dictionary catalog, listing the library holdings for the entire campus, is in Main, as are the general and research collections, comprehensive reference, interlibrary services, documents, 4000/5000-level reserves, newspapers, non-print materials, and Special Collections, the last a repository of local and regional source materials.

The John C. Hodges Undergraduate Library, on Volunteer Boulevard at Andy Holt Ave., has a limited collection of 150,000 volumes selected to meet the needs of students in undergraduate courses. Reserve materials for 1000-3000 level courses are available in this library as is a large collection of audio-tapes, slides, and video-cassettes.

Other libraries serving specialized areas are Agriculture-Veterinary Medicine in Morgan Hall, Law in the Taylor Law Building, Music in the Music Building, and Science/Engineering in Dabney-Buehler.

The libraries are administered by a director, three associate directors (for public, technical, and administrative services) and a number of department heads. Questions and comments are invited in person or through the suggestion boxes located in each library. Continuing evaluation and building of the collections is the responsibility of the Collections Development Librarian. While most materials are selected by faculty, recommendations for purchase are invited from all students and staff.

Copies of Your Libraries, the library handbook for students and faculty, are available at all libraries.
Computing Center

Gordon R. Sherman, Director
Asa O. Bishop, Jr., Associate Director
Martha F. Bowen, Associate Director
Timothy P. MacKenzie, Assistant Director

Faculty Associates
Professors:
G.R. Sherman (Director), Ph.D. Purdue;
J.E. Cline, Ph.D. Purdue.

Associate Professor:
A.O. Bishop, Jr., Ph.D. Clemson.

Assistant Professor:
D.W. Straight, Ph.D. Texas.

The University of Tennessee Computing Center (UTCC), the largest computing facility in the University of Tennessee system, provides computing facilities and services for the needs of the University’s teaching, research, public service, and administrative activities. In particular, UTCC maintains close contact with the UTK academic community by supporting research and instructional users with professional computer staff. UTCC is principally located in the Stokely Management Center and in Andy Holt Tower. From the Stokely location, UTCC supplies computing services to all campuses in the UT system through job entry facilities located on each campus. At UTK, UTCC maintains five job entry stations for batch work and eight sites for interactive computer work.

UTCC’s equipment consists of an IBM 370/148, an IBM 360/65 and a DECSysten-10 which are used for research, instruction and administrative computing work. UTCC also maintains an IBM 360/40 which is used exclusively for administrative work. The IBM 370/148 has two million bytes of memory, and the IBM 360/65 has 2.75 million bytes of memory. The DECSysten-10 is a 1080 configuration with 256K words of memory.

UTCC supports remote job entry stations (card reader/line printer) with the IBM 370/148-IBM 360/65-DECSysten-10 combination and a CalComp plotter. The IBM 370/148 and 360/65 run under OS/360 MVT with HASP II. The DECSysten-10 runs under the TOPS-10 Monitor. The time sharing system supported by the two machines includes ATS/360, Coursewriter III, APL, FORTRAN, BASIC, COBOL, Assembler language, and other special purpose application programs.

UTCC publishes a User’s Guide which describes the use of the IBM 370/148 and 360/65 and policies and procedures and the DECSysten-10 Programmer’s Guide, which is a general handbook for the use of the DECSysten-10. The two guides are available at the UT Book and Supply Store. UTCC also publishes a monthly Newsletter which announces systems, equipment and procedural changes and contains other items of interest to the user community. Program writeups and special user’s guides are also published.

UTCC periodically offers intensive training seminars of several days duration in computer utilization on the IBM 370/148 and 360/65 and the DECSysten-10. These seminars are planned primarily for faculty, staff and graduate students who use or plan to use UTCC facilities. UTCC offers non-credit short courses each quarter in topics such as programming languages and special purpose programs. These courses are announced in the Newsletter and in the UT Daily Beacon.

Computing services can be requested via the Request for Services form available from the business office in the Stokely Management Center. All users of UTCC facilities are assigned a consultant to provide user assistance.
Public Service

Vice President for Public Service: C.E. Smith, Ph.D. George Peabody
Associate Vice President for
Public Service: A.B. Bisce, Jr., Ph.D. Florida

Institute for Public Service

Executive Director: R.S. Hutchinson, M.B.A. Chicago.
Associate Director: L.R. Rogers, B.S. Tennessee.
Manager of Information Services: T.B. Ballard, B.S. Tennessee.
Manager of Request-for-Service System: W.S. Evans, B.S. Tennessee.
Business Manager: G.W. Baskette.
Director, Emergency Training: Harry V. Price, M.S. Tennessee.

The Institute for Public Service was established in 1971 within the Office of the
Vice President for Urban and Public Affairs. The purpose of the Institute is to
coordinate and promote public service activities throughout the University
system, excluding services provided through the Institute of Agriculture.

The basic goal of the University public service effort is to bring to the citizens of
Tennessee—their business, their industry, and their governments—the problem-
solving capabilities uniquely embodied within their statewide University system.

Public service at The University of Tennessee includes all services offered to
those outside the University, including teaching in certain non-degree situations, technical assistance, and applied research which is conducted specifically at the request and for the benefit of non-
University organizations in Tennessee.

The Institute provides: (1) a system-wide focal point for urban and public services; (2) a means to coordinate the various system-level public service
activities; and (3) an organizational base for communication and program
development that relates to both outside service clientele of the University and the campuses of the University system.

The Institute is headquartered in
Knoxville and maintains regional offices in
Chattanooga, Cookeville, Jackson, Johnson City, and Nashville.

The Institute is comprised of the system-level public service operations listed below.

County Technical Assistance Service

Executive Director: J.H. Westbrook, Jr., B.S. Tennessee.
Assistant Executive Director: C.R. Phebus, M.S. Vanderbilt.
Assistant Director for Administration: T.D. McNulty, M.A. Austin Peay State.
Legal Specialist: W.C. McIntyre, J.D. YMCA Law School.
Senior Law Enforcement Consultant: G.L. White.
Professor of Law Enforcement: S.F. Glaser, B.S. Tennessee.
Engineering Specialist: C.R. Phebus, M.S. Vanderbilt.
Research Analyst: W.E. Bragg, M.P.A. Middle Tennessee State.
Communications and Publications Specialist: M.C. Walker, B.S. Tennessee.
Special Projects Coordinator: M.J. Frank, B.A. Tennessee.
Director of Research: J.C. Smith, B.S. Middle Tennessee State.

County Field Advisers:
J.B. Gardner, M.A. Memphis State;
M.R. Gentry, M.C.M. East Tennessee State;
R.W. McIlly, B.A. Maryville; B.C. Rodgers, B.S. Tennessee Tech; G.W. Smith, B.A. Western
Kentucky; J.M. Williams, B.S. Middle Tennessee State; S.L. Yarbrough, M.S. Tennessee.

The County Technical Assistance Service was established by the Board of Trustees at the 1973 mid-year meeting and began operation on January 1, 1973. Establishment of the Service was authorized by the 88th General Assembly for the purpose of providing "studies and research in county government, publications, educational conferences and attendance thereto, and to furnish technical, consultative and field services to counties of the state in problems relating to fiscal administration, accounting, tax assessment and collection, law enforcement, improvements, and public works, and in any and all matters relating to county government. This program shall be carried on in cooperation with and with the advice of counties in the state acting through the
Tennessee County Services Association and its Board of Directors, which is recognized as their official agency or instrumentality."

The Service is headquartered in Nashville, with regional offices in
Chattanooga, Cookeville, Jackson, Johnson City, and Knoxville.

Municipal Technical Advisory Service

Executive Director: V.C. Hobday, Ph.D. Syracuse.
Assistant Director: A.P. Hartman, M.P.A. Tennessee.
Specialist Consultants:
J.M. Crabtree, Jr., B.S. Tennessee Tech (Personnel); J.W. Crawford, B.A. Miami (Personnel); J.A. Fitzgerald, B.A. Memphis State (Police); D.W. Huffer, J.D. Tennessee (Ordinance Codification); W.K. Jones, B.S. Tennessee Polytechnic (Finance and
Accounting); J. Kersh, B.S. Tennessee (Municipal Information); F.E. Kirk, B.S., in C.E. Southern Methodist (Public Works); J.H. Leuty, B.S. Tennessee Polytechnic (Finance and
Accounting); A.C. Lock, Jr., B.S.C.E. Oklahoma State (Public Works); R.A. Lovelace, M.P.A. Kansas (Intergovernmental Affairs); G. Musick (Police); D.W. Oyamb, J.D. Tennessee (Ordinance Codification); M.T. Pentecost, B.S. Murray State (Finance and Accounting); E. Puet, J.D. Tennessee (Municipal Law).
Municipal (District Consultants);
W.R. Bailey, B.S. Florida State; B.S. Barker,
M.S. Texas; J.P. Depen, M.P.A. Michigan;
G.M. Mabrey III, M.C.M. East Tennessee State;
G.J. Maurer, Ph.D. Oklahoma.
E.W. Miseenheister, M.S. in P.A. Syracuse;
C.L. Overman, M.C.M. East Tennessee State;
T.M. Sprowl, B.A. St. Mary's.

Librarian:
E.M. Sodemann, B.L.S. Wisconsin.

The Seventy-Fifth General Assembly
(1949) established a Municipal Technical
Advisory Service at The University of
Tennessee. The legislation designated the
purposes to be "studies and research in
municipal government, publications,
educational conferences and attendance
thereat, and furnishing technical,
consultative, and field services to
municipalities in problems relating to fiscal
administration, accounting, tax
assessment and collection, law
enforcement, improvements and public
works, and any and all matters relating to
municipal government." Services are
currently provided in the fields of
municipal law, municipal management,
public works, finance and accounting,
ordinance codification, municipal
information, personnel, and police
administration. The state is divided into
eight districts and a Municipal Consultant
is assigned to each district. Most of
the staff are located in the headquarters
office on the Knoxville campus; regional offices
are maintained in Cookeville, Jackson, and
Nashville. This program is carried on in
cooperation with the Tennessee Municipal
League.

Center for Industrial Services
Executive Director:
R.E. Harris, M.S. Tennessee, P.E.
Assistant Director for Field Services:
R.L. Highers, B.S. Tennessee Tech, P.E.
Senior Field Engineers:
S.E. Clapp, M.B.A. Tennessee; P.E. Rinella, B.S.
Tennessee; J.E. Ross, B.S. Geneva (Penn.); P.E.; C.R. Vandiver, B.S. Middle
Tennessee State, P.E.
Field Engineers:
P.L. Dannell, M.B.A. Memphis State;
R.E. Dobb, M.B.A. East Tennessee State, P.E.,
C.P.A.; J.O. Grisby, B.S. Georgia Tech;
B.R. Wiggins, Jr., B.S. Tennessee, P.E.
Counselor:
J. Logan, M.B.A. Arkansas.
Industrial Engineer:
T.C. Parsons, M.S. Tennessee, P.E., CPA.
Industrial Librarian:
N.W. Wiesehuegel, M.L.S. Peabody.

The Center for Industrial Services has
the primary role of assisting Tennessee's
manufacturing firms by providing technical
and managerial assistance to those
companies seeking assistance. By the
Tennessee Public Acts of 1963, the
assigned objectives for the Center are "to
render service to the industries in this
state by providing information, data, and
materials relating to the needs and
problems of industry which might be
supplied and solved through research; by
providing information about available
research facilities and research personnel
in Tennessee colleges and universities,
and in governmental and private research
laboratories; by keeping Tennessee's
industries informed about the supply of
and demand for trained qualified
personnel; and by cooperating with the
Governor's Staff Assistant for Industrial
Development and the Tennessee Industrial
and Agricultural Commission in carrying
out its duties."

This statewide program encourages
and assists managers of Tennessee firms
to draw upon the intellectual resources of
the colleges and universities to upgrade
the firm's performance. Field engineers
experienced in manufacturing operations
take the initiative in encouraging the
upgrading and expansion of management
in their plant environment.

The Center for Industrial Services is
headquartered in Nashville. Regional
offices are maintained in Chattanooga,
Cookeville, Jackson, Johnson City and
Knoxville.

Center for Government Training
Executive Director:
Associate Director:
Assistant Directors:
E.K. Smith; M.D. Traugther, B.S. Middle
Tennessee State; G.T. Himes, Jr., B.S. Belmont.
Regional Managers:
T.R. Carpenter, M.S. Tennessee; J.W. Fort,
M.A. Austin Peay State; P.J. Gipson, B.S.
Belmont College; A.C. North, Jr., B.S. Middle
Tennessee State; D.R. Waynick, B.S. Lambuth.

The Center for Government Training
has responsibility for providing
professional assistance and establishing
training and career development programs
for state and local government officials
and employees throughout the state.
Headquarters is located in Nashville, but
regional offices are also maintained in
Jackson and Knoxville. The Center is
charged with identifying and analyzing
needs for public service education and
training at the state and local levels in
Tennessee, and with developing and
conducting programs for training of public
agency employees, working with
institutions of higher education in the
state and other educational facilities. The
Center acts as a clearinghouse for
information relative to public service
personnel education and training
programs. In addition, the Center serves
as the central administrative agency in a
statewide local government training
network which includes four campuses of
the University and the six senior
institutions in the Board of Regents
system.

Technical Assistance Center
Director:
J.T. Brothers, B.S. Tennessee.
Associate Director:
J.R. Anns, M.B.A. Inter-American.
THE UNIVERSITY OF TENNESSEE GENERAL SUMMARY

Administration

Trustees:
- Appointed by the Governor .......................................................... 18
- Ex-Officio ...................................................................................... 5

Officers of Administration:
- President ...................................................................................... 1
- Vice Presidents ............................................................................ 8
- Associate/Assistant Vice Presidents ............................................ 8
- Chancellors .................................................................................... 5
- Vice Chancellors and Provost ....................................................... 19
- Associate/Assistant Vice Chancellors ......................................... 9
- Deans and Directors .................................................................... 261

Full-Time and Part-Time Faculty 1977-78

<table>
<thead>
<tr>
<th></th>
<th>Center for the Health Sciences</th>
<th>Chattanooga</th>
<th>Knoxville</th>
<th>Martin</th>
<th>Nashville</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professors</td>
<td>177</td>
<td>44</td>
<td>509</td>
<td>32</td>
<td>21</td>
</tr>
<tr>
<td>Associate Professors</td>
<td>190</td>
<td>87</td>
<td>445</td>
<td>103</td>
<td>46</td>
</tr>
<tr>
<td>Assistant Professors</td>
<td>252</td>
<td>109</td>
<td>406</td>
<td>80</td>
<td>50</td>
</tr>
<tr>
<td>Instructors</td>
<td>153</td>
<td>114</td>
<td>290</td>
<td>43</td>
<td>26</td>
</tr>
<tr>
<td>Totals</td>
<td>772</td>
<td>354</td>
<td>1,650</td>
<td>258</td>
<td>143</td>
</tr>
</tbody>
</table>

Instruction, Research, and Public Service

<table>
<thead>
<tr>
<th></th>
<th>Center for the Health Sciences</th>
<th>Chattanooga</th>
<th>Knoxville</th>
<th>Martin</th>
<th>Nashville</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers of the Agricultural Experiment Station</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Officers of the Agricultural Extension Service (Includes County Agents)</td>
<td>430</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecturers</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate, Research, and Teaching Assistants, Fellows, Trainees</td>
<td>1,874</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Officers of the UT Center for the Health Sciences-Knoxville Unit</td>
<td>69</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Includes two vice presidential titles held by one person.
* Includes two vice presidents.
* Includes UTCHS-Knoxville Unit.
<table>
<thead>
<tr>
<th>Institution</th>
<th>Total</th>
<th>Fall 1997</th>
<th>Fall 1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAHVILLE</td>
<td>666</td>
<td>115</td>
<td>744</td>
</tr>
<tr>
<td>MARTIN</td>
<td>380</td>
<td>225</td>
<td>155</td>
</tr>
<tr>
<td>CHATTANOOGA</td>
<td>112</td>
<td>91</td>
<td>21</td>
</tr>
<tr>
<td>TOTAL KNOXVILLE</td>
<td>483</td>
<td>744</td>
<td>279</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major</th>
<th>Full-time</th>
<th>Part-time</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knoxvillie Tech Center</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knoxvillie Coop Center</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knoxvillie—Transing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knoxvillie Day</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: The enrollment data in this statewide summary of the University of Tennessee System represent students enrolled for degree credit. Students enrolled only on a non-credit or audit basis are not included.
Index
Academic Calendar, 4, 5
Academic Continuation, 26
Academic Regulations, 24
Accelerated Program, 28
Accounting, 82, 87, 89
Accreditation, 56, 61, 97, 104, 239
Administration:
Knoxville, 6
Statewide, 8
Summary, 251
Admission, 14-24
Application Directory, 14
Center for the Health Sciences, 14, 180
Colleges and Schools:
Agriculture, 16, 55
Architecture, 16, 74
Business Administration, 16, 81
Communications, 16, 97
Education, 16, 104
Engineering, 16, 126
Home Economics, 16, 158
Law, 172
Liberal Arts, 16, 177
Nursing, 16, 239
Veterinary Medicine, 70
Evening School, 14
General Requirements, 14
Graduate School, 14, 46
High School Unit Requirements, 14, 16
International Students, 23
Readmission, 28
Specific Categories, 15
Specific Programs, 17
Special Student, 15
Transfer, 15
Unclassified Students, 23
Advised Standing, 23
Advertising, 98, 100
Aerospace Engineering, 129, 133, 154
Advising, 23
Agriculture:
Animal Science, 59, 66
Biology, 57, 63
College of, 55
Cooperative Program, 63
Economics and Rural Sociology, 57, 64
Education, 58, 112, 123
Engineering, 58, 65, 130, 134, 143
Experiment Station, 55
Extension Education, 59, 66
Extension Service, 56
Food Technology and Science, 61, 67
Forestry, Wildlife, and Fisheries, 61, 68
Institute of, 55
Interdepartmental Courses, 63
Mechanization, 59, 65
Ornamental Horticulture and Landscape Design, 62, 69
Plant and Soil Sciences, 62, 69
Pre-Veterinary Medicine, 60, 71
Short Courses, 63
Veterinary Medicine, College of, 70
Wildlife and Fisheries Science, 62, 68
Air Force Aerospace Studies, 242
Advanced, 28
American Studies, 199
Ancient Mediterranean Civilization, 201
Animal Science, 59, 66
Anthropology, 188
Application Directory, 14
Arabic, 230
Architecture, 74
Army, 28, 243
Arrowmont School of Crafts, 166
Art: 190
Education, 108, 112
Exhibitions, 43
Asian Studies, 199
Assistantships, 47
Astronomy, 223
Athletics, 41
Audiology and Speech Pathology, 191
Auditors, 23, 26, 30
Automobile Regulations, 43
Average, Required, 26
Aviation Systems, 53
Awards, 36
Bachelor of Arts, 177, 178
Bachelor of Fine Arts, 177, 182
Bachelor of Music, 177, 183
Bachelor of Science in Chemistry, 178, 185
Bachelor’s Degree, Requirements, 27, 178
Bands, University, 44
Banking, 83
Binary Engineering Program, 127
Biochemistry, 193
Biology, 193
Biology, Agriculture, 57, 63
Biomedical Engineering, 130, 150
Biomedical Sciences, 47, 49
Black Studies: 200
Office of, 187
Board of Trustees, 7
Bookstore, 40
Botany, 194
Broadcasting, 44, 98, 100
Business Administration, College of, 81
Business Administration, 95
Business and Economic Research, Center for, 81, 96
Business Law, 90
Business:
Cooperative Program, 82
Education, 83, 111, 124
General, 84, 87
Calendar, 4, 5
Campus map, 10
Carousel Theatre, 43
Center, University, 40
Center for Centered Expanded, 245
Center for the Health Sciences, 14, 180
Chemical Engineering, 130, 134, 143, 144
Chemistry, 195
Cooperative Program, 185
Child and Family Studies, 160, 165
Chinese (Asian Studies), 200
Choral Groups, 44
Church Centers, 42
Civil Engineering, 130, 135, 146
Class, 25, 26
Classics, 197
Classification of Students, 26
Clothing, Textiles and, 164, 171
College Scholars Program, 180
Communications, 99
Communications, College of, 97
Community Nutrition, 163
Comparative Literature, 201
Computer Science, 198
Computing Center, 248
Concentrations, 17
Conferences and Institutes, 102
Continuing and Higher Education, 113
Continuing Education, Division of:
Knoxville, 245
Statewide, 245
Cooperative Programs:
Agriculture, 63
Business Administration, 82
Chemistry, 185
Communications, 98
Engineering, 127, 133
Coordinated Undergraduate Program in Dietetics (ADA), 163
Correspondence Study, 27, 245
Counseling, Student, 23, 42
County Technical Assistance Service, 249
Course Changes in Registration, 25
Course Numbers and Levels, 26
Crafts, 161, 166
Crafts, Interior Design and Housing, 161, 166
Credit Hours, 24
Cultural Opportunities, 43
Cultural Studies, 199
Curriculum and Instruction, 113
Cybernetics and Bionics, 54
Dean’s List, 36
Degrees, 17, 29, 47
Deferred Payment Service Fee, 30
Dental Hygiene, 181
Dentistry, 180
Deposits, Military, 29
Disabled and Elderly Persons, 23
Distributive Education, 111, 124
Doctor of Education Degree, 47
Doctor of Jurisprudence Degree, 172
Doctor of Philosophy Degree, 47
Dormitories, 31
Dropping Courses, 25
Ecology, 203
Economics, 83, 90, 204
Agricultural, 57, 64
Education:
Administration and Supervision, 116
Agricultural, 58, 112, 123
Art, 108, 112
Business, 83, 111, 124
Continuing and Higher, 113
Curriculum and Instruction, 113
Distributive, 111, 124
Elementary, 106
Health and Safety, 109, 118
Home Economics, 112, 124, 159, 164, 170
Industrial, 111, 124
Music, 108, 112
Physical, 108, 109, 119
Psychology and Guidance, 117
Recreation, 109, 118, 121
Secondary, 107, 186
Special, 110, 121
Vocational-Technical, 111, 123
Educational Administration and Supervision, 116
Educational Psychology and Guidance, 117
253
Off-Campus Study, 102, 187
Office Administration, 85, 94
Ombudsman, 43
Opera Workshop, 44
Options, 17
Organizational Psychology, 48
Organizations:
     Honorary and Professional
     Fraternities, 38
     Student, 42
Orientation, 25
Ornamental Horticulture and Landscape Design, 62, 69
Parking Regulations, 43
Passing Grades, 24
Payments, Deferred, 30
Persian, 200
Personnel Management, 86, 88, 92
Pharmacy, 182
Phi Beta Kappa, 39, 44
Phi Kappa Phi, 39
Philosophy, 222
Physical Education, 43
Physical Education, 109, 118
Physical Examinations, 25
Physical Sciences, 223
Physical Therapy, 182
Physics, 223
Physics, Engineering, 131, 137, 152, 223
Placement Service, 39
Planning, Graduate School of, 51
Plant and Soil Science, 62, 69
Political Science, 225
Polymer Engineering, 145
Portuguese, 232
Pre-Dental Program, 180
Pre-Dental Hygiene, 181
Pre-Medical Program, 181
Pre-Medical Record Administration, 181
Pre-Medical Technology, 181
Pre-Nursing, 182
Pre-Pharmacy, 182
Pre-Physical Therapy, 182
Pre-Veterinary Medicine, 60, 70
Press, University of Tennessee, 45
Proficiency Examinations, 23, 28
Psychological Clinic, 188
Psychology, 226
Psychology and Guidance, 117
Public Administration: 86, 186
     Bureau of, 225
     Public Health, 118
     Public Service, Institute for, 249
Publications:
     Student, 44
     University, 45
Quarter Hour, 24, 25, 26
Radiation Biology, 47
Radio Services, 246
Readmission, 26
Real Estate and Urban Development, 86, 88, 92
Recreation, 109, 121
Recreation, Office of, 40
Refund of Fees, 30
Registration Dates, 4, 5
Rehabilitation, 121
Religious Influences, 42
Religious Studies, 228
Requirements:
     Academic, 24
     Admission, 14
     Bachelor’s Degree, 27
     Correspondence Work, 27
     Doctor of Education Degree, 47
     Doctor of Jurisprudence Degree, 173
     Doctor of Philosophy Degree, 47
     Grades, 24
     Health, 25
     High School Units, 14, 16
     Master’s Degree, 47
     Orientation, 25
     Parking, 43
     Residency Classification, 14
     Residence Requirements, 27
     Research Organizations, 12
     Residence Hall, 31
     Residence Requirements, 14
     Residency Classification, 27
     Romance Languages, 230
     R.O.T.C.:
     Advanced, 243
     Air Force, 242
     Army, 243
     Rural Sociology, 57, 64
     Russian and East European Studies, 233
     Safety, 118
     Scholarship, 31
     School Health, 119
     Science, Engineering, 131, 138, 150
     Science-Medical Technology, 181
     Secondary Teaching, 107, 186
     Secretarial Program, Two Year, 85
     Short Courses, Agriculture, 63
     Singers, UT, 44
     Social Fraternities and Sororities, 42
     Social Work, 52
     Sociology: 233
     Rural, 57, 64
     Sororities, 42
     Space Institute, 46, 53
     Spanish, 232
     Special Education, 110, 121
     Special Students, 15
     Speech and Theatre, 234
     Speech Pathology, Audiology and, 191
     Sports, 40
     State and Federal Laws, 23
     Statistics, 86, 89, 236
     Stokely Athletics Center, 44
     Student Affairs and Services: 39
     Admissions and Records, 39
     Activities Office, 39, 41
     Career Planning and Placement Service, 39
     Counseling Center, 42
     Employment, 33
     Financial Aid, 31
     Health Service, 42
     Insurance, 29
     International Student Affairs, 40
     Loans, 32
     Organizations, 42
     Publications, 44
     Traditions, 45
     Student Government Association, 45
     Study Abroad, 187
     Summer Quarter, Fees and Expenses, 31
     Supply Store, 40
     Teachers:
     General Information, 26, 105, 186
     Elementary, 106, 186
     Secondary, 107, 186
     Teaching Materials Center, 246
     Technical Assistance Center, 250
     Technical Education, 123
     Television Services, 246
     Tennessee Executive Development Program, 81
     Textiles and Clothing, 160, 164, 171
     Theatre, Speech and, 234, 235
     Theatres, University, 43, 188
     Theology, 186
     Title IX, 2, 24
     Traditions, 45
Transfer Students, 14, 15, 27
Transportation, 86, 89, 93
Transportation Center, 49
Transportation, Marketing and, 93
Trustees, 7
Tuition, 29
Unclassified Students, 23
Undergraduate Degrees, 17, 28
University Center, 43
University Computing Center, 248
University Studies, 236
Urban and Public Affairs, 249
Urban Studies, 203
Vehicle Operation and Parking, 43
Veterinary Medicine, 70
Vocational Certification, Home Economics, 159, 164
Vocational-Technical Education, 111, 123
Water Resources Development, 54
Wildlife and Fisheries Science, 62, 68
Withdrawals, 25
Women’s Studies, 203
WUOT, 44
Zoology, 236