### Student Calendar For 1979-80

**Winter Quarter, 1979**

- January 3-4 (Wednesday-Thursday): Registration
- January 5 (Friday): Classes Begin
- February 8 (Thursday): Change of Registration Deadline
- March 15 (Thursday): Classes End
- March 19 (Monday): Commencement

**Spring Quarter, 1979**

- March 26-27 (Monday-Tuesday): Registration
- March 28 (Wednesday): Classes Begin
- April 13-14 (Friday-Saturday): Change of Registration Deadline
- May 1 (Tuesday): Classes End
- June 7 (Thursday): Commencement
- June 12 (Tuesday): ClassEnd

**Summer Quarter, 1979**

- June 18-19 (Monday-Tuesday): Registration, First or Both Terms
- June 20 (Wednesday): Classes Begin
- July 4 (Wednesday): Independence Day (No Classes)
- July 9 (Monday): Change of Registration Deadline, First Term
- July 20 (Friday): Classes End, First Term
- July 23 (Monday): Registration, Second Term
- July 24 (Tuesday): Classes Begin, Second Term
- July 24 (Tuesday): Change of Registration Deadline, Full Term
- August 10 (Friday): Change of Registration Deadline, Second Term
- August 22 (Wednesday): Classes End
- August 25 (Saturday): Commencement

**Fall Quarter, 1979**

- September 17-19 (Monday-Wednesday): Registration
- September 20 (Thursday): Classes Begin
- October 24 (Wednesday): Change of Registration Deadline
- October 26 (Friday): East Tenn. Educ. Assoc. (No Classes)
- November 3 (Saturday): Homecoming (No Classes)
- November 22-24 (Thursday-Saturday): Thanksgiving (No Classes)
- November 29 (Thursday): Classes End
- December 1-4 (Friday-Tuesday): Alternative Period
- December 6 (Thursday): Commencement

**Winter Quarter, 1980**

- January 3-4 (Thursday-Friday): Registration
- January 7 (Monday): Classes Begin
- February 11 (Monday): Change of Registration Deadline
- March 11 (Tuesday): Classes End
- March 12-15 (Wednesday-Saturday): Alternative Period
- March 18 (Tuesday): Commencement
Correspondence Directory

Graduate Study
L. Evans Roth, Vice Chancellor for Graduate Studies and Research
Margaret N. Perry, Dean for Graduate Studies
Diana C. Lopez, Director of Graduate Admissions
Clea J. Greenawalt, Assistant Director of Graduate Admissions

Assistantships
Head of department in which you plan to major

Loans
Work Study
Part-time Employment
Student Loans
Carolyn Cuddy, Director, Financial Aid, 301 Student Services Building

Housing
Married students—Office of Rental Properties, Stadium
Single students—Office of Residence Halls, 405 Student Services Building

International Student Advisor
Dixon Johnson, Alumni Hall

Scholarships and Fellowships
Clea J. Greenawalt, The Graduate School

Thesis Consultant
Georgia Bunn, The Graduate School

Timetable of Classes
Supervisor of Registration, Registrar’s Office

Transcripts
Bob L. Cochran, Registrar

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<tr>
<th>Abbreviation</th>
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<td>HH</td>
<td>Hanson Hall</td>
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<td>HFR</td>
<td>Health, Physical Education &amp; Recreation Bldg.</td>
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<td>Humanities and Social Sciences Bldg.</td>
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<td>I</td>
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<td>MAH</td>
<td>Massey Hall (Residence)</td>
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<td>MEL</td>
<td>McClung Museum</td>
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<td>Non-Credit Programs</td>
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<td>S-SOC</td>
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<td>Safety &amp; Security</td>
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<td>SW</td>
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<td>Textiles &amp; Clothing Lab</td>
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<td>TOW</td>
<td>McClung Tower</td>
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<td>UC</td>
<td>Carolyn P. Brown Memorial University Center (Meeting and recreation facilities, food services, post office, bookstore)</td>
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<td>WLS</td>
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<td>WWF</td>
<td>Winter Workout Facility</td>
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The Graduate Council

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Lloyd Seatz, *Chairperson for Research Council*

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Date of Expiration
Dec. 31, 1979
Dec. 31, 1979
Dec. 31, 1979

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# Majors and Degrees Available

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<th>LETTERS OF RECOMMENDATION</th>
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<td>G.R.E.</td>
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<td>Animal Science</td>
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<td>Food Technology and Science</td>
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<td>Forestry</td>
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<tr>
<td>and Landscape Design</td>
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<td>Public Policy</td>
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<td>Crafts, Interior Design, and Housing</td>
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<td>Textiles and Clothing</td>
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All M.S. and Ph.D. applicants obtain special application form from Associate Dean, College of Home Economics.
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<th>Intercollegiate</th>
<th>M.S.</th>
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<th>X</th>
<th>X</th>
<th>or</th>
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<tr>
<td>*Aviation Systems</td>
<td>M.S.</td>
<td>M.S., PH.D.</td>
<td>X</td>
<td>X</td>
<td>or</td>
<td>X</td>
</tr>
<tr>
<td>*Ecology</td>
<td>M.S.</td>
<td>M.S., PH.D.</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Management Science</td>
<td>M.S.</td>
<td>M.S., PH.D.</td>
<td>X</td>
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<td>or</td>
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<tr>
<td>Organizational Psychology</td>
<td>M.S.</td>
<td>M.S., PH.D.</td>
<td>X</td>
<td>X</td>
<td>or</td>
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<tr>
<td>Water Resources Development</td>
<td>M.S.</td>
<td>M.S., PH.D.</td>
<td>X</td>
<td>X</td>
<td>or</td>
<td>X</td>
</tr>
</tbody>
</table>

| College of Liberal Arts       | M.A., PH.D. | M.A., M.F.A. | X | X | or | X |
| Anthropology                  | M.A. | M.S., PH.D. | X | X | or | X |
| *Art                          | M.A. | M.S., PH.D. | X | X | or | X |
| Biochemistry                  | M.A. | M.S., PH.D. | X | X | or | X |
| *Biography                    | M.A. | M.S., PH.D. | X | X | or | X |
| Computer Science              | M.A. | M.S., PH.D. | X | X | or | X |
| English                       | M.A. | M.S., PH.D. | X | X | or | X |
| *French                       | M.A. | M.S., PH.D. | X | X | or | X |
| Geography                     | M.A. | M.S., PH.D. | X | X | or | X |
| German Language and Literature| M.A. | M.S., PH.D. | X | X | or | X |
| *History                      | M.A. | M.S., PH.D. | X | X | or | X |
| *Mathematics                  | M.A. | M.S., PH.D. | X | X | or | X |
| Microbiology                  | M.A. | M.S., PH.D. | X | X | or | X |
| Music                         | M.A. | M.S., PH.D. | X | X | or | X |
| Philosophy                    | M.A. | M.S., PH.D. | X | X | or | X |
| *Physics                      | M.A. | M.S., PH.D. | X | X | or | X |
| Political Science             | M.A. | M.S., PH.D. | X | X | or | X |
| Psychology                    | M.A. | M.S., PH.D. | X | X | or | X |
| Public Administration         | M.A. | M.S., PH.D. | X | X | or | X |
| Radiation Biology             | M.A. | M.S., PH.D. | X | X | or | X |
| Romance Languages             | M.A. | M.S., PH.D. | X | X | or | X |
| Sociology                     | M.A. | M.S., PH.D. | X | X | or | X |
| Spanish                       | M.A. | M.S., PH.D. | X | X | or | X |
| Speech and Hearing Science    | M.A. | M.S., PH.D. | X | X | or | X |
| Speech Pathology              | M.A. | M.S., PH.D. | X | X | or | X |
| Speech and Theatre            | M.A. | M.S., PH.D. | X | X | or | X |
| *Zoology                      | M.A. | M.S., PH.D. | X | X | or | X |

| College of Nursing            | M.S.N. | M.S., PH.D. | X | X | or | X |
| Nursing                       | M.S., PH.D. | M.S., PH.D. | X | X | or | X |
| School of Biomedical Sciences | M.S., PH.D. | M.S., PH.D. | X | X | or | X |
| Biomedical Sciences           | M.S., PH.D. | M.S., PH.D. | X | X | or | X |
| School of Library and         | M.S.L.S. | M.S.L.S. | X | X | or | X |
| Information Science           | M.S.L.S. | M.S.L.S. | X | X | or | X |
| Library Science               | M.S.L.S. | M.S.L.S. | X | X | or | X |
| School of Planning            | M.S.P. | M.S.P. | X | X | or | X |
| Planning                      | M.S.P. | M.S.P. | X | X | or | X |
| School of Social Work         | M.S.S.W. | M.S.S.W. | X | X | or | X |
| Social Work                   | M.S.S.W. | M.S.S.W. | X | X | or | X |
| (Memphis, Nashville and Knoxville) | M.S.S.W. | M.S.S.W. | X | X | or | X |

*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.
The Graduate School

The mission of The University of Tennessee, Knoxville is to offer instruction on all levels of higher education, engage in and train for research, and provide extended services of great variety. The obligations of this mission are reinforced by the fact that The University of Tennessee is both the State University and the official Land-Grant Institution of Tennessee.

Advanced Graduate Work and Research

The University of Tennessee has some obligations not shared in the same degree by other public colleges and universities of the state, although these specialized functions are common to most major state universities and land-grant institutions. For instance, the University must develop and maintain advanced instruction and research in the basic arts and sciences and in professional and occupational areas dependent upon the fundamental fields of learning, especially (but not exclusively) those of substantial importance to the state. It is the business of such a state university to advance the frontiers of knowledge in all areas of human concern, to discover facts previously unknown, to present new theories, and to test hypotheses and theories not previously established. The augmentation of the intellectual heritage of the human race, particularly in basic research, is a major function of this and all other universities. So far as publicly-supported higher education is concerned, The University of Tennessee, Knoxville is the center of advanced graduate training and research in Tennessee. As of 1978 the University provides Master's level work in 120 fields of knowledge and doctoral work in 47, enrolling more than 7,000 graduate students.

The search for new knowledge and its application to the changing needs of society is a major aim of The University of Tennessee. In graduate instruction, through research programs, and by public service, the University and its faculty constitute a major resource for contributions to state, national, and international problems. In addition to typical departmental units of administration, numerous interdisciplinary programs, institutes, and centers have been developed in the locations and the scholarly areas needed. Beyond those described below, numerous other organizations exist and are described within the appropriate department or college descriptions.

Environment Center

J. H. Gibbons, Director, Ph.D. Duke
R. A. Bohm, Associate Director, 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.

Current research includes 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 through the Office of the Vice Chancellor for Graduate Studies and Research.

Transportation Center

Knoxville: K. W. Heathington, P.E., Director, Ph.D. Northwestern;
R. A. Mundy, Ph.D. Pennsylvania State; M. S. Bronzini, P.E., Ph.D., Pennsylvania State, Associate Directors

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

The Transportation Center performs four main functions: (1) managing interdisciplinary transportation projects for the University, (2) managing transportation projects for the Tennessee Department of Transportation, (3) managing highway safety projects for the Governor's Highway Safety Program, and (4) providing public service activities in transportation throughout the state. In performing these functions, the Transportation Center works extensively with various colleges and departments, organizations, and campuses of The University of Tennessee.

The Center conducts research in all modes of transportation. Current research includes transportation management, railroad and waterways, urban goods movement, airport ground transportation, transportation brokerage, social service transportation, ridesharing, transit, legislation, diagnostic vehicle inspection, highway safety, tunnel construction and ventilation, archaeological exploration, highway construction, and environmental impacts.

The Center is operated through the Office for Graduate Studies and Research. The Center's main office is at UT, Knoxville with a satellite office in Nashville.

The University of Tennessee
Space Institute

C. H. Weaver, Dean, Ph.D. Wisconsin
R. L. Young, Associate Dean, Ph.D. Northwestern
A. A. Mason, Assistant Dean, Ph.D. Tennessee

The Space Institute was originated to interface University faculty research with the Arnold Engineering Development Center of the United States Air Force. Located at Tullahoma, Tennessee, the Space Institute offers graduate degree programs, institutes, and centers have been developed in the locations and the scholarly areas needed. Beyond those described below, numerous other organizations exist and are described within the appropriate department or college descriptions.

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programs with majors in Aerospace Engineering, Aviation Systems, Computer Science, Electrical Engineering, Administration, Engineering Science, Mathematics, Mechanical Engineering, Metallurgical Engineering, and Physics. In addition to the fundamental academic work characteristic of each discipline, research opportunities and supporting interdisciplinary coursework are available to permit specialization in many aspects of space flight such as subsonic hypersonic aerodynamics, aerospace vehicle design, and propulsion systems, aircraft noise and sonic boom, flight simulation, avionics, plasma-dynamics, and advanced design computer facilities. The University also offers a unique opportunity for meaningful research in these and other areas.

The Graduate School

Students who enroll at UTSI must be admitted to the Graduate School, University of Tennessee, Knoxville. Further information concerning the Graduate School may be obtained by writing the Director, UT-Oak Ridge Graduate School, Post Office Box 117, Oak Ridge, Tennessee 37830.

For complete information concerning the program, see page 154.

Admission and Registration

Admission to the Graduate School requires a Bachelor's degree with a satisfactory grade point average from an accredited college or university. (A minimum grade point average of 2.5 out of a possible 4.0, or a 3.0 for the senior year, is considered a satisfactory grade point average.) An application cannot be processed without the $10 fee (payable to The University of Tennessee). If permission to enter The University prior to graduation is granted, the applicant's file will be automatically withdrawn if the Bachelor's degree is not awarded before the date of registration.

The Graduate School

Students who enroll in these 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, Tenn., and Charlotte, Nashville, Tennessee 37203.

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 The Biology Division of the Oak Ridge National Laboratory.

For complete information concerning the program, see page 147.

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 through the School of Social Work, with programs in Nashville, Knoxville, and Memphis. Further information concerning the program, see page 154.

Admission to a Graduate Degree Program:

The University offers graduate study programs at Oak Ridge, with work leading to Master's degrees in Business Administration with a concentration in management, Industrial Education, and Environmental Education, and to doctoral degrees in the following areas of specialization: engineering, mathematics, and physical and biological sciences. Courses are given in the late afternoons, evenings, and Saturdays, fall and spring semesters.

Application for the Graduate School

Applications for admission to the Graduate School are accepted at any time and are processed continuously. Applicants must submit a completed application form along with any required fee or fee waiver. The applicant must provide proof of academic qualifications, and if applicable, proof of eligibility for admission to The University of Tennessee prior to graduation. Applicants are encouraged to visit the Graduate School prior to submitting their application.

For complete information concerning the program, see page 154.

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For complete information concerning the program, see page 154.
Doctoral degree—In addition to meeting the minimum requirements for admission to the Graduate School, applicants at the doctoral level must have demonstrated a potential for superior academic performance. To be considered are such criteria as performance in prior undergraduate and/or Master's level studies, achievement on aptitude tests for graduate studies, letters of recommendation from professors familiar with the applicant's work, and similar evidences of scholarly achievement. (Refer to description of doctoral programs for specific requirements for admission.)

Non-degree Graduate Students: No more than 12 semester hours of non-degree graduate credit may be obtained from a student while in the non-degree status may be included in a Master's degree program. The applicant must have a satisfactory grade average (2.5 out of a possible 4.0 or 3.0 during the senior year). Non-degree students may take courses for graduate credit, providing the department approves the registration, but cannot be admitted to candidacy for a degree without first gaining admission to a graduate degree program.

Some departments will not permit non-degree students to register for graduate credit. Please contact the head of the department in which a major is planned concerning registration for graduate credit. No international student may enroll as a non-degree graduate student.

Transcript Graduate Students: A student who has been admitted to a degree program at another institution and who wishes to take courses for transfer to that institution may be admitted on receipt of the Transcript of work which may be obtained from The University of Tennessee, Knoxville Graduate School. This form must be completed prior to registration. A student may take no more than 18 total hours of non-degree graduate credit.

Eligibility of Seniors: A senior in The University of Tennessee, Knoxville who needs less than 45 quarter hours to complete the requirements for a Bachelor's degree and has at least a 3.0 average (3.0), may take sufficient work for the last 60 hours of the degree at The University of Tennessee, Knoxville without being admitted to the Graduate School. The student must register for only one course per quarter. The student must have completed the last 30 hours of undergraduate work when taken or at a later date. No international student may enroll as a post-baccalaureate student. A post-baccalaureate student cannot receive graduate credit for any course work when taken or at a later date. No international student may enroll as a post-baccalaureate student.

Admission Procedures

Procedures for admission are as follows:

1. The student's advisor must approve in advance the student's enrollment in each such course.
2. The student may not enroll in a total of more than 15 quarter hours of graduate courses.
3. Approval of the Vice Chancellor for Graduate Studies and Research must be obtained each quarter at registration through the Graduate Office. The student's progress is subject to review and approval each quarter by the Assistant Dean for Resident Instruction, College of Veterinary Medicine.

Admission of Faculty Members: Faculty members may be admitted to the Graduate School through established procedures. However, the following persons may not receive doctoral degrees from The University of Tennessee, Knoxville:

a. Any member of the instructional, research, library, or administrative staff holding the rank of assistant professor and above, or equivalent status at The University of Tennessee, Knoxville;

b. Staff in the Institute of Agriculture holding rank of associate professor and above, or equivalent status and occupying full-time research and extension positions;

c. Any member of The Graduate School system administration holding the rank of assistant professor and above, or equivalent status, except in the case of instructors of graduate personnel as specified in item "b" above.

Any exceptions to this policy shall be made by petition to the Graduate Council. All students from China must possess a Bachelor's degree with grade average of 80.0 or above for the last two years of a four-year program. A student from India must be First Class the last two years of a four-year Bachelor's degree program after completion of the second grade. All students with a Master's degree must be First Class. Applicants from other countries will be evaluated upon receipt of transcripts.

An applicant must present:

1. A complete and accurate chronological outline of all previous university-level education;
2. Authorized school or university records for all courses taken, including translations if the records are in a language other than English;
3. Evidence of financial resources sufficient to provide for his/her living expenses at $6200 (U.S.) per calendar year during the period of registration as a student; and
4. Certification of proficiency in English. Every international student whose native language is not English must pass the Test of English as a Foreign Language (TOEFL), taken within the last two years, or have received a Bachelor's degree from an accredited institution in the United States in order to gain admission.

The complete file (application, official certificates, descriptive titles of courses studied, detailed transcripts including marks gained in final examinations and English proficiency certification) must be submitted to the Graduate Office approximately one quarter in advance of the quarter in which the applicant hopes to gain admission. An applicant who is accepted will receive the necessary forms to enable him/her to obtain a student visa. The University of Tennessee will not consider for admission any student who has entered the United States on an I-20 issued by another institution. No international student admitted to admission as a post-baccalaureate or non-degree student.

All students whose native language is not English must pass an English proficiency examination after arrival at the University. Students who cannot satisfy this requirement must enroll for English 1221 Written and Oral English for Foreign Students (or a course assigned by the Department) for undergraduate credit and pass with a grade of C or better. (No student can audit this course.) A student may not take more than 6 additional hours while enrolled for English. (Any student not passing this examination at a specified level will be sent to an intensive English program until English proficiency is gained.)

Post-baccalaureate: When an applicant who has a Bachelor's degree from an accredited institution is ineligible for regular admission to the Graduate School, but believes that eligibility can be shown if given the opportunity, the student may request admission as a post-baccalaureate student. A student and the proposed major department must outline a course of study, and the student must register for 12 to 15 quarter hours of graduate courses (3000-4000 level). If the student completes these with a B average, the student automatically becomes a non-degree student. A post-baccalaureate student cannot receive graduate credit for any course work when taken or at a later date. No international applicant may enroll as a post-baccalaureate student.

Admission of International Students: The Graduate School can accept only students who have outstanding records. A student from China must possess a Bachelor's degree with grade average of 80.0 or above for the last two years of a four-year program. A student from India must be First Class the last two years of a four-year Bachelor's degree program after completion of the second grade. All students with a Master's degree must be First Class. Applicants from other countries will be evaluated upon receipt of transcripts.

An applicant must present:

1. A complete and accurate chronological outline of all previous university-level education;
2. Authorized school or university records for all courses taken, including translations if the records are in a language other than English;
3. Evidence of financial resources sufficient to provide for his/her living expenses at $6200 (U.S.) per calendar year during the period of registration as a student; and
4. Certification of proficiency in English. Every international student whose native language is not English must pass the Test of English as a Foreign Language (TOEFL), taken within the last two years, or have received a Bachelor's degree from an accredited institution in the United States in order to gain admission.

The complete file (application, official certificates, descriptive titles of courses studied, detailed transcripts including marks gained in final examinations and English proficiency certification) must be submitted to the Graduate Office approximately one quarter in advance of the quarter in which the applicant hopes to gain admission. An applicant who is accepted will receive the necessary forms to enable him/her to obtain a student visa. The University of Tennessee will not consider for admission any student who has entered the United States on an I-20 issued by another institution. No international student admitted to admission as a post-baccalaureate or non-degree student.

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Admission Procedures

Procedures for admission are as follows:

1. Complete the "Application for Admission" form (first page of the catalog); select a major from those listed on pages 8-9; (2) return the completed application form along with a $10 application fee as soon as possible; (3) request the registrar of all colleges and universities attended to send two official transcripts to the Graduate School (all documents, including transcripts, submitted for admission become the property of the University and will not be returned); (4) if required, submit scores from the Graduate Record Examination or Graduate Management Admission Test; and (5) request that any reference or rating forms required as part of the application be sent to the Graduate Office or where indicated.
Anyone with a Bachelor's degree wishing to take courses for graduate credit, whether or not he/she desires to become a candidate for a degree, must make formal application for admission to the Graduate School or submit the Transient Form. No action is taken until a file is complete.

Examinations
Applicants for admission to many of the degree programs are required to submit scores from the Graduate Record Examination or the Graduate Management Admission Test. (Refer to pages 8-9 for majors requiring these examinations.) All students whose native language is not English must submit scores from the Test of English as a Foreign Language (TOEFL) unless graduated from an accredited institution in the United States.

Each applicant is individually responsible for arrangements for the examination for transmission of these scores directly from Educational Testing Service to the Vice Chancellor for Graduate Studies and Research. Application forms may be obtained from Educational Testing Service, Princeton, New Jersey 08540, or from the UTK Graduate School Office. The completed application form and examination fee must reach the proper office at the Educational Testing Service approximately one month in advance of the test date (tests are given four to five times each year). Approximately six weeks should be allowed for the examination results to reach the University.

The University of Tennessee is an approved testing center for all examinations.

Readmission
A student who has not attended the Graduate School at The University of Tennessee, Knoxville for more than five quarters must apply for readmission.

Since readmission is not automatic, a readmissions application should be submitted at least two weeks prior to the desired reentry date. A student who has attended another accredited institution since enrollment at the University must submit two official transcripts showing all course work and any degrees earned at that institution. The student will be notified when the application is received and when action has been taken by the department and the Graduate School. If admission is denied, the student may receive graduate credit for the work taken during the initial quarter; however, future registration will not be permitted until the student is fully readmitted to the Graduate School.

Students are urged to reapply well in advance of planned registration.

Registration Procedures
Dates of registration are listed in the University Calendar (front of catalog). Students should report to the Graduate School to obtain registration materials (scan form and timetable of classes giving details concerning registration procedures) and then should see a department advisor to plan a program and obtain a signature.

Registration requires two days. The University holds advanced registration at approximately the middle of a given quarter for the subsequent quarter. Information may be obtained from the Graduate Office. If a student participates in advanced registration, the student should obtain the class schedule and pay fees on the first day of registration.

All graduate students, including graduate and teaching assistants, research assistants, and scholarship or fellowship holders, should complete the registering procedure at registration (in Stokely Athletics Center) or afterwards at the Treasurer's Office, where the assessment of their tuition and fees will be determined. Those who do not report to the Treasurer's Office before the established deadline for paying fees will be charged the late registration fee. Retroactive registration is not permitted.

Fees, Fee Classification, and Financial Aid

University Fees
University fees are determined by the Board of Trustees and are subject to change without notice. The general fees in effect for graduate and post-baccalaureate students are as follows:

APPLICATION FEE: .................................. $10

Each graduate application for admission must be accompanied by a fee of $10 before it will be processed. (Fee not required if: (1) former UTK graduate student; or (2) graduate application fee previously paid at another UT campus.)

If a student applied but does not enter graduate school within twelve months after date of requested admission it will be necessary for him or her to resubmit the $10 application fee and application. This fee is not refundable.

MAINTENANCE FEE (all students):

| PER QUARTER | $160 |

TUITION (additional for out-of-state students):

| PER QUARTER | $312 |

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) as follows:

In-State
$23 per quarter hour or fraction thereof; minimum charge $59.

Out-of-State
$34 per quarter hour or fraction thereof; minimum charge $162.

All fees collected at registration are subject to audit for correctness. Adjustments, if needed, will be made after final audit.

UNIVERSITY PROGRAMS AND SERVICES FEE:

| PER QUARTER | $20 |

All graduate students taking in excess of 8 quarter hours per quarter will be assessed a University programs and services fee of $20 per quarter. Part-time students taking 8 quarter hours or less will be assessed at the rate of $1 per quarter hour or fraction thereof; minimum charge $3.

The fee for the summer quarter will be $15. Part-time students taking 8 quarter hours or less will be assessed at the rate of $1 per quarter hour or fraction thereof; minimum charge $3.

Graduate and teaching assistants, as well as fellowship students who may have waiver of fees (tuition and/or maintenance), must complete their registration at the Treasurer's Office and pay the appropriate part of the fee.

Students enrolled exclusively in Evening School or at off-campus centers will be exempt from the programs and services fee.

Students taking a course load of 6-8 hours may elect to pay the full programs and services fee.

This fee is not refundable.

LATE REGISTRATION FEE:

All students are required to have a validated fee receipt to complete the registration procedure. This includes students whose fees are billed, prepaid, or waived. Students who do not complete registration on the regular dates scheduled for this purpose will be charged a late registration fee of $2 up to $43. See the University General Catalog for application of this fee. The payment of fees with a check which is not honored by the bank will incur a service charge of $10 to $43, depending on the date the check is redeemed.

MUSIC FEE:

One half-hour lesson per week, per quarter .................................$20

One hour lesson per week, per quarter ...................................$40

Payable by students receiving individual instruction in music.

GRADUATION FEE:

Master's degree candidates ...........................................$16

Doctoral degree candidates ...........................................$41

There is no additional charge for diploma, binding, or microfilming. The graduation fee is non-refundable and is valid for three quarters after the quarter in which it is paid.

DEFERRED PAYMENT SERVICE FEE:.................................. $3

This fee is applicable when the payment of any part of a student's account is deferred, 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) is not paid within five regular business days after the date it was incurred.

If the student's responsibility to take the initiative to pay all University obligations promptly.

AUDITORS FEE:

Fees for courses being audited are the
REFUND OF FEES FOR WITHDRAWAL:
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, whether or not fees have been paid, classes have been attended, or the schedule is incomplete. Failure to attend class does not automatically 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 notify the Withdrawal Office promptly when withdrawing could result in a larger fee assessment. Withdrawal does not cancel fees or credits 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. The above refund policy does not apply to the off-campus Graduate Centers. At the Centers, no refund is made after the first 14 days. Refunds, in accordance with the withdrawal refund policy, will be made after the 7 calendar day deadline.

Part-time students may pay fees computed at the appropriate quarter-hour rate as indicated above. No charge is made for courses dropped after 21 days. 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 dropped 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.

Refunds for cancelled courses 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.

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

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 noted above.

Although the summer quarter is divided into terms of varying lengths, tuition and fees are assessed for the hours dropped. The refund for remaining 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 14 calendar days after the regular registration day for the course(s) involved.

WAIVER OF FEES:
Graduate assistants, teaching assistants, and others whose fees are billed, prepaid, or waived must complete their registration with the Bursar's Office, where they should have their fee receipts validated and supply necessary details concerning fee payment waiver.

NOTE: All fees are subject to change.

Fee Classification for the Purpose of Paying University Fees
Shortly after a student applies to the Graduate School, a receipt of the application, application fee, and residency classification for fee purposes is sent.

If a student has any questions concerning the residency status, he/she should contact the Residency Clerk at the Graduate School Office.

If a student is classified as out-of-state and is a full-time employee in the state of Tennessee or at Fort Campbell, Kentucky, and elects to attend the University on a part-time basis (6 hours or less), he/she must apply for a waiver of the out-of-state portion of the fees prior to the date of registration each quarter. Forms are available from the Residency Clerk at the Graduate School Office.

Rules for Determination of Status:
(1) Every person having his or her domicile in Tennessee has the status of an in-state student, provided that person is deemed to have gained residence while attending any educational institution in this state as a full-time student, as such status is defined by the governing board of such institution.

(2) The domicile of a married person shall be determined by the provisions of those regulations which apply to the status of the residence of the spouse.

(3) A person does not gain or lose in-state status for reason of his/her presence in any state or country while a member of the Armed Forces of the United States, provided that a member of the armed forces may obtain in-state status for the member and dependents by establishing domicile in this state.

Establishment of Domicile, If a student asserts that he/she has established domicile in Tennessee, the student has the burden of proving such assertion.

Appeal. The student who wishes to appeal his/her initial residency classification should contact the Residency Clerk in the Graduate Office.

Effective Date for Reclassification. If a student classified nonresident applies for in-state residency classification at the beginning of a quarter or semester and is subsequently classified as an in-state student, the in-state residency classification shall be effective
at the beginning of the quarter or semester in which application for reclassification was submitted.

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 this aid program 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 need analysis system of the College Scholarship Service (CSS). Through the use of the CSS form and the FAFSA, the Financial Aid Office determines the amount the parents and students 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 two basic types of financial aid for graduate students—loans and part-time employment. These may be awarded individually or in combination according to the needs of the student.

Fellowships and Assistantships

The Hilton A. Smith Graduate Fellowships for full-time studies at The University of Tennessee, Knoxville are awarded on the basis of ability and without regard to the field of study of the candidate. Monthly stipends are provided, and tuition and maintenance fee are paid by the University. Applicants need better than an overall 3.0 grade point average and high scores from the Graduate Record Examination or the Graduate Management Admission Test. Application packets are available in the Graduate Office from November 1 through February 1. Completed applications, including all required supporting material, must be submitted to the Assistant Director of Graduate Admissions by February 15.

Graduate assistantships and additional fellowships are offered through many departments of the University. The stipends usually provide for payment of tuition and maintenance fee by the University. Information concerning these types of assistance may be secured by writing to the head of the department in which the student expects to study.

Student Loans

National Direct Student Loans

Long-term loans are available primarily through the National Direct Student Loan Program. Proven need for financial assistance determines eligibility. Loan repayment and interest payments on National Direct Student Loans are deferred until after graduation or as long as the individual remains in at least half-time attendance at an accredited institution of higher education in the United States. Repayment may also be deferred for a period of 3 years while the borrower is serving in the Armed Forces, Peace Corps, or VISTA. Interest is 3 percent per year on the unpaid balance. The maximum repayment period is 10 years with the current minimum annual repayment of $360 or 10 percent of the accumulated loan, whichever is greater. If upon graduation the student becomes a full-time teacher in a public or non-profit school which is designated by the commissioner being a high enrollment of low-income families or becomes a teacher of the handicapped, 15 percent of the total principal plus interest is cancelled for the first and second years of teaching, 20 percent for the third and fourth years, and 30 percent for the fifth year. If after graduation the student becomes a staff member in a preschool program which is operated for a period comparable to 12½ percent of the total principal plus interest for each year of Armed Forces service in an area of hostility.

Graduate level students may be extended annual loans of $2,500 to a maximum accumulated (undergraduate and graduate) loan total of $10,000. The above regulations and provisions of the National Direct Student Loan Program are subject to change by federal legislative action.

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. A loan of up to $250 per quarter to an annual maximum of $750 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 number of years from the date of the note. Extensions may be obtained if academic studies are continued at the graduate 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 Program 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 at an accredited educational institution. Repayment of a long-term, low interest loan with repayment beginning nine months following termination of half-time study at an accredited school of nursing is required. 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 student becomes employed full-time as a registered nurse in a public or non-profit private agency or institution, up to 20 percent of the principal may be cancelled at the rate of 10 percent of the loan that was unpaid on the first day of employment plus interest for the first 3 years of employment and 20 percent for the fourth and fifth year of employment.

A Nursing Student Loan or any other educational loan will be repaid by the U.S. Department of Health, Education and Welfare if the nursing graduate enters into an agreement to serve as a full-time registered nurse for a continuous period of at least 2 years in an area designated as having a shortage of nurses. Thirty percent of principal and interest will be cancelled for the first 2 years of service and 25 percent for the third year. The above regulations and provisions of the Nursing Loan Program are subject to change by legislative action.

Student Employment

Two employment programs are administered in 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 must earn a part of their educational expenses. Eligible students are placed in on- or off-campus jobs where they work approximately 15 hours per week.

The Student Employment Service operates as a central referral agency. It coordinates lists of full-time employment from both University and private employers with the requests of students seeking part-time employment.

Other Assistance

Guaranteed Student Loans to help meet educational expenses may be available through the federal government or a state guaranteeing agency. Credit unions can determine participation in the program. To receive the loan, one 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 interest is accruing at a rate of less than 9 percent per annum. The student pays up to 7 percent simple interest. Total loans outstanding may not exceed $10,000 for a graduate student.

Complete information is available at interested in applying for such loans. In the state of Tennessee, the Tennessee Student Assistance Corporation, 707 Main Street, Nashville, Tennessee 37208.

Application Procedures

Because a student's resources can be used in combination with other financial aid,
Further information can be obtained from the Office of Residence Halls, 405 Student Services Building.

Married Students: The University has provided excellent apartment facilities in several locations for married students. Information and application for these facilities may be secured from the Office of Rental Properties, Stadium Hall.

Services to the Physically Disabled

Services relating to academic programs for students with physical disabilities, whether permanent or temporary, are coordinated by the Office of the Dean of Admissions and Records, 305 Student Services Building. In conjunction with the Physical Plant Office, the UT Bookstore, the Student Activities Office, and the academic departments, efforts are made to insure that attendance at The University of Tennessee, Knoxville is as convenient as possible for students with physical disabilities.

These services include assistance during registration (preregistration, collection of class schedules, payment of fees, drop and add), the securing of special parking permits, elevator keys, tickets for special events; and similar efforts to relieve the special mobility problems of the students. The Physical Plant Office coordinates efforts to eliminate physical barriers to the degree possible, with priority being given to access and facilities for academic buildings.

The Office of the Dean of Admissions and Records assists students in the scheduling of special class sections in order to respond to the particular needs of the physically handicapped.

Vehicle Operation and Parking

The University of Tennessee endeavors to provide adequate facilities for the increasing number of vehicles being operated by students. However, the areas available for parking are necessarily limited. In an effort to provide parking facilities and to reduce traffic congestion within the campus area, large student parking areas are located on the perimeter of the campus. The University provides an intracampus bus system connecting these parking areas with the main campus at no cost to the student. Staff parking areas are located throughout the campus.

Each person who operates a motor vehicle in connection with attendance or employment at the University must register that vehicle with the traffic section of the Security Department. A University Traffic and Parking Authority determines the parking policy, traffic regulations, and fees, and this information is published each year in the "University Traffic and Parking Regulations". Consequently, a system of fees for violations of these regulations is established by the University. The importance of compliance with these parking and traffic regulations is indicated by the following policy of the UTK Traffic and Parking Authority.

Any student or staff member who has been notified of a violation of the traffic regulations is subject to disciplinary action up to and including termination or dismissal from the University.

Students with unpaid traffic citations will not be permitted to register at the beginning of the quarter until indebtedness is cleared. A staff member with unpaid traffic citations will not be allowed to register the vehicle or purchase a parking permit. If a traffic citation is not paid or appealed within 10 working days after issuance, a penalty of 50 percent of fine will be added. This penalty does not apply to fire lane violations.

Computing Center

The University of Tennessee Computing Center (UTCC) 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 UT campuses 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 DECsystem-10 which are used for research, instruction and administrative computing work. UTCC also maintains an IBM 3036/68 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 DECsystem-10 is a 1080 configuration with 250k words.

UTCC supports remote job entry stations (card reader/line printer) with the IBM 370/148/IBM 360/65 DECsystem-10 combination and a CalComp plotter. The IBM 370 and 360/65 run under OS/360 MVT with HASP II. The DECsystem-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 applications.

UTCC publishes a User's Guide which describes the use of the IBM 370/148 and 360/65 and policies and procedures and the DECsystem-10 Programmer's Guide, which is a general handbook for the use of the DECsystem-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

General Information

Housing

Single Men and Women: Single graduate students are provided excellent accommodations in both traditional and modern facilities which are conducive to academic achievement and personal development. Single graduate students have the same priority as other single students and may be assigned to any residence hall. Some units of the residence halls and of the student apartment building have been designed specifically for single graduate students. In Melrose Hall the graduate section offers accommodations for up to ten students with personal responsibility for the apartment.

Further information can be obtained from the Office of Residence Halls, 405 Student Services Building.

Veterans' Benefits

The Office of the Registrar administers the university's eligibility for programs of the Veterans Administration. Each veteran or eligible dependent should apply to the nearest Veterans Administration office for a certificate of eligibility. The application should be made before registration if possible. Certificates of eligibility are sent directly to students who then bring them to the Office of the Registrar for University authentication and processing.

Assistant Head Resident positions are available for single graduate students. The Assistant Head Resident is responsible to and assists the Head Resident in coordinating and supervising assigned aspects of the operation of the hall to which the assignment is made. The position is a part-time live-in position, with appointment on a 9½-month basis. Summer employment may be possible.

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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 DECSYSTEM-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.

Office of International Student Affairs

This office, located at 201 Alumni Hall, assists students from other countries with the many matters that are of particular concern to them during their stay in the United States. International Student Affairs serves as the official University representative in all matters involving immigration authorities, international educational organizations, and foreign governments.

The Office maintains the student’s official immigration records and handles questions regarding immigration regulations. It coordinates such projects as a community volunteer program for international students and activities for student spouses. To aid the international student’s understanding of American life, the Center’s staff serves as advisors on personal and related problems.

Orientation programs are held at the beginning of each term, and international students are urged to attend them.

International students applying for admission should write to: The Vice Chancellor for International Student Affairs, The University of Tennessee, Knoxville, Tennessee 37916.

University International House

The International House is located approximately two blocks from the heart of the campus, at 1601 West Clinch Avenue. Provided by The University of Tennessee and operated by the staff of the Office of International Student Affairs, the House provides an activity center where domestic and international students may meet to relax and discuss matters of mutual interest. The small library at “I” House contains books and periodicals from all over the world.

The University Library

The University of Tennessee, Knoxville Library owns approximately 1,390,000 volumes, 1,970,000 manuscripts, 50,000 microfilm reels and 1,100,000 items of other microtext, plus recordings, tapes, United States and United Nations documents, and more than 20,000 periodicals and other serial titles, which are received annually. The library’s membership in the Association of Research Libraries indicates the University’s emphasis on research and graduate instruction at the doctoral level and the support of large, comprehensive collections of library materials on a permanent basis.

Interlibrary loan service augments the UTK Library research holdings for faculty and graduate students and includes borrowing monographs, obtains copies of needed materials, and providing access to bibliographic services offered by other institutions, such as computer-based data searches and information retrieval.


The Special Collections section, located in the Main Library, is a repository of regional and local materials, Tennessee, and other specialties, including the legislative papers and manuscripts of many Tennessee political figures, and the Radiation Biology Archives which houses the files of a group of internationally renowned scientists. Its materials are of particular interest to scholars in the fields of history, political science, social sciences, biological sciences, and the arts.

The libraries located on the statewide campuses in Chattanooga, Martin, Memphis, Nashville, and Tullahoma are individually administered; all libraries of The University of Tennessee are accessible to all students and faculty in the system.

General Regulations of the Graduate School

Responsibility

A graduate student must assume full responsibility for knowledge of rules and regulations of the Graduate School and departmental requirements concerning the individual degree program. A statement on Graduate School Requirements and Responsibilities is printed on the back of the student’s Admission Status Form. Additional copies are available at the Graduate Office.

Requirements

The Graduate School requirements are minimal and, in many cases, are exceeded by those of the individual departments. In some cases, departments have brochures describing in detail their programs and requirements.

Academic Termination

Continuous registration is not automatic. Graduate education (particularly at the doctoral level) requires continuous evaluation of the student. This evaluation includes not only periodic objective evaluations such as satisfactory cumulative grade point average, satisfactory completion of the preliminary examination and approval of the dissertation or thesis but also the overall appraisal by the faculty of the student’s progress and potential. The determination to dismiss a student for academic reasons requires evidence both objective and subjective; a student may be terminated from a program regardless of his or her grade point average. Although a B average is required for graduation, the determination of whether a student is making satisfactory progress toward the degree does not depend solely on his or her grade point average but reflects the appraisal of the student’s total record and potential.

Departments (programs) may develop requirements for graduation or continuation in addition to the minimum requirements set forth in the Catalog. Such additional requirements must be in writing and on file in the Office of the Dean for Graduate Studies. It is the student’s responsibility to become familiar with any additional requirements of his/her department (program).

Appeals Procedure

Normally grievances should be handled at the departmental level through the student’s advisor, department chairman or program head. Further appeal may be made to the Vice Chancellor for Graduate Studies and Research, then to the Chancellor, and then to the Board of Trustees, through the President. A copy of the detailed procedure is available in the Graduate Office and in each department.

Correspondence Study

No graduate credit is allowed for work done by correspondence study with this or any other university.

Graduate Credit

No student may receive graduate credit for a course unless properly admitted to the Graduate School. Students are expected that students will be so admitted prior to registration for courses carrying graduate credit. In some instances, however, students who appear to meet the criteria for admission are permitted conditional registration for graduate credit after filing an application for admission to the Graduate School and paying the application fee. Transcripts (two official copies) and additional materials required must be filed with the Graduate Office at once. If the student is admitted within seven weeks from the last day of registration, the student may receive graduate credit for the courses. Should the student not be so admitted, whether because of lack of qualifications or because of failure to furnish the necessary materials in ample time for a decision concerning admission, the courses being taken will be charged to undergraduate credit, and no future registration will be permitted until the student is properly admitted as a graduate student.

Change of Registration

A student’s permanent record card will show all courses for which registration has been completed except those from which the student withdraws during the first 5
calendar days after the beginning of classes. Students who fail to attend the first class meeting without prior arrangement with the department may be dropped from the course. The deadline for change of registration (from credit to audit, audit to credit, graduate to undergraduate, undergraduate to graduate, withdrawal, etc.) is set at midquarter, approximately 35 calendar days after the first day of classes each quarter. A student may change registration from a course at any time up to and including this date by executing a change of registration slip and submitting this to the Graduate Office. The advisor's signature is not required. The instructor's signature is required to add a course two weeks after classes begin and/or to add a course that is closed. If withdrawal from a course or from the University occurs after the first 5 days of classes and before the withdrawal deadline, the grade of W will automatically be entered on the student's record. A grade of W will not be entered on the student's permanent record if the request for withdrawal is based on circumstances beyond the student's control.

Examples of circumstances beyond the student's control are:

a. illness or injury of the student (verified by the Student Health Service or private physician).

b. 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 permission are:

a. improper registration on the part of the student.

b. failure to achieve academically.

c. A student wishing to withdraw from a course, or from the University, after the withdrawal deadline, or change his or her registration shall present the request, together with evidence of extenuating circumstances to the Graduate Office. If the request is approved, the Graduate Office will notify the Office of Admissions and Records, which will enter the grade(s) of W or the appropriate change on the student's permanent record.

Maximum Load

The maximum load for a graduate student is 15 hours, and 9 to 12 hours is considered a full load. Registration for more than 15 hours during any quarter including the summer quarter is not permissible without prior approval of the Vice Chancellor for Graduate Studies and Research, who may allow registration of up to 18 hours if the student has achieved an average of 3.6 or better in at least 9 hours of graduate work.

Graduate students are urged to register each quarter for no more hours than they can successfully complete; at the same time, students should register for a number of hours that is compatible with their utilization of faculty time and University facilities. The formula on which state funds are appropriated to the University recognizes 12 hours per quarter as the full-time registration for graduate students. Full-time students who hold fellowships and research assistantships and do not have teaching responsibilities should consider 12 hours to be the minimum full-time registration for each quarter. Full-time benefits are paid by the Veterans Administration on registrations of 9 or more hours in each quarter.

Advisors

The Vice Chancellor for Graduate Studies and Research is the general advisor for all graduate students, but so far as particular courses are concerned, a student is counseled by an advisor from the major department. A new student seeking an advisor should go to the office of the department or graduate program in which the student is to major. At the time of each registration, the advisor must approve the program of study for a student. If the student is pursuing a collateral area of study, the advisor, in approving the student's program, should secure the advice of the department representing the collateral area.

Auditors

Persons who wish to attend certain classes regularly, without taking examinations or receiving grades or credit, may do so by completing a graduate application, paying the application fee, registering as auditors, and paying regular fees. Auditors are not permitted to participate in class discussions and recitations, or use laboratory equipment and materials.

Grades

Grades in the Graduate School have the following meanings:

A- (4 quality points per quarter hour); indicates work of superior quality.

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 cannot be used in a graduate program.

F- (no quality point value); indicates extremely unsatisfactory work and cannot be used in a graduate program.

I- (no quality point value); indicates that the student has completed 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 two quarters. If a supplementary grade report has not been received in the Graduate Office at 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. 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 in a 45-hour Master's thesis program or 12 hours in a 48-hour non-thesis program or 18 hours in a doctoral program of 72 hours excluding dissertation hours.)

S/N is used for courses which culminate in a thesis, dissertation, or preliminary examination. The N grades take on the value of the S when the thesis or dissertation is accepted by the Graduate School.

No 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. The grade of W will not be counted in computing the grade average on courses completed in the Graduate School.

Course Numbers

All 5000- and 6000-level courses are graduate courses. Some 3000- and 4000-level courses, if listed in the Graduate Catalog, are available for graduate credit; however, a "G" must be indicated on the registration material at the time of registration. (A "G" will also be placed on the permanent record beside the hours credit.)

Prerequisites

Graduate work in any department must be preceded by sufficient undergraduate work in the major area and related ones to satisfy the department that the student can successfully do graduate work in the chosen field. All prerequisites are not listed in the Graduate Catalog since undergraduate records are examined and evaluated by the appropriate department before admission to a degree program.

Residence Requirements

There is no residence requirement for any Master's program. The Specialist in Education Degree requires one quarter of full-time study if the student has a Master's degree. A student without a Master's degree is required to have two consecutive quarters of full-time residence.

*If a student receives an I after finishing the course work for the Master's degree but has not received the degree, he/she may graduate with an I with the approval of the Vice Chancellor for Graduate Studies and Research.
The minimum residence for any doctoral degree is one academic year of three consecutive quarters of full-time study (minimum of 9 hours) in the resident graduate program. A student in residence is devoting essentially all energies to graduate study on campus. Part-time enrollment does not count toward this requirement. Consecutive quarters include the summer quarter.

Revision of Program
A student who wishes to revise a major program of study must complete a "Request for Revision of Graduate Program" form which can be obtained from the Graduate Office. It is necessary to obtain the signature of the head of the department in which admission was previously granted. No signature is needed if a student is requesting a change from non-degree to a degree program or from one degree to another in the same department.

Time Limit
The time limit for the use of graduate credit toward a Master's degree is six years from the beginning date of the earliest course applied toward the degree. The last 45 hours of credit for an Specialist in Education degree must also be earned within a period of five years prior to the award. Normally, these time limits may not be extended. However, in exceptional cases, courses taken beyond these periods may be recognized after special examination or other means recommended by the department and given prior approval of the Vice Chancellor for Graduate Studies and Research.

The doctoral program must be completed within a period of five years after passage of preliminary examinations.

Graduate School News
The Graduate School News is published quarterly and is available to all graduate students. Calendars, schedules, and new requirements for degrees are published in order for students to have access to the latest information, some of which may supersede this catalog.

Proficiency Examination
A proficiency examination may be given in any academic course offered for graduate credit. To be eligible, a student must be regularly admitted to the Graduate School, and the examination must be recommended by the head of the department offering the course. Students applying for this privilege must present evidence that they have developed the knowledge and abilities expected of graduate students who have taken the same courses. Upon passing such an examination with a minimum grade of B, the student will receive regular graduate credit. A maximum of three graduate courses may be completed by this method. A fee must be paid before administration of each examination. Proficiency examinations may not be used to raise the grade or change the credit in a course previously completed, nor may such an examination be repeated.

English Proficiency
Any student whose native language is not English must present a TOEFL score of at least 525 unless he/she has received a Bachelor's or Master's degree from an accredited institution in the United States. The student must also pass an English proficiency examination prior to initial registration. The regulations concerning this examination are described under Admission of International Students.

Law Courses
A graduate student may be allowed to take up to 9 quarter hours of law courses and receive credit toward a degree upon approval of the College of Law and department committee chairman. DBA students may take a maximum of 12 hours.

Transfer Credits
A maximum of 9 quarter hours (6 semester hours) may be transferred into a student's major program for work taken at accredited institutions. (Extension courses at other universities are not applicable.) One-half of a student's program must be transferred from within the University of Tennessee System. Such work must have been taken for graduate credit and passed with a grade of B or better, be part of an otherwise satisfactory graduate program (B average) but not used toward another degree, and be listed on the Admission to Candidacy form approved by the committee members and the Vice Chancellor for Graduate Studies and Research. Ordinarily, course work from foreign institutions is not transferred since these institutions have not been accredited. This course work must be completed within the six-year period prior to the receipt of the degree. The same rule applies also to the Specialist in Education degree. Courses transferred into a student's Major's program must be a combination of University of Tennessee System courses and courses from other institutions so long as the total accepted does not exceed one-half the total program, and courses accepted from outside The University of Tennessee System do not exceed 9 quarter hours. Transfer credits will be placed on The University of Tennessee transcript record only after the student has been admitted to candidacy. Courses taken for graduate credit at another institution and passed with a grade of B or better from a satisfactory graduate program (B average) may be accepted in a student's doctoral program. The number of hours a student may include will be determined by the doctoral committee. They must be listed on the Admission to Candidacy form and approved by the committee members. Although the hours may be used as part of the requirements for the degree, the courses will not appear on The University of Tennessee transcript record. Official transcripts must be received by the Vice Chancellor for Graduate Studies and Research directly from appropriate institutions. No signature is needed if a student is requesting a change from non-degree to a degree program or from one degree to another in the same department.

Credits accepted in either the Master's or doctoral program will not affect the minimum residence requirements, nor will they be counted toward meeting the student's grade average. Neither will they count toward meeting 5000- or 6000-level requirements for an advanced degree.

Thesis Consultant
All theses and dissertations are submitted to the Graduate School Thesis Consultant for approval before they are officially accepted for the Graduate Council. A student may confer with the Thesis Consultant regarding any problems or questions encountered during the preparation of the final copy of the thesis or dissertation. Students should also consult the Graduate School Theses and Dissertations Manual as a guide to the correct format for the thesis or dissertation.

Before a thesis is deposited in the Library, it is the responsibility of the Thesis Consultant to examine the materials and to make sure that the report is mechanically accurate and attractively presented, is free of typographical and grammatical errors, is suitable for binding, and reflects credit upon the University and its graduate program. If the form of the thesis is not thus approved, the student must make whatever corrections are necessary and submit the materials again.

A one-hour Thesis Workshop is held each fall and summer quarter for all interested students. The date for the Workshop is announced in the Graduate School News.

Requirements for Advanced Degrees

Master's Degrees
Master's degree programs offered in the Graduate School may have a "Major's and Degrees Available" on pages 9-9. See also chart, page 22 for a summary of procedures for these degrees.

Non-Thesis Programs: Some departments offer optional non-thesis programs for the Master's degree. Departmental announcements indicate whether this option is available.

Course Requirements: A candidate for a Master's degree must present a total minimum credit of 45 quarter hours of approved graduate courses. These hours may be entirely in one major subject or may include one or two minors, if approved by the student's faculty advisory committee and the Vice Chancellor for Graduate Studies and Research. The major subject must include at least 18 quarter hours of course work except in the MBA degree program. A minor shall consist of not less than 9 or more than 18 quarter hours of course work. All courses for which a student registers must be completed (not officially dropped) before graduation. At least one-half of these total hours in the graduate program must be at or above the 5000-level, of which no more than 9 may be
thesis hours. Those courses must be completed at The University of Tennessee. (5000- and 6000-numbered courses are open to graduate students only; 3000- and 4000-numbered courses may be taken for graduate credit if listed in the Graduate Catalog.) The Master of Arts in College Teaching requires 60 quarter hours, 9 hours of which must be devoted to the preparation of a thesis. Some departments permit the student to take additional courses in lieu of a thesis—see departmental requirements). In the two-year program, the candidate also spends six quarters as a part-time teaching intern. The emphasis in the program will be on training prospective teachers of undergraduate courses. Participating departments are indicated in the list of "Majors and Degrees Available" on pages 8-9.

**Master's Committee:** A committee for the Master's degree is formed at or before the time the student applies for admission to candidacy. The responsibility of this committee is to assist the student in planning a course of study and carrying out research for the achievement of degree requirements. The student should consult with the major professor concerning the composition of a committee. This committee consists of a minimum of three members, with the rank of assistant professor or above. If a student does not have a major, all members may be from the major department. If a student does have a minor, one member of the committee must be from the minor department. A student should consult with the advisor or department head concerning the Master's committee after one quarter of graduate-level work.

**Admission to Candidacy:** Application for admission to candidacy for the Master's degree is made as soon as possible after the student completes any required prerequisite courses and 15 hours of graduate credit with a B average in all courses taken for graduate credit. Approval of the Vice Chancellor for Graduate Studies and Research is required. The student must submit the Admission to Candidacy form, with appropriate signatures, to the Graduate Office no later than commencement day of the quarter preceding the quarter in which he/she plans to graduate. The deadline for submission of this form is given each quarter in the Graduate School News.

**Thesis Registration:** A minimum of 9 quarter hours and, in some approved programs, a maximum of 18 quarter hours of credit (course number 5000 which is variable credit) in the major may be earned in the preparation of an acceptable thesis, representing original, independent work. A student must be registered for a thesis course each quarter work is being pursued on the thesis. If the thesis is not completed during the quarter in which the student registers for the last 3 hours of 5000, the candidate shall continue to register for a minimum of 3 hours of 5000 each quarter until the thesis work is completed on the research and thesis through the quarter in which the thesis is accepted by the Graduate School. Similar rules apply when problems are used in lieu of the thesis.

**Non-Thesis Registration:** All non-thesis students using University facilities or faculty time may be registered for course 5002 if not registered for other courses. Students taking the final examination but not otherwise registered must pay a fee of $50. Final examinations will not be scheduled until one of the above is met. The formulation of the student's program, supervision of program development, recommendation for admission to degree candidacy, direction of research, and qualifying and terminal examinations are executed by a committee of not fewer than three faculty members, with the major professor as chairperson. (Members of the University faculty may attend the examination.) In case of failure of the final examination, the candidate may not appear for reexamination until the following quarter. The result of the second examination is final.

**Final Examination for Non-Thesis Students:** A candidate presenting a thesis must pass a final oral (or oral and written) examination on all work offered for the degree. The examination is not merely a reexamination of course work but is a test of the candidate's ability to integrate material in the major and related fields, including the work presented in the thesis. This examination, which must be scheduled through the Graduate Office, shall be held at least 10 days before the final date for submission of theses to the Graduate School. The complete thesis, submitted in accordance with the rules of the Graduate Office, shall be distributed to the members of the committee at least one week before the date of the final oral examination. This examination will be conducted by a committee of not fewer than three faculty members, with the major professor as chairperson. (Members of the University faculty may attend the examination.) In case of failure of the final examination, the candidate may not appear for reexamination until the following quarter. The result of the second examination is final.

**Final Examination for Thesis Students:** A final written examination on all work offered for the degree. The department may or may not follow this examination with an oral examination. The examination is not merely a reexamination of course work but is a test of the candidate's ability to integrate material in the major and related fields. It must be scheduled through the Graduate Office in accordance with the Graduate School News deadlines and will be conducted by a committee of not fewer than three faculty members, with the student's major professor as the chairperson. In case of failure of the final examination, the candidate may not appear for reexamination until the following quarter. The result of the second examination is final.

**Thesis:** The thesis represents a culmination of an original research project completed by the student. The organization, method of presentation, and subject matter of the thesis is important in conveying to others the results of such research. Two copies of the thesis must be submitted to and approved by the Graduate School within the dates specified by the Graduate School. Each copy of the thesis must include an approval sheet, signed by the members of the committee, which certifies to the Vice Chancellor for Graduate Studies and Research that the committee has examined the final copy of the thesis and found its contents to be satisfactory. The student should check with the department head concerning additional required copies of the thesis. The thesis must be prepared according to the Graduate School Thesis and Dissertation Manual.

**Specialist in Education Degree**

The Specialist in Education (Ed.S.) degree is offered in Curriculum and Instruction, Educational Administration and Supervision, Educational Psychology and Guidance, Safety Education and Service, and Vocational-Technical Education. Students in the Graduate School who become candidates for the Ed.S. must have a minimum of one year of teaching experience or its equivalent. Admission to the Specialist in Education program requires formal application for admission to Graduate School, followed by processing and recommendation by the department or the student is majoring, and is dependent upon final approval by the Vice Chancellor for Graduate Studies and Research.

The formulation of the student's program, supervision of program development, recommendation for admission to degree candidacy, direction of research, and qualifying and terminal examinations are executed by a committee of not fewer than three faculty members. This committee is appointed upon request from the department head by the Vice Chancellor for Graduate Studies and Research and includes a minimum of two members from the department or area of specialization. See chart, page 23 for summary of procedures.

**Course Requirements:** Each student's program involves a minimum of six quarters of study totaling not less than 90 quarter hours. A student with a Master's degree is required to have at least one quarter of full-time residence. A student without a Master's degree is required to have two consecutive quarters of full-time residence. A minimum of 12 quarter hours from collateral fields in professional education (outside the major department or area) and 12 quarter hours from fields outside of the College of Education is required for each individual program.

Credits earned in a Master's degree may meet course requirements in the student's Specialist in Education program to which they are specifically comparable. Nine hours of work beyond the Master's degree may be transferred from approved institutions and may be used to meet the student's course requirements. (See Transfer Credits, page 19.)

For a student admitted to the program with a Master's degree or appropriate work beyond the Master's degree, program requirements may be modified upon recommendation of the student's committee and approval of the Vice Chancellor for Graduate Studies and Research, except that no modifications shall be permitted unless the following: (1) examination requirements, research requirements, and the minimum of 24 quarter hours of course credit
outside the department or area in which the student is doing the work are met; and (2) all graduate course work completed prior to admission accepted as part of the student’s program must be appropriately related to the student’s objective.

Undergraduate courses required for certification at The University of Tennessee in the student’s field of specialization may not be taken for graduate credit as part of the program. At least 22% of the last 45 hours of course work, exclusive of the thesis or problems, must be in 5000- or 6000-level courses.

Admission to Candidacy: Admission to candidacy is established by formal application to the Vice Chancellor for Graduate Studies and Research, normally during or immediately following the quarter in which the student’s course credit totals or exceeds 45 hours and upon the recommendation of the student’s committee. Approval of the Vice Chancellor for Graduate Studies and Research is required. The student must submit the Admission to Candidacy form, with appropriate signatures, to the Graduate Office no later than commencement day of the quarter preceding the quarter in which the student plans to graduate. A qualifying examination is required if the student’s Master’s degree was earned six or more years prior to admission to the program. The qualifying examination may be written, oral, or both written and oral.

Thesis: The thesis represents a culmination of an original research project completed by the student. The thesis, method of presentation, and subject matter of the thesis are important in conveying to others the results of such research. A minimum of 9 hours of research credit (5180, 5190, and 5200) is required. If the student does not complete the research during the first quarter registered for 5200, the student must continue to register for the course each quarter as long as active work on the thesis continues or until the thesis is accepted by the Graduate School. The thesis is to be prepared according to the instructions in the Graduate School Thesis and Dissertation Manual. It should be approved by the committee prior to submission and must be submitted by the appropriate date the quarter the student wishes to graduate.

Final Examination: The final step in the program is an oral examination covering the student’s research and course of study. This examination must be scheduled through the Graduate Office in accordance with the instructions in the Graduate School News. In case of failure, the student may not appear for reexamination until the following quarter. The result of the second examination is final.

Doctoral Degrees

Three doctoral degree programs are available: Doctor of Philosophy, Doctor of Education, and Doctor of Business Administration. Doctoral programs are listed under “Majors and Degrees Available” (see pages 8-9). The doctoral degree, the highest in-course degree, is awarded in recognition of distinctive scholarship and the completion of a research project which is a significant contribution to knowledge.

Doctoral programs include a field of specialization and often study in one or more collateral fields. Collateral study is defined as a minimum of 8 quarter hours of graduate courses in a given area outside of the department of the student’s major field. The selection of specific courses will be determined by each student’s faculty committee, subject to regulations of the Graduate School and approval by the Vice Chancellor for Graduate Studies and Research. See chart, page 24, for summary of procedures for this degree.

Doctoral Committee: The student’s committee is nominated by the student’s major professor who serves as the chairperson, and department head and approved by the Vice Chancellor for Graduate Studies and Research, preferably before beginning the second year of graduate study. The committee shall consist of at least one member from outside the major department. Three of the four members, including the chairperson, must be approved by the Graduate Council to direct doctoral research.

This committee has the primary responsibility, subject to Graduate Council policies and special requirements adopted by the faculties of individual areas of study, for the degree work of the student. The committee should plan and must approve all course work, certify the student’s mastery of the subject matter of the field of study, direct the research, and recommend the dissertation for approval.

Continuous Registration: Registration for course 6000 is necessary whenever a student is working on the dissertation. A minimum registration of 36 quarter hours of course 6000 is required of all doctoral candidates before the dissertation will be accepted. The student will continuously register for course 6000 (minimum of 3 hours) from the time that the doctoral research proposal is approved, admission to candidacy is accepted, or registration for course 6000 is begun, whichever comes first, including the quarter in which the dissertation is accepted by the Graduate School. Continuous registration is interpreted to include the summer quarter. If a student must be away from the University during the doctoral study the student may, upon recommendation of the department head and approval of the Vice Chancellor for Graduate Studies and Research, be granted a leave of absence from the requirement for periods not exceeding eight quarters.

Preliminary Examination: A comprehensive preliminary examination which is an indication of the student’s fitness for completing the program is required of each person working toward the doctorate. This examination may be written but may also include an oral examination by the student’s committee. The nature and time of the examination will be determined by the student’s major department or faculty committee. The preliminary examination must be passed prior to admission to candidacy and at least three quarters in advance of conferral of the degree.

Language Requirements: Usually candidates for the Ph.D. degree must possess a reading knowledge of at least one foreign language in which there exists a significant body of literature relevant to their major field of study. Some programs require two languages and some none.

Admission to Candidacy: A student may be admitted to candidacy after passage of the preliminary examinations, fulfillment of the language requirements (for Ph.D.), and maintenance of at least a B average in the courses. (Each doctoral student must plan to take an appropriate number of 6000-level courses, usually a minimum of 9 quarter hours, which are designed expressly for doctoral students at The University of Tennessee, during the program of study. These courses cannot be transferred from another institution.) Admission to candidacy must be secured at least three quarters prior to the date the degree is to be conferred. Each student is responsible for filing the application for admission to candidacy, which must be signed by the committee members and approved by the Vice Chancellor for Graduate Studies and Research, the Vice Chancellor for Graduate Studies and Research, the specific language (or languages) required. When the student feels adequately prepared to take a language examination, he or she should notify the language representative in the department. The appropriate forms to schedule the examination may be obtained from the Graduate Office. The dates and times of the examinations are printed in the Graduate School News.

Satisfactory completion (B grade or better) of an appropriate 3030 course in a language department may be substituted for the actual language examinations. (The student cannot repeat this course if a grade of C or below is received when used for the actual language examinations.)

Research Requirements: Research is an essential part of the program of every candidate for the doctoral degree. For the Doctor of Philosophy and Doctor of Business Administration degrees, original research forms the basis of the dissertation.
The program for the Doctor of Education degree requires demonstration of proficiency in at least two types of research techniques. These techniques may include foreign languages, historical research methods, statistics, experimental design, sociological research methods, survey design and analysis, philosophical research methods, or machine data processing. The candidate's faculty committee shall determine the research techniques to be included in the candidate's program.

Final Examination: A final examination (oral, or oral and written) on the student's dissertation, special field, and such other fields as the student's faculty committee may specify, will be administered by the full, approved committee after completion of the dissertation and all course requirements. This examination must be passed at least ten days before the date for submission of the dissertation to the Graduate Office. The examination must be scheduled through the Graduate Office and oral examinations not properly scheduled must be repeated. The dissertation, in the form approved by the major professor, must be distributed to the committee at least two weeks before the examination. The date of the examination is announced publicly and the examination is open to all faculty members.

Dissertation: The dissertation represents a culmination of an original major research project completed by the student. The organization, method of presentation, and subject matter of the dissertation are important in conveying to others the results of such major research. A student should be registered for the number of dissertation hours representing the appropriate fraction of effort devoted to this phase of the candidate's program. A minimum registration of 36 quarter hours of course 6000 is required of all doctoral candidates before the dissertation will be accepted. The student shall continue to register for course 6000 (minimum of 3 hours) for the entire period during which the person is actually working on research and dissertation, including the quarter in which the dissertation is accepted by the Graduate School. The number of hours registered each quarter should be at full-time levels (12 hours) if the facilities and faculty are being utilized at full-time levels.

Two copies of the dissertation (prepared according to the regulations given in the Graduate School Thesis and Dissertation Manual) must be submitted to and approved by the Graduate School. These copies must include an approval sheet, signed by all members of the faculty committee, which certifies to the Vice Chancellor for Graduate Studies and Research that they have examined the final copy and found that its contents demonstrate scholarly achievement. Doctoral forms and a thesis card are also submitted at this time. The student should check with the department head concerning additional required copies of the dissertation.

Summary of Procedures for Master's Degrees

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<tr>
<th>PROCEDURE</th>
<th>UNDER DIRECTION OF</th>
<th>DATE</th>
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</thead>
<tbody>
<tr>
<td>Admission as a potential candidate (if previously admitted non-degree)</td>
<td>Major departmental advisor and Vice Chancellor for Graduate Studies and Research</td>
<td>Prior to completing 18 hours of course work</td>
</tr>
<tr>
<td>Formation of faculty committee</td>
<td>Major departmental advisor</td>
<td>Prior to application for admission to candidacy</td>
</tr>
<tr>
<td>Submission of application for admission to candidacy (forms at Graduate Office)</td>
<td>Major professor and student's committee</td>
<td>B average, completed prerequisites, at least one quarter prior to graduation*</td>
</tr>
<tr>
<td>Approval of admission to candidacy</td>
<td>Vice Chancellor for Graduate Studies and Research</td>
<td>Prior to Commencement</td>
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GRADUATION REQUIREMENTS

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<tr>
<th>PROCEDURE</th>
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<tbody>
<tr>
<td>Placement of name on graduation list</td>
<td>Student</td>
<td>Indicate on registration material</td>
</tr>
<tr>
<td>Application for diploma</td>
<td>Vice Chancellor for Graduate Studies and Research</td>
<td>See deadline notice available at registration*</td>
</tr>
<tr>
<td>Scheduling of oral or written examination</td>
<td>Major professor, student, and Vice Chancellor for Graduate Studies and Research</td>
<td>Not later than one week prior to oral or written examination</td>
</tr>
<tr>
<td>Submission of thesis to faculty committee</td>
<td>Faculty committee</td>
<td>At least one week prior to oral or written examination</td>
</tr>
<tr>
<td>Oral examination</td>
<td>Major professor and committee</td>
<td>Not later than ten days before thesis deadline*</td>
</tr>
<tr>
<td>Removal of incompletes</td>
<td>Instructor of course</td>
<td>Not later than one week before Commencement*</td>
</tr>
<tr>
<td>Submission of final copy of thesis and thesis card</td>
<td>Major professor, candidate's committee, and Vice Chancellor for Graduate Studies and Research</td>
<td>After oral examination and no later than two weeks before Commencement*</td>
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* Dates are printed in Graduate School News quarterly.
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<tbody>
<tr>
<td>Admission as a potential candidate (if previously admitted non-degree)</td>
<td>Major departmental advisor and Vice Chancellor for Graduate Studies and Research</td>
<td>After submission of Revision Form</td>
</tr>
<tr>
<td>Formation of faculty committee</td>
<td>Major departmental advisor</td>
<td>Prior to application for admission to candidacy</td>
</tr>
<tr>
<td>Submission of application for admission to candidacy (obtain forms from the Graduate Office)</td>
<td>Major professor and Vice Chancellor for Graduate Studies and Research</td>
<td>At least one quarter prior to graduation*</td>
</tr>
<tr>
<td>Approval of admission to candidacy</td>
<td>Vice Chancellor for Graduate Studies and Research</td>
<td>Prior to Commencement</td>
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**GRADUATION REQUIREMENTS**

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<td>Vice Chancellor for Graduate Studies and Research</td>
<td>See deadline notice available at registration*</td>
</tr>
<tr>
<td>Scheduling of oral or written examination</td>
<td>Major professor, Vice Chancellor for Graduate Studies and Research, student</td>
<td>Not later than one week prior to oral or written examination*</td>
</tr>
<tr>
<td>Submission of thesis or problems to faculty committee</td>
<td>Faculty committee</td>
<td>At least one week prior to oral examination</td>
</tr>
<tr>
<td>Oral examination</td>
<td>Major professor and committee</td>
<td>Not later than ten days prior to thesis/problems deadline*</td>
</tr>
<tr>
<td>Removal of incompletes</td>
<td>Instructor of course</td>
<td>Not later than one week before Commencement*</td>
</tr>
<tr>
<td>Submission of final copy of thesis and thesis card</td>
<td>Major professor, candidate's committee, and Vice Chancellor for Graduate Studies and Research</td>
<td>After oral examination and no later than two weeks before Commencement*</td>
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* Dates are printed in Graduate School News quarterly.
### Summary of Procedures for Doctoral Degrees

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<tr>
<th>PROCEDURE</th>
<th>UNDER DIRECTION OF</th>
<th>DATE</th>
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<tbody>
<tr>
<td><em>Appointment of faculty committee</em></td>
<td>Vice Chancellor for Graduate Studies and Research on recommendation of major department</td>
<td>Preferably before the second year of graduate study, but at the latest, prior to admission to candidacy</td>
</tr>
<tr>
<td><em>Preliminary examination</em></td>
<td>Major department</td>
<td>Prior to admission to candidacy</td>
</tr>
<tr>
<td><em>Foreign language examination(s)</em>**</td>
<td>Major department and language department jointly</td>
<td>Prior to admission to candidacy</td>
</tr>
<tr>
<td>Approval of admission to candidacy (obtain blanks from Graduate Office)</td>
<td>Faculty committee and Vice Chancellor for Graduate Studies and Research</td>
<td>At least three quarters prior to graduation</td>
</tr>
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### GRADUATION REQUIREMENTS

<table>
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<tr>
<th>Action</th>
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<tr>
<td>Placement of name on graduation list</td>
<td>Student</td>
<td>Indicate on registration material</td>
</tr>
<tr>
<td>Application for diploma</td>
<td>Vice Chancellor for Graduate Studies and Research</td>
<td>See deadline notice available at registration**</td>
</tr>
<tr>
<td>Scheduling of oral examination</td>
<td>Faculty committee and Vice Chancellor for Graduate Studies and Research</td>
<td>When approved by faculty committee and at least one week prior to oral examination**</td>
</tr>
<tr>
<td>Submission of dissertation to faculty committee</td>
<td>Faculty committee</td>
<td>At least two weeks prior to oral examination</td>
</tr>
<tr>
<td>Oral examination</td>
<td>Faculty committee</td>
<td>Not later than ten days before dissertation deadline**</td>
</tr>
<tr>
<td>Removal of incompletes</td>
<td>Instructor of course</td>
<td>Not later than one week before Commencement**</td>
</tr>
<tr>
<td>Submission of final copy of dissertation, doctoral forms, and thesis card</td>
<td>Faculty committee and Vice Chancellor for Graduate Studies and Research</td>
<td>After oral examination and at least two weeks before Commencement**</td>
</tr>
</tbody>
</table>

* The order of these items varies with individual programs.
** Dates are printed in *Graduate School News* quarterly.
*** Not required in some programs.
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 three main divisions: Agricultural Experiment Station, Agricultural Extension Service, and College of Agriculture.

In March 1974 the College of Veterinary Medicine was established within the Institute. The college is developing research and graduate programs in veterinary medical sciences in addition to the professional curriculum leading to the degree, Doctor of Veterinary Medicine. The first students were admitted in the fall of 1976.

Agricultural Experiment Station

D. M. Gossett, Dean
T. J. Whatley, Associate Dean
J. I. Sewell, Assistant Dean

The Agricultural Experiment Station was established by the University's Board of Trustees on June 8, 1882, five years before the passage of the Hatch Experiment Station Act by the U.S. Congress. The University was one of the first five institutions in the U.S. to establish an Agricultural Experiment Station. Since its beginning the Station has given first attention to investigations of concern to the agriculture of Tennessee. The investigations of the Station follow a systematic method of gaining and applying knowledge efficiently to the biological, physical, and economic phases of producing, processing, and distributing farm and forest products; to the social and economic aspects of rural living; and to consumer health and nutrition. Both farm and urban populations gain from the accomplishments of the Agricultural Experiment Station. Examples of some of these accomplishments are new and improved varieties of crops, new and better methods of controlling crop and livestock pests, more efficient production of crops and pasture through improved fertilization and mechanization, and more efficient feeding and management of livestock.

The program is designed and administered through sixteen subject matter departments located at Knoxville. A number of the staff have teaching responsibilities in addition to their research. To assist in the research program the Station supports a large number of graduate students. To serve Tennessee's diverse agriculture, branch stations are operated at Jackson, Spring Hill, Springfield, Lewisburg, Crossville, Greeneville, and Martin. In addition, field stations are operated at Grand Junction, Milan, Wartburg, Tullahoma, and near Chattanooga. Professional and technical staff are in residence at these locations. The UT-DOE Comparative Animal Research Laboratory is located about twenty miles west of Knoxville near Oak Ridge, where a program of radiobiological research in the field of agriculture is carried out by the Agricultural Experiment Station under contract to the Department of Energy. The program includes research with farm and laboratory animals, with soils, and in applied radiobotany and plant breeding.

Agricultural Extension Service

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

The Agricultural Extension Service was established in 1914. Its purpose is to extend through various educational means agricultural and home economics information to farm families and others in the state who do not have the opportunity to enroll in resident courses of instruction at colleges.

The educational program is carried on through offices in each of the ninety-five counties of the state. Education emphasis includes work in four major program areas: agriculture and natural resources, community resource development, home economics, and education of young people through 4-H Clubs. County Extension staff members working directly with local people are supported in the various information fields by a specialist staff, members of which are stationed either in Knoxville, Nashville, or Jackson.

The Agricultural Extension Service operates administratively as one of four units of the Institute of Agriculture. For administration the state is divided into five districts with supervisors located in their respective districts. District headquarters are maintained in Knoxville, Chattanooga, Cookeville, Nashville, and Jackson.

The Agricultural Extension Service operates as a three-way partnership among county, state, and federal governments. The University of Tennessee represents state and federal government and a County Agricultural Extension Committee represents county government in this partnership.

College of Agriculture

O. Glen Hall, Dean

Graduate programs of the College of
Agriculture are designed to prepare men and women for positions of leadership in industry, state and federal government, teaching, research, and extension.

The graduate student is expected to demonstrate a thorough knowledge of the subject matter in his/her specialized field of study and its relationship to the sociological, economic, and environmental impacts of society. The student must demonstrate the ability to plan, conduct, analyze, and report original research.

In order to apply to the Department of Agricultural Economics, students are required to

- have completed a minimum of 36 quarter hours in courses numbered 5000 and 6000, exclusive of credits for the Master's thesis.
- have completed a minimum of 36 quarter hours in courses beyond the Bachelor's degree, exclusive of Doctoral Research and Dissertation.

The specific program of a candidate for the degree of Doctor of Philosophy in Agricultural Engineering will depend upon his/her interest and previous training of the candidate. Each candidate will be under the immediate supervision of a faculty advisory committee in planning his/her program. The major professor will serve as chairperson of the faculty advisory committee and will direct the research and preparation of the dissertation.

Animal Science

The Department of Animal Science, with support from the Department of Food, Technology and Science, offers programs leading to the Doctor of Philosophy degree in the following areas:

1. Animal nutrition
2. Animal breeding
3. Animal physiology
4. Animal products

Supporting studies are required in related biological and physical sciences fundamental to the training of the candidate.

Additional specific course requirements for the degree of Doctor of Philosophy in Animal Science include:

1. Minimum of 108 quarter hours credit in courses beyond the Bachelor's degree
2. A minimum of 36 quarter hours credit in courses numbered 5000 and 6000
3. A minimum of 24 quarter hours credit in courses numbered 5000 and 6000
4. Excluding the dissertation, a minimum of 36 quarter hours in 6000 Doctoral Research and Dissertation

Agricultural Engineering

Candidates pursuing the Doctor of Philosophy degree in Agricultural Engineering may specialize in one of the following areas:

1. Agricultural power and machinery
2. Soil and water conservation engineering
3. Agricultural structures
4. Electric power and processing
5. Supporting studies are required in related biological, physical, and engineering sciences and are necessary fundamental to the training of the candidate.

Additional course requirements for the degree are:

1. Minimum of 108 quarter hours credit beyond the Bachelor's degree, exclusive of credit for the Master's thesis. Of this number, students are required to complete a minimum of 36 quarter hours in 6000 Doctoral Research and Dissertation.
2. A minimum of 30 quarter hours credit in courses numbered 5000 and 6000, exclusive of Doctoral Research and Dissertation.

Plant and Soil Science

The Department of Plant and Soil Science offers programs leading to the Doctor of Philosophy degree in the following areas of specialization:

1. Soils
2. Plant breeding and genetics
3. Crop physiology and ecology

Supporting studies are required in related sciences fundamental to the training of the candidate.

Some of the specific requirements for the degree are:

1. Minimum of 108 quarter hours credit beyond the Bachelor's degree exclusive
of Master's thesis. Of this number, students are required to complete a minimum of 36 quarter hours in Doctoral Research and Dissertation.

2. Minimum of 30 quarter hours credit in courses numbered 5000 and 6000 exclusive of Doctoral Research and Dissertation.

In addition, each individual program of a candidate for the degree of Doctor of Philosophy in Plant and Soil Science will depend upon the interest and previous training of the candidate. The program of courses and research will be planned with the student in consultation with a faculty advisory committee. The major professor will serve as chairman of the faculty advisory committee and will direct the research and the preparation of the dissertation.

Departments of Instruction

Numbers in parentheses following the course titles indicate quarter hours credit offered.

Agricultural Biology

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>DEGREE</th>
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<tbody>
<tr>
<td>Agriculture Biology</td>
<td>M.S.</td>
</tr>
</tbody>
</table>

Professors:
- C. J. Southards (Head), Ph.D. North Carolina State; J. W. Hilty, Ph.D. Ohio State; J. F. Jordan, Ph.D. Louisiana State.

Associate Professors:

Assistant Professor:
- E. C. Bernard, Ph.D. Georgia.

3130 Introductory Plant Pathology (4) Principles of plant pathology illustrated by diseases of common agricultural crop plants. Prereq: Introductory botany or zoology. Graduate credit for non-majors only. (Same as Botany 3130.) 3 hrs and 1 lab.

3210 Economic Entomology (4) Structure, life histories, habits and principles of control of important insect pests of farm, garden, orchard, and household. 3 hrs and 1 lab.

3220 Apiculture (3) Biology of the honey bee, with emphasis on beekeeping equipment and apiary management practices relative to pollination of crops and production of honey and beeswax. 2 hrs and 1 lab.

4010 Biology of Soil Microorganisms (4) Morphology and physiology of soil organisms, decomposition of organic matter, chemical transformations, and interactions between soil organisms and higher plants. Prereq: Introductory microbiology or 3130. 3 hrs and 1 lab.

4030 Forest and Shade Tree Entomology (3) Identification, biology, ecology, and control of forest and shade tree pests. Prereq: 3210 or equivalent. 2 hrs and 1 lab.

5000 Thesis

5010 Research Methods and Instrumentation in Plant Pathology and Entomology (3) Techniques for laboratory, field, and greenhouse research in plant pathology and entomology. 1 hr and 2 labs.

5210 Plant Parasitic Nematodes (4) Morphology, physiology, taxonomy, and ecology of plant parasitic nematodes with emphasis on host-parasite relationships. Prereq: 8 hrs biological science or consent of instructor. (Same as Zoology 5210.) 2 hrs and 2 labs.

5220 Plant Disease Control (3) Basic problems and principles involved in controlling plant diseases. Prereq: 130.

5230 Field Crop and Vegetable Insects (3) Taxonomy, biology, and control of insects affecting field and vegetable crops. Prereq: 3210 or equivalent course in applied entomology. 2 hrs and 1 lab.

5250 Medical and Veterinary Entomology (4) Morphology, taxonomy, biology and control of arthropod parasites and vectors of pathogens of humans and domestic or wild animals. Prereq: consent of instructor. 3 hrs and 1 lab.

5260 Insect Pest Management (4) Principles and applications of biological, cultural, genetic, behavioral, and chemical methods of control to maintain pest populations below economic threshold levels. Prereq: 3210, Zoology 3110, or consent of instructor. 3 hrs and 1 lab.

5310 Special Problems in Plant Pathology or Economic Entomology (1-6) Comprehensive individual study of current problems in economic entomology or plant pathology. May be repeated. Maximum 9 hrs.

5410 Seminar (1) Review of literature and current research in plant pathology and economic entomology. May be repeated. Maximum 3 hrs.

Agricultural Economics and Rural Sociology

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<tr>
<th>MAJOR</th>
<th>DEGREE</th>
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<tbody>
<tr>
<td>Agricultural Economics</td>
<td>M.S., Ph.D.</td>
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</tbody>
</table>

Professors:
- J. A. Martin (Head), Ph.D. Minnesota; M. E. Badenhop, Ph.D. Purdue; D. W. Brown, Ph.D. Iowa State; C. L. Cleland, Ph.D. Wisconsin; J. Dobov, Ph.D. California (Berkeley); H. Keller, Ph.D. Kentucky; F. O. Leuthold, Ph.D. Wisconsin; B. R. McManus, Ph.D. Purdue; B. H. Perlecost, J.D. Tennessee; C. B. Sappington, Ph.D. Illinois.

Associate Professors:

Assistant Professor:
- R. H. Orr, Ph.D. Illinois.

The department has programs for the Doctor of Philosophy degree and the Master of Science degree with a thesis or non-thesis option.

Agricultural Economics

4120 Farm Management (3) Principles of farm organization and operation; allocating land, labor, and capital; meeting 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.

4240 World Agriculture and Trade (3) Economic bases of world agricultural products 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 Rur al Planning (3) Decision-making concepts applied to design and implementation of agricultural programs. Case examples from the U.S. and other countries.

5410 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.

5410 Agricultural Policies (3) Meaning of agricultural policy in democratic society; relationship of farm groups to public policy; problems giving rise to policy; agricultural policy and appraisal of recent policy problems. Prereq: Agriculture 1110 and Economics 2120.

5330 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 income. Prereq: Agriculture 1110 and Economics 2120.

5410 Management of Farm Supply and Marketing Firms (3) Operation of firms selling farm supplies and merchandising agricultural products. Emphasis on accounting data and economic theories for decision making. Prereq: Agriculture 1110 and Economics 2120.


7100 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, forms of business organization, estate planning, regulatory laws, and other selected topics.

5000 Thesis

5010 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise registered during any quarter when such a student uses University facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/N only.

511 Special Problems in lieu of Thesis (3)

5120 Agricultural Price Analysis (3) Analysis and interpretation of factors affecting agricultural prices; price trends and cycles; application of economic theory and statistical techniques to agricultural price research. Prereq: 3120 and Statistics 4310 or equivalent.

5130 Advanced Agricultural Production Economics (3) Theory and empirical concepts of agricultural resource allocation problems under conditions of uncertainty. Prereq: 4140 or equivalent.

5210 Seminar: Agricultural Policies (3)

5220 Seminar: Methodology of Research (3)

5230 Seminar: Adjustments to Industrialization (3)

531 Research (3) Special research problems in agricultural economics and rural sociology. Gathering, tabulating and interpreting data and report writing. May be repeated. Maximum 9 hrs. S/N only.

5410 Agricultural Marketing Analysis (3) Application of tools of economic analysis to problems at all levels of marketing systems and marketing organizations in agricultural commodities. Prereq: 4630 or equivalent.

5420 Advanced Land Economics (3) Problems in land tenure, land use, and conservation in United States and selected foreign countries. Prereq: 4330 or equivalent.

5440 The Economics of Agricultural Development (3) Role of agriculture in overall economic development; economic nature of traditional agriculture, and analysis of causal forces and structural interdependence of agriculture under conditions of economic change. Prereq: 4240 or consent of instructor.
5610 Quantitative Methods in Agricultural Economics: Analytical techniques useful in estimation of functions—supply, demand and production—and prediction of economic variables. Emphasis on application of multiple regression model specification, estimation technique using computer and interpretation of results. Prereq: Statistics 4310 or Economics 5510 or consent of instructor.

5701 Quantitative Methods in Agricultural Economics (3) Linear programming technique with emphasis on application of multiple regression model specification, estimation technique using computer and interpretation of results. Prereq: Economics 4180 or consent of instructor.

6000 Doctoral Research and Dissertation

6120-30 Seminars in Agricultural Economics (3, 3) Topics selected, from the areas of economics of production, consumption or distribution in agriculture and related industries and public policies concerned with agriculture and related industries.

6210 Agricultural and Rural Transformation Problems (3) Systematic evaluation of policy and development proposals related to agricultural modernization, food supply, and rural living. Decision-making processes include roles of social scientists. Analysis of current issues in U.S. and developing nations. Prereq: Consent of instructor.

6410 Agricultural Supply Analysis (3) Estimating supply relationships using aggregative time series regression, production functions, linear programming, simulation and firm growth models with emphasis on correspondence between theoretical concepts and model attributes. Prereq: 5130 or consent of instructor.

6420 Marketing and Resource Use (3) Institutional settings for research and policy formulation. Analytical tools to measure efficiencies of marketing and resource use. Emerging problems in marketing and resource use. Management in marketing systems to conserve resources and environment. Prereq: 5410 or consent of instructor.

6430 Agricultural Engineering

4230 Selected Topics in Agricultural Engineering (3) Develop new topics as required by current trends and problems in agricultural engineering.

4610 Design of Water Control and Waste Utilization Structures (3) Design of water control and waste utilization systems including earth dams, irrigation, drainage, land grading, hydraulic transport, and application of wastes on agricultural land. Prereq: 3610 or consent of instructor. 1 hr and 2 labs.

4620 Design of Structures for Production, Processing and Environmental Control (3) Functional planning and structural design of agricultural buildings; emphasis placed on complete design of structure or system; design to include functional, structural and environmental aspects. Prereq: 3620. 1 hr and 2 labs.

4630 Design of Processing and Materials Handling Systems (3) Development of systems and components for integrated agricultural processing considering mass and energy balances, productivity characteristics, equipment specifications, storage, handling and economic merit. Prereq: 3630. 1 hr and 2 labs.

4640 Design of Agricultural Machinery (3) Functional requirements of agricultural machinery. Elements of design; structural design; design methods; design of specialized and unique and alternate production and harvesting systems; operational management. Prereq: 4210. 2 hrs and 1 lab.

5620 Environmental Control in Agricultural Structures (3) Engineering analysis of factors related to processes of animal and plant life; basis for development and design of facilities and structures for confined housing of animals, controlled environment for plant growth, and storage facilities for plant and animal products. Prereq: Agricultural Mechanization 3220, Mechanical Engineering 3110, or consent of instructor. 2 hrs and 1 lab.

5310 Thesis

5400 Research Problems in Agricultural Economics: Analytical techniques useful in estimation of functions—supply, demand and production—and prediction of economic variables. Emphasis on application of multiple regression model specification, estimation technique using computer and interpretation of results. Prereq: Economics 4180 or consent of instructor.

5410 Agricultural Mechanization

5420 Selected Topics in Agricultural Mechanization (3) Lecture, group discussion, and individual study on specialized developments in power and machinery, soil and water, structures, and processing. May be repeated. Maximum 9 hrs.

5430 Agricultural Business Planning (3) Techniques, equipment, and structures for utilizing, treating, and disposing of agricultural wastes by land spreading, lagooning, and processing. 2 hrs and 1 lab.

5440 Environmental Control in Agricultural Structures (3) Engineering analysis of factors related to processes of animal and plant life; basis for development and design of facilities and structures for confined housing of animals, controlled environment for plant growth, and storage facilities for plant and animal products. Prereq: Agricultural Mechanization 3220, Mechanical Engineering 3110, or consent of instructor. 2 hrs and 1 lab.

5450 Hydrology of Agricultural and Forest Lands (3) Analytical approach to problems involving water supply, deficiency and time distribution as related to agricultural and forest purposes. Prereq: 3610, Introductory Hydrology; Forestry 4020 or consent of instructor. (Same as Water Resources Development 5340). 2 hrs and 1 lab.

5460 Instrumentation in Agricultural Systems (3) Analysis of specific instrumentation needs in agricultural industry and research problems; principles and utilization of designed instrumentation. Prereq: Engineering electronics or consent of instructor. 2 hrs and 1 lab.

5470 Research Problems in Rural Communities (3) Emphasis on problems that arise in survey research in rural areas. Sampling procedures, questionnaire construction, interview techniques, selection of training, control, and legitimation needs are covered. Prereq: Undergraduate course in statistics.

5480 Rural Population Analysis (3) Analysis of U.S. and world population changes and determinants. Feasibility of rural change, and migration with emphasis upon changes in rural sector. Prereq: Sociology 4110 or equivalent.

Agricultural Engineering

MAJORS

DEGREES

Agricultural Engineering

M.S., Ph.D.

Agricultural Mechanization

M.S.

Professors:

D. H. Luttrell (Head), Ph.D. Iowa State;
H. O. Vaignue (Assoc. Head), Ph.D. Iowa State;
B. L. Blodgett, Ph.D. Michigan State, P.E.
J. L. Sewell, Ph.D. North Carolina State, P.E.

Associate Professors:

Z. A. Henny, Ph.D. North Carolina State, P.E.;
C. H. Shellon, M.S. Virginia Polytechnic Institute;
L. R. Wilhoit, Ph.D. Tennessee, P.E.

Assistant Professors:

D. G. Moure; L. M. Safety, Jr.; Ph.D. Cornell;
F. D. Tompkins, Ph.D. Tennessee.

Agricultural Sociology

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; tenancy, farm service, extensional facilities, churches, local government; impact of industrialization.

3450 Diffusion of Agricultural Technology (3) Analysis of diffusion process whereby new technology is adopted by farmers and finally to final adopters. Topics discussed include the adoption process, communication behavior, the role of social agents, opinion leadership, and two-step flow hypothesis. Prereq: 3420 or consent of instructor.

3460 Advanced Rural Sociology (3) Application of sociological concepts to analyze change structures and functions of rural areas; attitudes, values and norms as they influence the family, formal and informal groups, population shifts and changing farm technology. Prereq: 3420 or equivalent.

3470 Research Problems in Rural Communities (3) Emphasis on problems that arise in survey research in rural areas. Sampling procedures, questionnaire construction, interview techniques, selection training, control, and legitimation needs are covered. Prereq: Undergraduate course in statistics.

3490 Rural Population Analysis (3) Analysis of population and housing characteristics and changes in rural areas. Prereq: Sociology 4110 or equivalent.
Agricultural Extension Education

MAJOR

DEGREE

Agricultural Extension

M.S.

Professors:

M. S. McInnes, Ph.D., Oklahoma State;

R. H. Dickson, Ed. D., Cornell.

Associate Professor:

C. E. Carter, Jr., Ph.D., Ohio State.

3110 Introduction to Agricultural Extension (3) History; philosophy; organization; teaching methods; relationships with other educational agencies. Graduate credit for non-majors only.

4110-20 Field Studies (3, 3) Supervised work experience with county extension agents in a district. Prereq: 3110 or consent of instructor. Requires living off-campus for a specified time.

5000 Thesis

5100 Special Problems in Agricultural Extension (1-6) May be repeated. Maximum 9 hrs.

5210 Long-range Extension Program Planning (3) Development of a county extension program based on effective interpretation of physical, social, economic characteristics of areas. Prereq: 3110 or consent of instructor.

5230 Evaluation in Programs of Agricultural Extension (3) Principles, instruments, and techniques of identifying, gathering, analyzing and using data to appraise planning and teaching to determine progress of clientele. Prereq: 5210 or consent of instructor.

5310 History, Philosophy and Objectives (3) Historical and philosophical foundation of informal adult education in American agriculture from the agricultural societies (1785 to present). Key figures, related movements, institutions, organizations and programs. Emphasis on agricultural extension service, its origin, legislation and growth and nature of present day objectives and programs. Prereq: 3110 or consent of instructor.

5320 Volunteer Leadership in Agricultural Extension Programs (3) Theory, principles and procedures in development of volunteer leadership for small groups in rural communities through agricultural extension programs. Emphasis on the development of effective leadership function, techniques of effective leadership in small groups and methods of developing volunteer leaders. Prereq: 5230 or consent of instructor. 2 hrs and 1 lab.

5330 Supervision of Agricultural Extension Programs and Personnel (3) Theories of human effectiveness; principles of successful supervision applied to various parts of county, district and other extension programs; and planning for effective office management. Prereq: 5210 or 5220 or consent of instructor.

Animal Science

MAJOR

DEGREES

Animal Science

M.S., Ph.D.

Professors:

J. R. Johnson (Head), Ph.D., Ohio State; M. M. Bell, Ph.D., Oklahoma State; C. C. Chamberlain, Ph.D., Iowa State;

H. M. Jamison, Ph.D., Tennessee; J. E. Mclaren, Ph.D., Auburn; G. M. Merriman, D.V.M., Michigan State;

M. J. Montgomery, Ph.D., Wisconsin; R. L. Murphee, Ph.D., Wisconsin; D. K. Richardson, Ph.D., Ohio State;

H. K. Holcomb, R. R. Shrode, Ph.D., Iowa State; E. W. Swanson, Ph.D., Missouri; R. L. Tugwell, Ph.D., Kansas State.

Associate Professors:


Assistant Professors:

E. R. Currie, Ph.D., Kansas State; J. A. Corrick, Ph.D., Tennessee; D. C. Doyle, D.V.M., Ph.D., Michigan State;

P. D. Cortez, Ph.D., Michigan State; S. Kincaid, D.V. M., Ph.D., Purdue; J. Oliver, D. V. M., Ph.D., Purdue; R. S. Schaub, Ph.D., Washington State; J. D. Small, Ph.D., Texas A. & M.

3210 Anatomy and Physiology of Farm Animals (4) Skeletal and joint, canine, muscular, body, circulatory, respiratory, digestive, renal and endocrine systems; demonstrations of physiochemical phenomena. Prereq: Biology 1210 or Agriculture 1130. 3 hrs and 1 lab.

3220 Physiology of Reproduction (3) Comparative anatomy and physiology of reproductive systems of higher vertebrates. Developmental and physiological aspects, fertilization, implantation, prenatal growth, parturition and initiation of lactation; endocrine regulation of sexual and milk secretion; factors affecting yield and composition of milk. Prereq: Biology 1210 or Agriculture 1130. 3 hrs and 1 lab.

4210 Physiology of Lactation (3) Milk production, secretion, digestion and absorption; milk proteins; hormones and milk secretion; factors affecting yield and composition of milk. Prereq: 3220.

4220 Avian Physiology (3) Anatomy and physiology of avian reproduction. 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. Prereq: 3210. 1 hr and 2 labs.

Institute of Agriculture 29

4320 Feeding Applications for Farm Animals (3) A detailed application of feeding principles designed to allow the student to discover and explore the feeding situations related to producers through problem solving. Prereq: 3330. 1 hr and 2 labs.

4340 Experimental Animal Nutrition Laboratory (2) Laboratory feeding trials to demonstrate basic animal nutrition concepts including the preparation and feeding of experimental diets. Prereq: 3330.

4410 Applied Animal Breeding (3) The principles studied in 3420. Team taught by specialists in breeding of dairy cattle, meat animals, and poultry. Prereq: 3420. 2 hrs and 1 lab.

4810 Beef Cattle Production and Management (4) Principles of nutrition, physiology, and breeding in a complete beef cattle management program. Topics include structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. 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) Principles of nutrition, physiology and breeding in a complete dairy cattle management program. Topics include structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4870 Light Horse Production and Management (4) Principles of nutrition, physiology and breeding in a complete light horse production program. Topics include structure of industry, establishment, systems of production, production practices and herd improvement programs. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4880 Poultry Production and Management (4) Structure of poultry industry, organization and management of poultry enterprises including breeding, housing, feeding, marketing and marketing. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 3 hrs and 1 lab.

4890 Light Horse Production and Management (3) Integration of principles of nutrition, physiology and breeding in light horse production programs. Topics include structure of industry, establishment, systems of production, production practices and production programs; and marketing. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 2 hrs and 1 lab.

4960 Lamb and Wool Production and Management (3) Integration of principles of nutrition, physiology and breeding in complete lamb and wool production and management programs. Topics include structure of industry, enterprise establishment, systems of production, production practices and economic returns. Prereq: Completion of animal science sophomore and junior core courses or consent of instructor. 2 hrs and 1 lab.

5000 Thesis

5011 Problems in Lieus of Thesis (1-6) May be repeated. Maximum 6 hrs.

5100 Special Problems in Animal Science (1-6) May be repeated. Maximum 8 hrs.

5210 Endocrine Relations in Animal Production (4) Endocrine systems and their role in reproduction; hormone preparation for altering
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>5230</td>
<td>Advances in Mammalian Reproduction (3)</td>
<td>Germ cell development, maturation, transport, metabolism, and preservation</td>
</tr>
<tr>
<td>5240</td>
<td>Advanced Studies of the Secretion of Milk (3)</td>
<td>Effect of endocrine and nutritional factors on mammary gland development, initiation and maintenance of lactation.</td>
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<tr>
<td>5311</td>
<td>Analytical Techniques in Animal Nutrition (3)</td>
<td>Physical and chemical analyses of feeds, ingredients, and biochemical fluids associated with nutrition research.</td>
</tr>
<tr>
<td>5322</td>
<td>Advanced Experimental Animal Nutrition (3)</td>
<td>Animal experimental techniques for digestion, absorption, nutrient balances, and radiolotope tracer techniques.</td>
</tr>
<tr>
<td>5333</td>
<td>Nonruminant Animal Nutrition (4)</td>
<td>Physiological development and changes in digestive system and nutrient absorption during the life cycle.</td>
</tr>
<tr>
<td>5344</td>
<td>Ruminant Animal Nutrition (3)</td>
<td>Digestive physiology of the ruminant stomach, rumen fermentation, determination of nutrient requirement and feed intake regulation of ruminant animals.</td>
</tr>
<tr>
<td>5350-20</td>
<td>Advanced Animal Physiology (5, 5)</td>
<td>Animal physiology of ruminant and nonruminant animals during the life cycle. Concepts and methodology concerning nutrient requirements, interactions, and availability of nutrients.</td>
</tr>
<tr>
<td>5360</td>
<td>Genetics of Animal Populations (3)</td>
<td>Population and individual, genetic and physiological frequencies, and forces influencing genetic changes.</td>
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<td>5370</td>
<td>Methods of Evaluating Experimental Data in Animal Science (3)</td>
<td>Regression, analysis of variance, and multiple regression.</td>
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<tr>
<td>5380</td>
<td>Design and Interpretation of Experiments (3)</td>
<td>Analysis of variance, partition of variance, and selection indexes.</td>
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<tr>
<td>5390</td>
<td>Animal Physiology and Biochemistry (5)</td>
<td>Advanced animal physiology and biochemistry.</td>
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<tr>
<td>5411</td>
<td>Recent Advances in Animal Breeding (1-6)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
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<tr>
<td>5420</td>
<td>Animal Breeding Research Methods and Interpretation (3)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
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<tr>
<td>5430</td>
<td>Advanced Topics in Animal Nutrition (1-4)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
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<tr>
<td>5440</td>
<td>Advanced Topics in Animal Products (1-4)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
</tr>
<tr>
<td>5450</td>
<td>Seminar (1) Animal nutrition, breeding, physiology, and products.</td>
<td>May be repeated. Maximum 6 hrs.</td>
</tr>
<tr>
<td>5510-20</td>
<td>Advanced Animal Physiology (5, 5)</td>
<td>Advanced animal physiology of ruminant and nonruminant animals during the life cycle. Concepts and methodology concerning nutrient requirements, interactions, and availability of nutrients.</td>
</tr>
<tr>
<td>5550</td>
<td>Biochemistry (3)</td>
<td>Application of scientific principles to commercial technology of fats and oils.</td>
</tr>
<tr>
<td>5560</td>
<td>Food Technology and Science</td>
<td>Major degree in food technology and science.</td>
</tr>
<tr>
<td>5570</td>
<td>Seminar (1) Reports and discussions of selected topics from research literature.</td>
<td>Maximum 3 hrs.</td>
</tr>
<tr>
<td>5580</td>
<td>Food Color (3)</td>
<td>Color of natural food pigments and melanins.</td>
</tr>
<tr>
<td>5590</td>
<td>Food Flavors (3)</td>
<td>Flavor of foods.</td>
</tr>
<tr>
<td>5600</td>
<td>Doctoral Research and Dissertation</td>
<td>Maximum 3 hrs.</td>
</tr>
<tr>
<td>5610</td>
<td>Topics in Milk Constituents (3)</td>
<td>Properties of milk constituents and relationship to milk and dairy products.</td>
</tr>
<tr>
<td>5620</td>
<td>Topics in Dairy Microbiology (3)</td>
<td>Microbiological problems related to various phases of the dairy industry.</td>
</tr>
<tr>
<td>5621</td>
<td>Advanced Topics in Animal Physiology (1-6)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
</tr>
<tr>
<td>5630</td>
<td>Food Products Manufacturing (3)</td>
<td>Preparation of butter, cheese, and dairy products.</td>
</tr>
<tr>
<td>5640</td>
<td>Meat Products Manufacturing (3)</td>
<td>Preparation of meat products with emphasis on sausage making.</td>
</tr>
<tr>
<td>5650</td>
<td>Physical Phenomena of Foods (4)</td>
<td>Physical states of food materials, foams, emulsions, colloidal sols, hydrates, crystals, gels.</td>
</tr>
<tr>
<td>5660</td>
<td>Meat Quality Assurance (3)</td>
<td>Systems for meat quality assurance.</td>
</tr>
<tr>
<td>5670</td>
<td>Fat and Oils (3)</td>
<td>Properties of lipids.</td>
</tr>
<tr>
<td>5680</td>
<td>Research (1-5)</td>
<td>Research in selected areas.</td>
</tr>
<tr>
<td>5690</td>
<td>Food Products Development (3)</td>
<td>Fundamentals of art, science, and technology applied to research, development, and marketing of new food products.</td>
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<tr>
<td>5700</td>
<td>Food Thermobiology (3)</td>
<td>Fundamentals of food Thermobiology.</td>
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</tbody>
</table>

Food Technology and Science

**MAJOR DEGREE**

**Food Technology and Science**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>5710</td>
<td>Methods of Evaluating Experimental Data in Animal Science (3)</td>
<td>Regression, analysis of variance, and multiple regression.</td>
</tr>
<tr>
<td>5720</td>
<td>Design and Interpretation of Experiments in Animal Science (3)</td>
<td>Analysis of variance, partition of variance, and selection indexes.</td>
</tr>
<tr>
<td>5730</td>
<td>Animal Physiology and Biochemistry (5)</td>
<td>Advanced animal physiology and biochemistry.</td>
</tr>
<tr>
<td>5740</td>
<td>Recent Advances in Animal Breeding (1-6)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
</tr>
<tr>
<td>5750</td>
<td>Animal Breeding Research Methods and Interpretation (3)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
</tr>
<tr>
<td>5760</td>
<td>Advanced Topics in Animal Nutrition (1-4)</td>
<td>Recent advances and concepts, research techniques, current problems.</td>
</tr>
<tr>
<td>5770</td>
<td>Seminar (1) Animal nutrition, breeding, physiology, and products.</td>
<td>May be repeated. Maximum 6 hrs.</td>
</tr>
<tr>
<td>5780</td>
<td>Seminar (1) Reports and discussions of selected topics from research literature.</td>
<td>Maximum 3 hrs.</td>
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<td>Properties of lipids.</td>
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</table>

Institute of Agriculture
5420 Advanced Food Quality Assurance (3) Applications of current instrumental methods used to control food manufacturing processes. Prereq: 4120, 4121 and 1 lab.

5510 Meat Technology (3) Physical and chemical changes that occur during conversion of muscle to meat; the influence these changes have on quality, coloration, meat packaging, preservation, and quality control. Prereq: 3840, 2 hrs and 1 lab.

5530 Microorganisms Common in Food Products (3) Identification of desirable and undesirable microorganisms in foods and relationships to manufacturing operations. Isolation and characterization of microorganisms from food products and plant equipment. Prereq: 4810 or Microbiology 3810. 3 labs.

5540 Microbial Cultures in Foods (3) Physical and chemical environment and metabolism of microorganisms as related to cultured food products. Prereq: 4810 and Microbiology 3810. 2 hrs and 1 lab.

Forestry, Wildlife, and Fisheries

MAJORS

DEGREES

Forestry
Wildlife and Fisheries Science

Professors:
G. Schneider, (Head), Ph.D. Michigan State; J. W. Barrett, Ph.D. Syracuse; H. A. Core, Ph.D. Syracuse; C. C. Carbo, Ph.D. North Carolina State; F. W. Woods, Ph.D. Tennessee.

Associate Professors:

Assistant Professors:
W. E. Hammitt, Ph.D. Michigan; R. J. Strange, Ph.D. Oregon State.

Forestry

*3020 Forest Environments and Ecology (3) Environments and ecology of forests and associated wildlife; the application of ecological principles to contemporary problems. Prereq: 8 hrs of biology, botany, or zoology.

*3040 Dendrology and Silvics of Woody Angiosperms (3) Measurement of tree growth, identification and silvical characteristics of the more important species. Prereq: 3120 or equivalent. 2 hrs and 1 lab.

*3050 Dendrology and Silvics of Gymnosperms (3) Measurement of tree growth; identification, classification, nomenclature, identification, and silvical characteristics of the more important tree species. Prereq: 3120. 2 hrs and 1 lab.

*3100 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.

*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.

*3210 Forest Resource Economics (4) Allocation of forest resources via market and institutional systems. Application of economics to forest resource management. Prereq: Economics 2120.

*3220 Forest Products and Utilization (3) Harvesting, processing, marketing factors in stand conversion, intermediate and harvest cuts. Prereq: 3120 and 1 lab.

3230 Wildlife Management (3) Lives and ecological relationships of wild animals; biological, social, and economic aspects of their management. Prereq: 3110 or Dendrology and Fisheries Science 3230. 2 hrs and 1 lab.

*3320 Principles of Silviculture (3) Influence of site factors on reproduction, growth, development, and characteristic of forest vegetation; classification of forest structure; silvicultural laws. Prereq: 3020 or Biology 2130, 3040, Plant and Soil Science 2130.

*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-logs/muber-grading; pulpwood operations, flooring plants, treating plants; plant layout, flow diagrams. Prereq: 3120 and 1 lab.

4003 Field Methods of Timber Inventory (3) Field measurement of forest growth, yield, production, and timber cruise. 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 as it influences management decisions; impact of public pressure for outdoor recreation on management decisions; management of forest resources. Prereq: 4006 and 1 lab.

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 quantity, quality, and flow. Prereq: 4003 or 4020 and consent of instructor. Two overnight field trips.

4210 Forest Organization and Administration (3) Principles of organizing, and leadership concepts and cases; problem analysis and decision making in forest resources management. Prereq: Consent of instructor. 3 labs.

4220 Forest-resource Management (4) The forest as an integration of resource uses; 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 enterprises as a producer of timber, recreational services, and forest products; preparation of a complete plan based on optimizing forest uses. Prereq: 4210.

4240 Interpreting Forest Resources (3) Principles and techniques for estimating 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 management and development of forest resources; brief survey of policy implications of forest resource organizations in public and private sectors. Prereq: 4330.

4340 Aerial Photography in Forest-Resource Management (3) Use of conventional aerial photographs in forest-resource management; interpretation of detail from aerial photographs in forest-resource management. Prereq: Consent of instructor. 2 hrs and 1 lab.

4420 Forest Tree Improvement (3) Forest tree improvement on private and public lands; nature and purposes of tree improvement and forest genetics; principles of breeding techniques and population genetics; importance of seed source evaluation; selection of superior phenotypes 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 silviculture management of important tree species in North America; importance of forests and forestry to a region; physiography, geology, soils, climate and weather, sites and silvicultural problems of protection, and silvicultural characteristics of the more important species. Prereq: 4006 and 4210.

4440 Forest Recreation (3) Forest lands as a recreation resource; the influence of recreation and other management activities; development and management of forest recreation areas; socioeconomic and political determinants of recreation development and management. Prereq: 6 hrs sociology and/or economics. 2 hrs and 1 lab.

5000 Thesis

5110 Special Problems in Forestry (1-6) May be repeated. Maximum 9 hrs. Prereq: 4230 or equivalent.

5220 Seminar in Tree Forest Biology (3) Growth, reproduction, and physiology of forest trees; forest ecology; variability and taxonomy of forest trees. Prereq: 3320 or Botany 4310.

5230 Seminar in Forest Management (3) Newly developed systems in forest organization and management; financial and operational planning in forest management. Prereq: 4230 or equivalent.

5240 Seminar in Forest Genetics (3) Population genetics and speciation; variation patterns and heritability in forest trees; gains with different breeding methods; planning and conducting forest genetics research. Prereq: 4420, Biology 3110, and consent of instructor.

5250 Recreation Planning for Forests and Associated Lands (3) Planning process for recreation development on forest lands. Analysis and critique of specific management plans. Prereq: 4230 or equivalent. 2 hrs and 1 lab.

5260 Industrial Forestry (3) Structure and analysis of wood-using firms and industries. Forest taxation, land tenure and wood procurement alternatives. Development and application of forestry planning models. Prereq: 4230 or consent of instructor.

5270 Topics in Forest Industries Management (3) Current problems in forest industries. Executives from public and private business sector (concerned with forest industry) conduct classes in selected topics. Prereq: 4230 or consent of instructor. Prereq: 4270 or equivalent.

5310 Seminar (1) Current developments in forestry. May be repeated. Maximum 3 hrs. S/NC only.

Wildlife and Fisheries Science

*3230 Wildlife Management (3) Same as Forestry 3230.

4450 Game Mammals (4) Classification, identification, distribution, natural history, and management of wildlife and fisheries science majors only.

Graduate credit for non-forestry and non-wildlife and fisheries science majors only.
ment principles of game mammals in North America. Prereq: 3230 or 1 yr of zoology. 2 hrs and 1 lab.

4460 Game Birds (4) Biology, classification, identification, distribution, and management of game birds in North America. Prereq: 3230 or 1 yr of zoology. 3 hrs and 1 lab plus one weekend field trip.

4510 Freshwater Fishery Biology (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.

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: 1 yr biology and 8 hrs mathematics or consent of instructor. 3 hrs and 1 lab or field period.

5000 Thesis

5110 Special Problems in Wildlife and Fisheries Science (1-6) May be repeated. Maximum 9 hrs.

5210 Seminar in Wildlife Conservation (3) Current studies, problems and issues in wildlife conservation; wildlife agencies and organizations and their programs. Prereq: 3230 or consent of instructor.

5310 Seminar (1) Current developments in wildlife and fisheries science. May be repeated. Maximum 3 hrs. S/NC only.

5400 Advanced Topics in Wildlife Science (3) Recent developments and concepts; research techniques, and analysis of current problems. Prereq: 4450 and 4460 or consent of instructor. May be repeated. Maximum 6 hrs.

5460 Wildlife Diseases (3) Necropsy of game birds and mammals. Recognition of various diseases and methods of preparing pathological materials in the field and lab. Investigative procedures concerning wildlife diseases. Prereq: 1 yr zoology. 1 qr microbiology, pathology or parasitology, 4450 or 4460, or consent of instructor. 2 hrs and 1 lab.


5500 Advanced Topics in Fishery Science (3) Recent advances and concepts, research techniques and analysis of current problems. Prereq: 4450 and 4460 or consent of instructor. May be repeated. Maximum 6 hrs.

Ornamental Horticulture and Landscape Design

MAJOR

Ornamental Horticulture

M.S.

Landscape Design

B.S.

Associate Professors:

D. B. Williams (Head), Ph.D., Pennsylvania State; L. R. Callahan, Ph.D., Rutgers.

Assistant Professors:

E. L. Graham, Ph.D., Pennsylvania State; S. L. McLain, Ph.D., Iowa State; S. C. Smith, Ph.D., Florida; H. v.d. Werken, GAUST.

Horticulture College, Frederiksoord, Holland.

Assistant Professor:

J. W. Day, Ph.D., Mississippi State.

5820 Plant Propagation (2) Physiology, methodology, and environmental requirements for propagation. Prereq: 8 hrs of biological science. 2 hrs and 1 lab.

3110 Greenhouse Management (3) Factors involved in greenhouse production and management. Prereq: 3120 or 1 yr of horticulture. 2 hrs and 1 lab.

4120 Landscape Design I (4) Design and development of properties; planning, organization, structure, selection and use of plant and structural materials, methods of presentation, specification. Prereq: 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, projected needs and development of plans. Prereq: Consent of instructor. 2 hrs and 2 labs.

4150 Wholesale Nursery Management (3) Production, labor and sales management; layout, culture, equipment and facilities. Prereq: 3030 or 1 yr of horticulture. 2 hrs and 1 lab.

4160 Retail Nursery Management (3) Essentials of good nursery management: location, layout and operation of landscape nurseries, garden centers and chains. Prereq: 4150. 2 hrs and 1 lab.

4180 Park Design (4) Design criteria for parks and outdoor recreation systems. 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. Recommended: 4140. 2 hrs and 2 labs.

4220 Advanced Turfgrass Management (4) Principles and scientific basis of turfgrass culture: adaptation, utilization, 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 and Soil Science 3040 or equivalent. 2 hrs and 1 lab.

4320 Floriculture II (3) Principles and practices employed in producing flowering crops in pots and other containers. Emphasis on production systems 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. Maximum 10 hrs.

5000 Thesis

5110 Special Problems in Ornamental Horticulture and Landscape Design (3) May be repeated. Maximum 9 hrs.

5210 Golf Course Design, Development, and Management (4) Principles and applications in turfgrass management. Golf course design, development, and management of golf courses. Selection and utilization of grass varieties and other plant materials and development of specifications for nutritional, chemical, and mechanical maintenance. Financing, equipment, management, and public relations. Prereq: 4220 and consent of instructor. 2 hrs and 2 labs.

5310 Park and Public Grounds Management Systems (4) Design criteria affecting management systems requirements. Protection and cultural care of trees, shrubs, and turf in parks and public grounds; use pressure modification and maintenance, recreation, facilities. Resource management and performance analysis. Development and analysis of maintenance systems; evaluation and selection for specific situations. Prereq: 4180 or consent of instructor. 2 hrs and 2 labs.

5410 Histological Micromethod (4) Preparation of plant and soil material for microscopic examination. Experimental techniques of paraffin and plastic embedding, microtomy and mounting of sections, dyes and staining schedules and photography. Prepr: General biology or botany; general and organic chemistry, and consent of instructor. 2 hrs and 2 labs.

5500 Seminar (1) Current literature and developments in ornamental horticulture and landscape design. May be repeated. Maximum 3 hrs.

Plant and Soil Science

MAJOR

Plant and Soil Science

DEGREES

M.S., Ph.D.

Professors:

L. F. Sears (Head), Ph.D., North Carolina State; R. F. Bell, Ph.D., Iowa State; B. C. Conner, Ph.D., Washington State; H. A. Fribourg, Ph.D., Iowa State; L. M. Josephson, Ph.D., Wisconsin; W. Parks, Ph.D., Purdue; J. Bigg, Ph.D., Michigan State; Ph. D. Wisconsin; L. N. Skold, M.S., Kansas State; M. E. Springer, Ph.D., California (Berkeley); H. Y. Dodds, Ph.D., Louisiana State.

Associate Professors:

D. L. Coffey, Ph.D., Purdue; L. S. Jeffery, Ph.D., North Dakota State; W. A. Krupey, 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; H. C. Smith, M.S., Tennessee.

Assistant Professor:

F. L. Allen, Ph.D., Minnesota.

3020 Crop Ecology (3) Crops and environment; geographic location; site, heat, light, water and interplant relationships as a basis for judgment of growth and yield. Emphasis 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 season, growth regulating substances, functions and factors of the environment. Prereq: 8 hrs biological science. 2 hrs and 1 lab.

3110 Crop Physiology (3) 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, small grains, grain sorghum, soybeans and related crops. Prereq: 2130. 6 hrs biological science. 2 hrs and 1 lab.

3140 Forage Crops (4) Characteristics, adaptation, improvement, management, and utilization of grasses and legumes for pastures, hay, and silage. Prereq: 2130. 6 hrs biological science. 3 hrs and 1 lab.

3160 Cotton and Tobacco (4) Characteristics, adaptation, improvement, culture, harvesting, and marketing of cotton and tobacco. Prereq: 2130. 8 hrs biological science. 3 hrs and 1 lab.

3180 Fruit Crop Management (4) Soils, planting, cultivation, development of fruit crops, plant disease control, fruit structures, fruit processing, packing, storage, and pruning. Prereq: Agricultural Biology 3130 and 3210. 3 hrs and 1 lab.

3220 Soil Management (4) Soil management for crop production including cropping systems, fertilizer use, and tillage operations for specified soil and farming conditions. Prereq: 2130. 3 hrs and 1 lab.

3250 Soils in Forestry (3) Soil as a medium for tree growth; relation of physical, chemical, and biological properties of soils to tree growth and management of forest stands. Soil properties of importance in forest location, recreational development, and watershed management. Prereq: 2130, Forestry 3320. 2 hrs and 1 lab.

3510 Commercial Production of Cool Season Vegetables (3) Characteristics, economic importance, adaptability, and production for fresh and processing market. Emphasis on tomatoes, green beans, collards, red and white cabbage, broccoli, cauliflower, and other related vegetables. Prereq: 8 hrs biological science. 1 lab.

3520 Commercial Production of Warm Season Vegetables (3) Characteristics, economic importance, adaptability, and production for fresh and processing market. Emphasis on tomatoes, green beans, collards, red and white cabbage, broccoli, cauliflower, and other related vegetables. Prereq: 8 hrs biological science. 1 lab.

Clyde B. Austin Distinguished Professor.
processing markets; emphasis on sweet potatoes, beans, tomatoes, peas, cucumbers, squash, corn, okra, and okra. Need not have 3510 as prerequisite. Prereq: 8 hrs of biological science. 2 hrs and 1 lab.

3610 Interpretation of Agricultural Research (3) Statistical methods for interpreting research. Prereq: Mathematics 1550.

3710 Principles of Weed Science (4) Basic principles of weed science, history, ecology, economic losses, means of control, types of herbicides, and specific recommendations for various crops and non-crop uses. Prereq: 8 hrs biological science and 3 hrs organic chemistry. 3 hrs and 1 lab.

4110 Soil Chemistry (4) Colloidal systems, properties and behavior of colloidal soil materials, relations of chemical properties to plant nutrient availability. Prereq: 2130 and Physics 1210. 3 hrs and 1 lab.

4120 Principles of Crop Breeding (4) Genetic principles and techniques used in crop improvement. Prereq: 8 hrs biological science or consent of instructor. 3 hrs and 1 lab.

4250 Agricultural Chemicals and the Environment (4) Characteristics, use, mode of action, degradation, and environmental impact of chemicals used in agriculture, forestry, and related areas with emphasis on agricultural pesticides; environmental safeguards imposed by federal and state regulations on chemical development and use. Prereq: 1 yr biological science and 1 yr chemistry. 3 hrs and 1 lab.

4320 Soil Formation, Morphology, and Classification (4) Soil formation; properties, distribution, and classification of soils; interpretation of morphology; use of soil surveys. Prereq: 2130. 3 hrs and 1 lab.

4400 Problems in Plant and Soil Science (1-6) May be repeated. Maximum 9 hrs.

5000 Thesis

5100 Special Problems in Plant and Soil Science (1-6) May be repeated. Maximum 9 hrs.

5200 Soil Crop Relationships (3-6) May be repeated. Maximum 9 hrs.

5240 Soil Productivity and Management (3) Concepts of soil productivity and management, quantitative evaluation of factors and their interaction affecting soil management decisions, crop production systems, water control and management, tillage and fertility management, planning and evaluation of specific soil management programs. Prereq: 3220 and 4110 or consent of instructor.

5250 Pedology (4) Factors and processes of formation as related to physical, chemical, and mineralogical properties of soils; soil in an ecosystem; classification of soils. Prereq: 4290 or consent of instructor. 3 hrs and 1 lab.

5310 Design and Interpretation of Experiments (3) Experimental design and procedures; effect of different variables on precision of experiments; problems dealing with the analysis of data. Prereq: 3610 or equivalent.

5340 Soil Physics (3) Chemical and physical relationships among solid, liquid, and gaseous phases of soil mass; relation to plant growth and soil management. Prereq: 4110. 2 hrs and 1 lab.

5370 Advanced Soil Fertility (3) Fundamental concepts and soil chemistry as they relate to nutrient absorption by plant roots; interrelation of these concepts in soil fertility and soil management. Prereq: 4110.

5390 Soil Physical Chemistry (3) Structural properties of soil minerals determining physiochemical reactions, ion exchange, Donnan equilibrium, double layer theory. Prereq: 4110; Chemistry 4110 or concurrent registration.

5600 Seminar (1) May be repeated. Maximum 3 hrs.
Donald D. Hanson, Dean
William J. Lauer, Associate Dean

Professors:

Associate Professors:

Assistant Professors:

Lecturers:

4031 Accelerated Historical Studies I (4) Introduction to the evolution of architectural periods with selected illustrations from local examples. Advanced examination of the relationship of historical and cultural developments to the built environment from antiquity through the 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 the relationship of historical and cultural developments to the built environment from the 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 the historical and cultural events of the Industrial Revolution which gave rise to the 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.

4170 Introduction to Preservation and Restoration (4) History and theory of restoration and preservation.

4175 Technology of Preservation (4) History of technology and materials, methods analysis and dating, techniques of preservation.

4311 Historic Preservation Laboratory (8) Directed studies for buildings of historical significance. Techniques of preservation; research of historic methods of construction; and studies of viable uses. Rehabilitation, restoration, preservation, and adaptive uses.


4733 Structural Design for Protection Against Extreme Hazards (4) Probability, risk, human values, insurance. Survey of possible hazards; floods, fire, hurricanes, and tornadoes. Earthquakes, nuclear effects, internal and external explosions. Building code and engineered design of steel, masonry, concrete, and wood structures to resist extreme effects. Protective construction for human and system needs. Fire protection engineering, fire phenomena, life safety and analysis, high-rise building fires.

4735 Aesthetics of Engineering Structures (4) Architecture in engineering; theory and utilization of space, design, and materials in large structures. Bridges, exhibition halls, power plants.


4910 Architectural Photography (4) Photography as a design, research and presentation medium. Emphasis on architectural photography using black and white media.

4920 Advanced Architectural Photography (4) Application of special photographic techniques with emphasis on color printing and processing. Prereq: Consent of instructor.


Graduate programs of the College of Business Administration are designed to prepare men and women to assume executive, managerial and professional positions in the increasingly complex world of domestic and international business and industry, teaching and research, government and institutional management.

Viewing the business firm as operating in a dynamic social, political and economic environment which demands leaders capable of dealing with innovation and rapid change, the College places central importance on development of students' thought processes rather than on specialized subject matter and courses descriptive of past practices. Emphasis is focused on flexibility of mind, receptivity to new ideas, capacity to adapt one's reasoning powers and judgment to rapid changes, vigor and imagination in using the mind, ability to reason analytically and logically and, above all else, inculcation of an irrepressible desire to continue to learn and grow in knowledge throughout the student's life.

Graduate Programs

The College of Business Administration offers programs leading to seven advanced degrees: the Doctor of Business Administration, the Doctor of Philosophy with majors in Economics and in Management Science, the Master of Arts and the Master of Arts in College Teaching with a major in Economics, the Master of Science with majors in Economics and Statistics, the Master of Accountancy in Accounting, and the Master of Business Administration. The Department of Management participates with the Department of Psychology in the College of Liberal Arts in offering an intercollegiate program in industrial and organizational psychology leading to the Master of Science and Doctor of Philosophy degrees. (See page 97.) Also, the department of Management Science offers an intercollegiate program leading to the Master of Science degree. (See page 96.)

The two College-wide programs, the MBA and the DBA, are described below. Descriptions of other degree programs will be found under the appropriate departmental or program headings.

The MBA Program

The College-wide curriculum of the Master of Business Administration program is designed to prepare students for successful careers in business and institutional management and for imaginative and responsible citizenship and leadership roles in business and society. The program is designed to encompass the major functional areas of business and economics in order to provide the perspective necessary for those who aspire to positions of executive and professional leadership. The curriculum reflects the application of evolving knowledge in economics and the behavioral and quantitative sciences. This program is accredited by the American Assembly of Collegiate Schools of Business.

Completion of the MBA program requires from four to six quarters (51 to 78 quarter hours of course work) for a full-time student, depending upon the individual's undergraduate preparation in business and economics. The four-quarter sequence is designed for those who have completed a baccalaureate program in business administration. Those with undergraduate degrees in the humanities, engineering, social sciences or natural sciences will require up to six quarters, depending upon the extent of their preparation in business and economics.

The complete MBA program with a concentration in management is offered by the regular graduate faculty of the College as a part-time evening program on the Knoxville campus, at Oak Ridge, and at the Kingsport University Center.

Students may begin the program in any of the four quarters of the academic year; however, those entering the program in the winter or spring may find it difficult to complete the program in minimum time due to course scheduling and sequencing.

The MBA student may select an area of concentration from the following fields: accounting; economics; finance; forest industries management; governmental financial administration; management; management science; marketing; real estate and urban development; statistics; transportation and logistics.

All entering students must have completed college-level mathematics through at least one quarter (or semester) of calculus or remove the deficiency by taking appropriate courses in mathematics. Specific requirements of the MBA program are shown below. To qualify for the degree, a student must complete a minimum of 51 quarter hours of graduate course work in Groups B, C and D, at least 42 hours of which must be at or above the 5000 level. Further, at least half of the credit hours taken in Group C (concentration area) must be at or above the 5000 level.

There is no thesis requirement although ample opportunity is provided for research and writing in course work. Group A—Foundation Courses. Required for students who lack adequate preparation in the areas listed. Any or all of these courses may be waived if the student has completed undergraduate course equivalents. Additional prerequisite courses may be required for certain concentration areas. These courses are available only to satisfy Group A requirements and as stated on page 68.
consolidations, advanced federal income tax, and computer concepts in accounting. Additionally, at least three of the following must be included: 5110, 5120, 5130, 5210, and 5420.

Economics. (See also Master's and Ph.D. programs in this area.) Area prereq: Intermediate Macro- and Microeconomic Theory (6). Any combination of 12-18 quarter hours of economics courses listed in this catalog as approved by the faculty advisor.

Finance. Area prereq: Finance 5050 or equivalent (6). A minimum of three courses must be taken in one of the following areas: Financial Management: 5120, 5130, 5140, 5620, 5800, 5990; Investments: 5420, 5430, 5810; Monetary Policy and Financial Institutions: 5800, 5810, 5820, 5830.

Forest Industries Management. Area prereq: B.S. degree in forestry or equivalent. Organization, planning, and control: Management 5120, 5130; Industrial Forestry: Forestry 5260; Topics in Forest Industries Management: 5270.

Group D—Electives. Unless the student elects two areas of concentration, a minimum of 6 quarter hours must be taken in areas outside the area of concentration. The elective area is increased beyond 6 hours to the extent that the concentration area is less than 18 hours. Specific approval of the student's advisor, an elective course may be taken outside the College of Business Administration.

Total, Group D: 6-12

Other Requirements. The application for Admission to Candidacy (see page 20) must be approved by two faculty members in the student's area(s) of concentration and the Assistant Dean for Graduate Programs of the College of Business Administration before submission to the Vice Chancellor for Graduate Studies and Research.

To qualify for the degree, the student must achieve a B average (3.0) or above in courses taken in the concentration area(s) as well as in the overall program and pass a written comprehensive examination during the final quarter of the program. If the results of the written examination are not clearly passing or failing, a supplementary written or oral examination may be given in the same quarter. The complete examination process may be repeated one time, but it may not be taken until the quarter following the first attempt.

DUAL J.D.-MBA PROGRAM

The College of Business Administration and the College of Law offer a coordinated dual program leading to the conferral 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 hours) of course work which would be required if the two degrees were to be earned separately.

Admissions. Applicants for the J.D.-MBA 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 MBA degree, and by the Dual Degree Committee.

Students who have been accepted by both colleges may apply anytime prior to, or after, matriculation in either college and 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 be started prior to entry into the last 42 hours required for the J.D. degree and the last 24 hours required for the MBA degree.

Curriculum. A dual program candidate must satisfy the graduation requirements of each college. Students withdrawing from the dual 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 the dual 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, of which the 12 quarter hours must be earned in Accounting 5510 or a more advanced accounting course. If College of Law credit is given for such an accounting course, the student may receive College of Law credit for Legal Accounting (Law College Course 8590).

The College of Business Administration will award credit toward the MBA 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 courses in the College of Law, students are encouraged to maximize the integrative facets of the dual program by taking courses in both colleges each quarter.

Awards 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 an academic 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 Law School course in which the student has earned a B grade or higher and a No Credit for any lower grade. Grades earned in courses of either college may be used on a regular graded basis for any appropriate purpose in the college offering the course. The student must pass a final written comprehensive examination to receive the MBA degree.

The DBA Program

The basic objective of the Doctor of Business Administration program is to provide the student an opportunity to attain the intellectual competence necessary to meet the highest standards for advancement to a professional position in an academic institution, business and industry, or government. The student will develop a sound foundation for expanding knowledge in the student’s chosen area of concentration and will contribute through research to advancement of the state of knowledge in that area. Moreover, the student’s educational experience should develop perspective toward education for business in a manner that will enable the student to respond to innovation and change in response to needs.

The DBA program is structured around four major features. First, it recognizes the interdisciplinary thrust of graduate education and provides the student with a sound foundation for expanding the body of knowledge related to business systems and their interactions with other socioeconomic systems and environmental forces. Second, the student’s program is flexible enough to respond to individual needs and interests, yet is formulated within a sound framework to achieve overall objectives. Third, emphasis is placed upon conceptual foundations and analysis of decision-making processes rather than the description and measurement of business administration. Fourth, the student does advanced work in the basic disciplines of economic theory, behavioral science and quantitative science to provide the necessary foundation for research.

Foundation Requirements. Although the program is designed for students who have completed an accredited MBA (or equivalent) degree program, those with outstanding undergraduate records in any area may be admitted directly to the DBA program and may, if they desire, earn the MBA degree in a coordinated program of study. Program prerequisites include at least one course each in mathematics to include college algebra, general mathematics and a course in single variable calculus; a course in statistics; knowledge of computer language (FORTRAN IV); intermediate economic theory (micro and macro); and introductory courses in financial accounting, business finance, marketing, production, operations, and the legal environment of business. Entering students deficient in any of these areas may enroll in courses designed to meet these requirements.

Course Requirements for the DBA Program. Each student must demonstrate by passing appropriate graduate level courses and/or by examination, an understanding of the business functional areas, the basic discipline underlying the study of business administration, the student’s concentration area and a supporting area. Following are the requirements for each area.

A. Business Functional Areas. One graduate level course in each of the following areas must be completed.

1. Students who choose this field as a supporting area take Management 5310 and 5311.
2. Statistics 5311 and 5312 and Management Science 5100 may not be included.

B. Basic Disciplines. Each student must demonstrate proficiency in the following areas by completing course work indicated or by passing appropriate examinations:

- Economics: Advanced Microeconomic Theory (Economics 5111); Advanced Macroeconomic Theory (Economics 5211).
- Behavioral Science: Organizational Behavior (Management 5230); Behavioral Science (Management 5210).
- Quantitative Science: 12 quarter hours in one or a combination of two of the following areas: Statistics, management science, econometrics, or computer science. Approval of student’s committee is required.

C. Concentration Area. This is the focal point of the program, the area in which the student expects to do his/her research and dissertation. A minimum of 24 quarter hours of course work is required, including 9 hours of doctoral seminars taken at this University. A study of research methodology of the discipline is included. Graduate work in the field taken at other institutions is considered by the student’s committee in determining additional course work required. Available concentration areas are:

- Accounting
- Finance
- Management
- Marketing
- Transportation and logistics

D. Supporting Area. A minimum of 12 quarter hours of graduate course work is required in an area complementary to, the concentration area. The student may choose the supporting area from one of the following: one of the business functional areas, additional work in one of the basic disciplines or a related area in another school or college of the University. The program of study should be arranged with an advisor in the discipline chosen and must be approved by the student’s committee.

Preliminary Examinations. Comprehensive written preliminary examinations consisting of two sessions of approximately four hours each in the concentration area and one four-hour session in the supporting area are required of each person working toward the DBA degree. The student’s committee may, if they deem it advisable, supplement the written examinations with oral examinations, and may accept the results of an oral examination only for supporting areas outside the College of Business Administration. These examinations are scheduled twice a year, in early October and early May. The student may opt to sit for all sessions during a single examination period, or may sit for the concentration area and the supporting session in two successive periods. A student who fails an area on the first attempt must, if he/she wishes to continue in the program, retake the examination at the next scheduled administration, the results of which shall be final.

Admission to Candidacy. A student may apply for admission to candidacy for the DBA degree after maintenance of at least a B average in course work, successful completion of preliminary examinations and acceptance of a research proposal for the dissertation by his/her faculty committee. Admission to candidacy must be approved at least three quarters prior to the date the degree is conferred. (Admission in the fall quarter permits graduation in the following spring quarter.) Prior to presenting the research proposal for formal approval, the student must form his/her advisory committee and may, if he/she wishes to continue in the program, request the concentration area department head to recommend their appointment by the Vice Chancellor for Graduate Studies and Research. There must be at least four members, one of whom must be from a
**Minimum Academic Performance Standards**

A graduate student in the College of Business Administration whose grade point average at any point after 12 hours is below 3.0 shall be placed on probation. A student on probation shall be dropped from the program if his/her cumulative grade point average is 3.0 or higher at the end of the probationary period. The probationary period is defined as the next 12 quarter hours of course work attempted which is specified in the student's degree program. Exceptions to this policy may be made only with the approval of the Assistant Dean for Graduate Programs of The College of Business Administration upon recommendation of the student's faculty committee.

**Admission Requirements**

General admission requirements for the Graduate School are stated on pages 11-12. MBA and DBA applicants are required to take the Graduate Management Admission Test (GMAT). Applicants for programs in economics, management science, and statistics may submit results of either the GMAT or the Graduate Record Examination (GRE) aptitude portion. Applicants for economics who submit GRE aptitude scores must also submit the Advanced GRE score for economics. Applicants for management science must meet the quantitative methods prerequisites stated in the program description.

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 966, Princeton, New Jersey 08540, and from most colleges and universities.

In addition to procedures required for admission to the Graduate School (pages 11-12), DBA applicants must submit additional forms provided by the College of Business Administration. The application for all programs and supporting materials should be submitted at least three months prior to desired entry date.

The College of Business Administration is associated with other leading graduate schools of business as a member of the Graduate Management Admission Council.

**Fellowships and Assistantships**

Fellowships. Information concerning fellowships administered by the Graduate School as well as application blanks may be obtained from the office of the Vice Chancellor for Graduate Studies and Research.

Assistantships. A limited number of graduate assistantships are available in each of the academic departments and in the Center for Business and Economic Research. Assistantships which carry remission of tuition and/or fees range up to $4500 per year, while others funded through various research centers of the University range up to $5500 per year for half-time service. Awards are generally made on the basis of scholarship and performance on the admission test. Application forms must be obtained in any of the departments or from the office of the Assistant Dean for Graduate Programs. Applications must be received by March 15 for consideration of assistantships to be awarded for the following fall term.

**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 various kinds of economic and socioeconomic information. It supports the faculty of the College in seeking funding for research projects. Staff members conduct research in regional economics, public finance, and areas related to socioeconomic problems in the region. The Center publishes the results of its own research and that of others in monograph form so that significant developments in the various business disciplines and economics can achieve widespread exposure. In addition, the Center staff does contract research on business and economic problems for government agencies, nonprofit organizations, and private industry. The Center publishes periodically the Tennessee Statistical Abstract and bimonthly the Survey of Business. The Center is a member of the Association for University Business and Economic Research.

**Management Development Programs**

The Management Development Programs Department offers a wide variety of programs ranging from two- to three-day public seminars and customized “in-plant” programs to the four-week 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 the nation. 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 thirty-six participants who live on campus for a total of four weeks spread over a three-month period. This arrangement provides executives with extensive opportunities to exchange ideas and operational concepts with contemporaries in other business areas and with TEDP faculty as well.

The faculty for the TEDP 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 extensive experience in either consultation with or actual operations in business and industry. The TEDP faculty is augmented by outstanding practitioners in their fields of business and industry.
course including audit of specific asset, liability, revenue and expense accounts, with emphasis on reporting, data processing, statistical sampling, and internal auditing. Prereq: 4110 with C or better.

4530 Analysis and Design of Information Systems (3) General systems concepts, flowcharting, planning of systems study, determination of systems objectives, development and evaluation of design alternatives, implementation, documentation and control. Prereq: Computer Science 3910.

4950 Individual Research in Accounting (3) Special projects undertaken by majors in accounting under the direction of faculty members of professorial rank or doctoral level. Not intended for persons who have completed prerequisites in accounting and other business and related disciplines individually designated to supplement the applicant's undergraduate background. Prerequisites, therefore, include the equivalent of an undergraduate degree in accounting including courses in taxation of estates and gifts and in advanced auditing, with adequate course work in calculus, microeconomic theory, and business policy.

Course Requirements for the M.Acc. Program. A student's program encompasses 51 quarter hours of graduate course work. Specifically, the student must complete courses in selected business disciplines and in the areas of accounting as indicated below. Each course is 3 quarter hours of graduate credit.


5150 Research in Accounting (3) Directed problem-oriented research during any quarter when a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.

5120 Seminar in Advanced Auditing (3) Theory and concepts underlying the philosophy of auditing as related to current auditing issues. Prereq: 4120 or equivalent.

5130-40 Seminar in Current Accounting Topics (3, 3) Critical in-depth consideration of current issues in financial accounting literature. Prereq: 4980 or 5110. Must be taken in sequence.

5150 Research in Accounting (3) Directed problem-oriented research during any quarter when a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.

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5130-40 Seminar in Current Accounting Topics (3, 3) Critical in-depth consideration of current issues in financial accounting literature. Prereq: 4980 or 5110. Must be taken in sequence.

5150 Research in Accounting (3) Directed problem-oriented research during any quarter when a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.
5610 Seminar in Applied Business Analysis (3) Application of business concepts and analytical skills to problems of small businesses in community. Students work in teams under supervision of participating professor. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.

Business Education
See College of Education

Economics

MAJOR

DEGREES

Economics

M.A., MACT, M.S., Ph.D.

Professors:

Associate Professors:
S. E. Ball, Ph.D. Texas; S. L. Carroll, Ph.D. Vanderbilt; E. Glustoff, Ph.D. Stanford; H. Grunder (visiting), Ph.D. Texas; W. Horszd, Ph.D. Massachusetts; A. Mayhew, Ph.D. Texas; K. E. Phillips, Ph.D. Washington (Seattle).

Assistant Professors:
N. O. Alper, M.A. Pittsburgh; D. P. Clark, Ph.D. Michigan State; R. Dzialowicz, M.A. California (Los Angeles); T. L. Majors (visiting), B.A. Tennessee; N. C. Modeste, Ph.D. Florida; M. J. Moreck, M.A. Washington State; F. M. Murtough (visiting), M.A. Tennessee; P. Spiva, Ph.D. State University of New York (Binghamton); A. M. Schliottmann, Ph.D. Washington (St. Louis).

THE MASTER'S PROGRAM

The minimum requirements for a graduate major in Economics for the Master of Arts and the Master of Science degrees consist of the following:

(1) Economics 5111-12 and Economics 5121-22.
(2) 9 additional hours in economics at the 4000 level or above.
(3) A thesis, or an additional 9 hours in economics at the 5000 level or above to be concentrated in one field. Students electing the non-thesis option will be required to pass a masters comprehensive examination.

The requirements for a graduate minor in Economics are as follows: Either (1) Economics 5111-12, or (2) Economics 5111 and 5121-22, or (3) Economics 5111 or 5112, 5140, and one other 4000- or 5000-series economics course or (4) with the consent of the head of the economics department, an alternative sequence of 9 hours to meet the above.

MASTER OF ARTS IN COLLEGE TEACHING DEGREE

The requirements for the MACT degree are listed on page 20. A thesis is required.

THE DOCTORAL PROGRAM

Subject Area Requirements

1. Students will be required to demonstrate their competence in the core subject fields as indicated:
   a. Economic theory, by a preliminary examination.
   b. Economic history, by completing hours in economics at the 5000 level or above with an average grade of B or better or by satisfying an examining committee.
   c. History of economic thought, by completing Economics 5150 and 3 additional hours in this area at the 6000 level with an average grade of B or better or by satisfying an examining committee.
   d. Mathematical and quantitative methods in economics by completing Economics 5180, 5190, and 5510 with an average grade of B or better or by satisfying an examining committee.

2. Students will be required to demonstrate their competence by preliminary examination in three fields with the approval of the department, at least two of which must be selected from the following: economic development; economic theory; econometrics; economics of labor and manpower; industrial organization; international economics; regional economics; a field, as agreed to by the department, combining two or three of the above.

Exceptions to the foregoing are discouraged but may be permitted by writing directly to the department head who will decide with the advice of an ad hoc committee of three tenured members of the faculty. This petition is to be submitted at least nine months before the student takes the preliminary exam in question.

Course Requirements. Candidates for the Ph.D. degree in Economics will be required to complete a minimum of 72 quarter hours of course work beyond the Bachelor's degree, plus the dissertation which carries 36 quarter hours of credit. At least 54 hours shall be in economics.

4000 Special Topics (3) Student-generated course, not numbered, under consent of department and instructor with approval of the department.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15) Requested by students not other-wise registered during any quarter when such a student uses university facilities and/or faculty time before thesis may not be used toward degree requirements. May be repeated. S/NC only.

5011-12 Problems in Lieu of Thesis (3, 3)

5910-20-30 Economics Seminar (1, 1, 1) Research in progress and discussion of selected topics. May be repeated. S/NC only.

6000 Doctoral Research and Dissertation

ECONOMIC THEORY

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 the 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 classical and neoclassical tradition, with an analysis of economic thought from a social science, together with an analysis of some economic conditions which influenced this development. Period covered: 1776 through 1938. Prereq: 1 yr of principles of economics 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 beginning graduate students who have limited training in analytic geometry and calculus. May be taken in sequence. Prereqs: 3110 and college algebra, calculus, and analytic geometry or the equivalent.

5050 Introduction to Economic Analysis (3) Nature of the economic problems: economics as science; brief survey of evolution of economics; analytical tools of micro- and macroeconomics. (Available only as stated on page 36.)

5060 Introduction to Economic Problems and Policies (3) Economic theory as basis for problem solving; tools of public and private policies for economic stability, growth and minimum income, international economic relations and problems of developing economics. (Available only as stated on page 36.)

5070-80 The Firm and Its Environment (3, 3) Macroeconomic environment; economic forecasting; microeconomic environment; organizational analysis; behavioral aspects of imperfect markets; legal and institutional aspects; responsibilities of the businessman. Must be taken in sequence. Prereq: 5050-80.

5110 Microeconomics (3) Basic topics in microeconomics; verbal and geometric formulation of algebraic techniques. Theory of consumer behavior and demand, theory of production and costs, and short and long run profit maximization in both perfectly competitive and monopolistic environments, and theory of demand and supply. Prereq: 5070-80.

5112 Microeconomic Theory (3) Fundamental theory of price determination in partial and general equilibrium settings, including theories of production and distribution. Prereqs: 4170 and 5111 or equivalent.

5121-22 Macroeconomic Theory (3, 3) Determination of levels of employment and prices for economy as a whole, focusing on relationships between interest rates, price expectations, productivity, and quantity of money, on one hand, and aggregate saving, investment, and liquidity preferences on the other. Prereqs: Intermediate economic theory or equivalent.

5150 History of Economic Thought (3) Development of economic ideas from mercantilists to mercantilism, given to classical and neoclassical tradition.

5180-90 Mathematical Methods in Economics (3, 3) Applications of basic concepts in differential and integral calculus, difference and differential equations, linear algebra and stochastic methods to topics in theory of firm, growth models, game theory, linear programming, and decision making under uncertainty. Prereq: 1 yr of calculus.

5510 Quantitative Methods in Economic Research (3) Methods of estimation and testing of economic relationships with use of time series and cross section data, with applications to current economic problems. Prereq: Introductory statistics or Statistics 5211 or the equivalent.

5620 Introduction to Econometrics (3) Statistical methods of estimation and analysis of relationships between dependent and independent variables, applications of major tools to problems of economic forecasting. Prereq: satisfactory performance on a test administered to students who contemplate taking Economics 6170-90.

5710 Public Finance: Revenues (3) Same as Finance 5710.

5720 Public Finance: Expenditures (3) Same as Finance 5720.

5740 Seminar in Public Finance (3) Same as Finance 5740.
monetary problems, capital movements, and foreign trade policy.

6231-32, 6341-42 Seminar in Economic Development
(3, 3, 3, 3) Development and application of analytical tools to problems of economic policy faced by developing regions and countries.

6250 Seminar in European Economic History
(3) Selected topics in European economic history.
Prereq: Consent of instructor. May be repeated with consent of department.

6260 Seminar in American Economic History
(3) Selected topics in American economic history.
Prereq: Consent of instructor. May be repeated with consent of department.

6270 Seminar in the Economic History of the Third World
(3) Selected topics in economic history of societies other than those of Western Europe and English-speaking North America.
Prereq: Consent of instructor. May be repeated with consent of department.

6510 Seminar in Regional Analysis
(3) Selected topics in regional economic theory and analysis.
May be repeated. Maximum 6 hrs.

6820 Regional Economics Workshop
(3) Selected topics in applied regional research.
Emphasis on student participation in model design and estimation, forecasting, simulation, and mathematical computer programming. May be repeated. Maximum 6 hrs.

6850 Seminar in Environmental and Resource Economics
(3) Topics in environmental quality, natural resource allocation by private markets, and issues in formulating public policy toward environmental problems.
Prereq: Consent of instructor. May be repeated. Maximum 9 hrs.

INDUSTRIAL ORGANIZATION
4350 Industrial Organization Analysis
(3) Monopoly and competition in United States economy; market structure, business behavior, and economic performance and interrelationships.
Prereq: 9 hrs of introductory economics.

5400 Seminar in Private Enterprise and Public Policy
(3) Structure of contemporary industry, factors in development, and consequences for business conduct and performance; social control of business through antitrust and other government regulation.

6351-52, 6361-62 Seminar in Industrial Organization
(3, 3, 3, 3) Organization of industry.
Emphasis on empirical and analytical techniques used in investigating structure, conduct, and performance.
Prereq: 6361-62.

Public Policy Problems in relation to industrial structure and business conduct; examination, appraisal, and proposals for change.

ECONOMICS OF CENTRALLY PLANNED ECONOMIES
5310 Economic Systems
(3) Study and appraisal of underlying theories and operations of capitalism, socialism, communism, and other economic systems.

6331 Theory and Practice of Economic Planning
(3) Leading issues in imperative and indicative planning.
Prereq: Consent of instructor. May be repeated with consent of department.

ECONOMICS OF LABOR AND MANPOWER
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.

4430-40 Labor Legislation
Prereq: 2110-20.
5440 Commodity Futures and Stock Options (3) Trading in commodity futures markets and in "put and call" stock options; factors influencing commodity futures and options prices; option valuation models. Prereq: 5420.

5800 Executive-in-Residence Seminar for MBA (3) Practical aspects of financial management and investments. Leading industry, banking, and governmental personnel in personal conduct class. Prereq: Consent of department.

5900 Research in Finance (3) Directed research on topic of mutual interest to the student and staff member. Prereq: 5110. May be repeated. Maximum 6 hrs.


6420 Theory of Finance (3) Theory of financial decision making under conditions of certainty and uncertainty. Application of theory of choice to allocation of financial resources over time with reference to financing decisions, investment decisions, and the determinants of the cost of capital.

6510 Seminar in Financial Management (3) Employment of quantitative techniques in formulation and solution of financial problems.

MONETARY POLICY AND FINANCIAL INSTITUTIONS

5810 Financial Markets and Intermediaries (3) Capital formation and allocation of capital in U.S. economy and abroad. Process of saving, partial institutionalization of these savings, investments of financial intermediaries, efficiency of allocation process and effect on economy, and impact of financial institutions on financial markets. (Same as Economics 5310.)

5820 Monetary Theory and Policy (3) Relationship of money, credit and liquidity to income, interest rates, employment and prices as well as examination of effect of monetary policy on economic activity. Prereq: Economics 5080 or equivalent. (Same as Economics 5820.)

5830 Commercial Bank Management (3) Bank management decision-making analysis of changes in banking environment and structure; acquisition and management of funds; current banking problems. Prereq: Consent of instructor. (Same as Economics 5830.)

6100-20 Seminar: Monetary Theory (3, 3) Study of money, credit, and liquidity as related to income, interest rates, employment, output, and price levels.

6180 Financial Institutions and Markets (3) Theory of financial markets, role of financial institutions, and analysis of market efficiency.

GOVERNMENTAL FINANCIAL ADMINISTRATION

5710 Public Finance: Revenues (3) Allocative, distributional, stabilization effects of alternative revenue systems. Coreq: Economics 5080. (Same as Economics 5710.)

5720 Public Finance: Expenditures (3) Functions and growth of public sector, public goods, and benefit/cost analysis. Coreq: Economics 5080 or equivalent. (Same as Economics 5720.)

5730 Finance Administration of Government (3) Budgeting, control and management in public sector. Prereq: Economics 5080 or consent of instructor.

5740 Seminar in Public Finance (3) Selected topics: public choice, pricing government services, financial intermediaries, and public economics. Prereq: 5710. (Same as Economics 5740.)

6710-20 Seminar: Fiscal Theory and Public Finance (3, 3) Advanced topics in fiscal theory and policy. (Same as Economics 6710-20.)

INSURANCE

5110 Theory of Risk Management (3) For students with no background in risk and insurance. Risk management and manageable risks facing individual and firm. Analysis of risk management techniques which assist in insurance as a tool.

REAL ESTATE AND URBAN DEVELOPMENT

4900 Aspects of Urban Environment (4) Interdisciplinary course in urban problems. Prereq: Consent of instructor. (Same as Architecture 4900 and Psychology 4980.) S/NC only.


5120 Real Estate Analysis (3) Analysis of real property investment, real estate appraisal and appraisal theory. Prereq: Finance 5050 or equivalent.

5130 Housing and Urban Land Markets (3) Analysis of housing demand, supply and location. Segregation and housing discrimination. Impact of urban renewal and public policy on housing markets. Prereq: 5110 or consent of instructor.

5140 Real Estate Investment and Taxation Analysis (3) Analysis of economic factors and institutions which underlie real estate investment decision-making. Prereq: 5120 or consent of instructor.

5200 Real Estate Investment and Taxation Analysis (3) Analysis of real estate investment, real estate estate and appraisal theory. Prereq: Finance 5050 or equivalent.

MANAGEMENT

Management

Professors:
H. D. Dewhurst (Head), Ph.D. Texas

Associate Professors:
F. A. Chamblin, M.B.A. Indiana; O. S. Fowler, Ph.D. Georgia; R. C. Maddox, Ph.D. Texas; C. W. Neel, Ph.D. Alabama.

Assistant Professors:
J. A. Bachmann, Ph.D. Virginia Polytechnic Institute; W. Henderson, Ph.D. Purdue; M. C. Rush, Ph.D. Akron; J. E. Theil, Ph.D. Indiana; W. S. Williams, Ph.D. Purdue State.

4201-02-03 Readings and Research in Personnel Management (1, 2, 3) Prereq: 4440, Statistics 4310, and consent of instructor.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise registered during any quarter when such a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.

5050 Production Management (3) Analysis of production function with emphasis upon application of mathematical-statistical methods. (For MBA students only. Available only as stated on page 36.)

5110 Organization Theory I (3) Analysis and design of organization structure.

5120 Organization Theory II (3) Dynamics of organizational structure, motivation, informal organization. Prereq: 5110.

5120 Managerial Planning and Control (3) Processes of management planning and controlling, with emphasis on long-range corporate planning.

5170-90-90 Proseminar in Industrial and Organizational Psychology (1, 3, 3) Introduction to basic concepts and ideas required for graduate study in industrial and organizational psychology. Must be taken in sequence during the student's first year. (Same as Psychology 5170-90-90.)

5210 Personnel Management (3) Analysis and appraisal of the personnel function.

5220 Wage and Salary Administration (3) Analysis of problems, programs, and practices.

5230 Human Problems in Administration (3) Review and critique of research in industrial human relations. (Same as Psychology 5240.)

5250-60-70 Industrial and Organizational Psychology (1-3, 1-3, 1-3) Research in industrial and organizational psychology. Prereq: Consent of instructor. S/NC or letter grade.

5320 Management Problems in Industrial Research (3) Basic administrative problems encountered in management of industrial technological research and engineering programs, and comparable programs in which professional personnel predominate.

5410-20-30 Production Management (3, 3, 3) Quantitative approach to solution of production management problems. (Same as Mathematics and Statistics, including 3 hrs of computer programming, or equivalent and consent of instructor.)

5710 Management of Foreign Operations (3) Analysis of operational environment of international business firms and impact of internal and external factors on managerial decisions. Readings and cases.

5810 Energy Management: Theory and Practice (3) Management of energy resources in operating systems; decision criteria, trade-offs, system analysis, energy audits, technical parameters, conservation methods, worldwide energy supply and demand, new energy technologies.

6000 Doctoral Research and Dissertation

6110 History of Management Thought (3) Significant historical ideas leading to present state of art of management.

6120 Advanced Organizational Theory (3) Analysis of operational environment of international business firms and impact of internal and external factors on managerial decisions. Readings and cases.

6250-60-70 Seminar in Industrial and Organizational Psychology (1-3, 1-3) Advanced problems in organizational psychology. Areas include performance evaluation, executive development, group processes, and morale. (Same as Psychology 6250-60-70.)

6380 Seminar in Industrial and Organizational Psychology (3) (Same as Psychology 6380.)

6900 Field Work in Industrial and Organizational Psychology (1-15) Supervised practice. One credit hr for each 30 hrs of such practice. Maximum 15 credits. (Same as Psychology 6900.)

Management Science

DEGREE

Management Science

Ph.D.

Associate Professors:
C. S. Bradley, Ph.D. Yale; R. S. Gartzel, Ph.D. Johns Hopkins.

Assistant Professor:
R. E. Rosenthal, Ph.D. Georgia Institute of Technology.

Assistant Professor:
C. E. Bell (Chairperson), Ph.D. Johns Hopkins.

Assistant Professor:
R. S. Garth, Ph.D. Georgia Institute of Technology.

Assistant Professor:
J. S. Bradley, Mathematics; R. L. Church, Civil Engineering; E. Glustoff, Economics; S. Selkow, Computer Science; R. E. Shiffres, Finance; C. C. Thigpen, Statistics.
MBA CONCENTRATION
Management Science 5310-30-40 forms the nucleus of a 12 to 16 hour concentration in management science for MBA students. See pages 35-36 for further MBA details.

MASTER OF SCIENCE PROGRAM
See page 38 for details of the Master of Science program in Management Science.

THE DOCTORAL PROGRAM
The Ph.D. program in Management Science is designed to prepare students for management positions, research, and teaching related to the application of mathematical and statistical methods. Topics in the administration of complex organizations. Three primary objectives of the program are:

1) to provide, through management science course work, a thorough knowledge of common Management Science/Operations Research mathematical models and their uses;
2) to provide sufficient advanced study in an applied area to qualify the graduate for a joint faculty position in the concentration area as well as in management science. The candidate may choose from the business functional areas (accounting, finance, marketing, production management, and transportation and logistics) or other disciplines, e.g., forestry, ecology, and public administration;
3) to develop in the student, through course work in mathematics, statistics, and computer science, a high degree of mathematical maturity which will serve the graduate well throughout a life-long career, whether in management, research, or teaching.

Degree Requirements. General University requirements for the doctoral degree are stated on page 21.

Course Work. A minimum of 72 quarter hours of course work taken for graduate credit (exclusive of thesis or dissertation) is required. The candidate must complete a minimum of 24 quarter hours at The University of Tennessee, Knoxville, at least 9 of which must be at the 6000 level. Entering students who have completed graduate studies in applicable fields will be granted course credits for work which is equivalent to required courses in the program.

The program includes approximately 24 to 30 quarter hours of course work in the applied concentration area.

Qualifying Examinations. The student must demonstrate mastery of probability and statistical inference (Statistics 5310-20-30) by a written qualifying examination or by presenting other evidence of mastery of the material satisfactory to the faculty.

Mastery of 18 quarter hours in mathematics course work must be demonstrated by passing a written qualifying examination or by presenting other evidence of mastery of the material satisfactory to the faculty. Topics normally include matrix methods (Mathematics/Computer Science 5555-65-75) and real analysis (Mathematics 4510-20-30). Other options may be approved.

There is no foreign language requirement.

These requirements generally are completed by the end of the first year of the program.

Preliminary Examination. Prior to admission to candidacy for the degree, and normally after completion of the second year of the program, the student must pass a written examination covering the theory of deterministic and stochastic management science models. Topics included in this examination are determined on an individual basis. Students will be expected to demonstrate an integrative ability that goes beyond simple mastery of course content.

Research and Dissertation. The student must complete 36 quarter hours of Management Science 6000, Doctoral Research and Dissertation, through which he/she is expected to make a significant contribution to the science. A final oral examination is conducted over the dissertation and such other segments of the program that the faculty committee deems appropriate. This effort, which is beyond the 72 hours of course work, normally is completed in the third year of the program.

5000 Thesis 5020 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise registered during any quarter when such a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.

5100 Introduction to Management Science Techniques (3) Prerequisites: Linear algebra and calculus. Proficiency in a computer language. May be repeated. S/NC only.

5310-20-30 Management Science Methods (3, 3, 3) 5310—Linear programming procedures and sensitivity analysis; transportation problem and introduction to network analysis. Prerequisites: 2510 or equivalent.

5320—Dynamic, integer, and nonlinear programming. Prerequisites: 5310, 5330—Simulation techniques, Markov analysis, and queuing theory. Prerequisites: 5310 or Mathematics 4750-60 or Mathematics 4560, proficiency in a computer language.

5335 Mathematical Programming Computational Systems (3) Practical aspects of using state-of-the-art mathematical programming systems. Students will write compatible matrix generation and report writing software for specific applications.

5340 Application of Management Science Methods (3) Application of methods from 5310-20-30 to large-scale management problems. May be taken concurrently.

5350 Management Science Problems (1-3) Prerequisites: Consent of instructor. May be repeated. Maximum 9 hrs.

5910 Management Science Problems (1-3) Directed study on subject of mutual interest to student and staff member.

6000 Doctoral Research and Dissertation

6110-20-30 Models for Production Systems (3, 3, 3) Semester-long intensive study of one of the major problem areas of deterministic models: multicommodity, multiterminal, and dynamic flows; flow with gains; and other advanced topics. Prerequisites: 5310 or equivalent.

6300 Integer Programming (3) Theoretical and computational aspects of integer programming with 3 topics. Advanced topics. Prerequisites: 5310 or equivalent.

6410 Large Scale Mathematical Programming (3) Development of solution strategies for linear programming problems that have many constraints, many variables, and/or extremely sparse constraint matrices. Prerequisites: 5310 or equivalent.

6510 Nonlinear Optimization (3) Solution of constrained and unconstrained nonlinear optimization problems. Prerequisites: 5310 or equivalent.

6610 Markovian Decision Models (3) Formulation and analysis of Markovian models; Markov Chain models which incorporate decisions—their formulation, application and solution through policy iteration. Stochastic dynamic programming models in continuous time. Prerequisite: 5330 or equivalent.

6620 Queuing Models (3) Application and mathematical analysis of models of congestion. Basic birth-death process models, other Markovian models, non-Markovian models. Prerequisites: 5310 or equivalent.

6910-20-30 Management Science Seminar (1, 1, 1) Subjects selected from a list of current management science literature.

Marketing and Transportation

G. N. Dicer (Head), DBA Indiana.

Marketing


Associate Professors: R. L. Barnaby, Ph.D. Purdue; J. R. McMillan, Ph.D. Ohio State; R. C. Reizenstein, Ph.D. Cornell; G. D. Sentell, DBA Indiana.

Assistant Professors: R. L. Barbour, Ph.D. Illinois; E. R. Cadotte, Ph.D. Ohio State; R. L. Jenkins, Ph.D. Ohio State; R. L. Spivey, Ph.D. Georgia.

5002 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise registered during any quarter when such a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.

5050 Survey of Marketing (3) Analysis of marketing problem solving, its structure, institutions, functions, and marketing problems. Current trends and developments. Prerequisites: 5050 or equivalent.

5200 Marketing Management (3) Management of basic marketing functions. Citing problems and marketing decision situations. Prerequisites: 5050 or equivalent.

5210 Sales Force Management (3) Basic communication theory, marketing and sales planning, and control and problems of sales force management. Recruitment,
selection, training, motivation, evaluation, and control of sales force; sales forecasting, territory design, and routing. Prereq: 5200 or equivalent.

5220 Promotion Management (3) Management of promotional activities within firm: advertising, publicity, and sales promotion. Emphasis on advertising, setting objectives, budgeting, segmentation, selection, training, motivation, evaluation, and innovation in making final viewpoint of decision maker. Prereq: 5200 or equivalent.

5230 Analysis and Design of Marketing Systems (3) Macrotaxital approach to marketing system. Conceptual framework for examining market, channel, and channel interrelationships, public policy, cost and efficiency, and innovation in making final viewpoint of decision maker. Prereq: 5200 or equivalent.

5300 Marketing Research (3) Investigation and solution of problems; application of research methods to functional areas of marketing. Research and evaluation of alternative approaches. Prereq: Statistics 5311 or equivalent and 5200 or equivalent.

5350 Buyer Behavior Analysis for Marketing (3) Buyer behavior patterns with emphasis on implications for marketing analysis and executive action. Marketing and behavioral sciences. Prereq: 5200 or equivalent.

5400 Analyzing Market Opportunity for Marketing Decisions (3) Basic determinants of opportunity within markets, framework for identifying and organizing information required to assess market opportunities. Consideration of alternative strategies, coordination and control of marketing activities. Prereq: 5300 and 5350.

5410 Marketing Strategy (3) Components of marketing strategy including development of marketing mix, consideration of alternative strategies, coordination and control of marketing activities. Prereq: 5300 and 5350.

5450 International Marketing Management (3) Development and international management of marketing programs. Problems involved in marketing goods and services in foreign markets. Political, economic, social, cultural, and economic conditions in different countries. Prereq: 5300 or equivalent.

5900 Research in Marketing (3) Directed research on subject of mutual interest to student and instructor. Prereq: 5200 and 5300. May be repeated. Maximum 6 hrs.

6000 Doctoral Dissertation and Dissertation (3) Advanced design and measurement issues. Theoretical scaling considerations, applications of multidimensional scaling techniques, and conjoint analysis. Prereq: Consent of instructor.

6100 Design and Measurement in Marketing Research (3) Advanced design and measurement issues. Theoretical scaling considerations, applications of multidimensional scaling techniques, and conjoint analysis. Prereq: Consent of instructor.

6150 Marketing Research Applications (3) Application of multivariate research tools to functional areas of marketing. Prereq: Knowledge of multivariate analysis and consent of instructor.

6200 Buyer Behavior (3) Behavioral processes of individuals and groups in roles as buyers of goods and services. Prereq: Consent of instructor.

6250 Selected Problems in Consumer Behavior (3) Information search processes, attitude models, attitude theory, and consumer satisfaction. Prereq: Consent of instructor.

6300 Marketing Decision Models (3) Model building process including application of variety of models to marketing decision making. Bayesian analysis, stochastic models, and mathematical programming. Prereq: Consent of instructor.

6350 Current Topics in Marketing (3) Specific topics will vary with each course offering, but could include: nonbusiness marketing applications, microenvironmental issues, market segmentation, children's television advertising, international marketing issues, marketing channels, and related issues. Prereq: Consent of instructor.

Transportation and Logistics

Professors:

Associate Professors:

Assistant Professor:
J. H. Foggl, DBA Indiana.

5002 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise registered. CANNOT be repeated. Maximum 6 hrs.

5050 Survey of Transportation and Logistics (3) Logistical demands made by society and specific users upon nation's transportation system and problems involved in meeting these demands. Prereq: 5110. May be repeated. S/NC only.

5110 Theory and Functions of Economic Regulation (3) Analysis of significant transportation problem areas with consideration of proposed solutions. Prereq: 5210. May be repeated. S/NC only.

5120 Management and the Pricing Problem (3) Critical analysis of application of economic theory and regulatory restraints to pricing of carrier services.


5210 Business Logistics (3) Development of concepts to guide analysis and design of logistics systems. Scope of operating any quarter when such a student used university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.

5220 Physical Distribution Strategy (3) Development and administration of basic logistical policies. Analysis of physical distribution and supply problems with emphasis on executive action. Practical applications through case approach and simulation game. Prereq: 5210, Statistics 5311.

5510 Urban Transportation Policy (3) Movement of goods and information in urbanized areas with special emphasis on formulation of national, state and local policy toward firms providing services.

5810 International Transportation Policy (3) Comparative analysis of transport systems in other countries. Analysis of U.S. policy relative to international transportation.

5910 Transportation Law and Carrier Liability (3) Legal rights and responsibilities of carriers and users. Procedures before regulatory agencies and analysis of regulatory statutes with appropriate agency and court decisions.

5820 Current Topics in Transportation and Logistics (3) Seminar to study current policy or problem area in transportation or logistics. Topic selected will be announced prior to each offering. May be repeated. Maximum 6 hrs.

5990 Research in Transportation and Business Logistics (3) Directed independent research on the subject of mutual interest to student and staff member. Prereq: 12 hrs in transportation. May be repeated. Maximum 6 hrs.

6000 Doctoral Research and Dissertation

6110 Seminar in National Transportation Policy (3) Critical analysis of contemporary national transportation policy issues. Prereq: 5110.

6120 Seminar in Transportation and Logistics Models (3) Analysis of current quantitative methodology used in transportation and logistics research. Prereq: Statistics 5311-12, Management Science 5100.

6220 Transportation and Logistics Systems—Analysis and Simulation (3) Directed independent research, analysis, and simulation of transportation or logistics system. Prereq: 6210.

Office Administration

Professors:
G. A. Wagner (Head), M.S., Indiana; O. Reese, Ph.D. Iowa; E. R. Smith, Ph.D. Ohio State.

Associate Professors:

Assistant Professors:
P. G. Campbell, M.S., Austin Peay; H. Petree, M.S., Tennessee; C. S. Shedd, M.S., Texas A&M; D. Reese, Ed.D., Ohio State.

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 report writing, and sources of business information.

4140-20 Advanced Shorthand and Transcription (3) Improvement of ability to take dictation and transcribe mailable copy; emphasis on skills necessary to meet occupational standards. Prereq: 2330. 3-2.5 hours.

4340 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. 2.5 hours.

4520 Office Systems (3) Routines and procedures for correspondence and mailing; filing systems; office communication; 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 consent of instructor.

4551-98 Problems in Office Management (3 hrs each) 4551—System Analysis; 4552—Form Design; 4553—Records; 4554—Mechanization; 4555—Correspondence; 4556-66—Supervision; 4557—Work Simplification; 4558-68—Training; 4559-60—Work Measurement. Prereq: 3210, 4320, 4520, or equivalent.

4710 Punched Card Methods (3) Card design, key punching, sorting, tabulating, and preparation of punched cards. Prereq: Knowledge of fields of accounting, statistics, personnel, economics, psychology, education, and other areas of research. Each 2 hrs and 2-5 hours.

4720 Punched Card Applications (3) Problems on tabulator and collator, introduction to programming, system design, and preparation of procedure manuals and flow charts. Prereq: 4710 or equivalent.

5011 Problems in Lieu of Thesis (3)

5050 Data Processing in Business (3) Fundamentals of data processing, computer programs, and applications. Prereq: 4710 or consent of instructor.

5101 Problems in the Use of Computers (3)
Statistics

MAJOR

Degree in Statistics

M.S.

Professors:
C. C. Thigpen (Head), Ph.D. Virginia Polytechnic Institute; D. S. Chambers, MBA Texas; R. A. McLean, Ph.D. Purdue.

Associate Professors:
H. A. Lazater, Ph.D. Rutgers; J. W. Philpot, Ph.D. Virginia Polytechnic Institute; R. D. Sanders, Ph.D. Texas; D. J. Wheeler, Ph.D. Southern Methodist; M. S. Younger, Ph.D. Virginia Polytechnic Institute.

Assistant Professors:

THE MASTER'S PROGRAM

The M.S. program in Statistics is designed to provide students a basic foundation in theoretical and applied statistics for meaningful careers as consulting and practicing statisticians. A candidate should possess an undergraduate degree with a strong background in calculus, but no restrictions are imposed regarding the undergraduate major. The typical Master of Science degree program in Statistics is as follows:

Statistics Major Area Quarter Hours
Theory of probability
Theory of statistical inference
Additional coursework in statistics
Additional coursework as approved by the student's committee

Minor Area
Selected with the approval of both the Department of Statistics and the department in which the work is to be taken

Thesis* Total minimum hours
9 45

Statistics 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 unfamiliar with these concepts should seek advice from a statistics advisor concerning prerequisite course work.

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.

4250 Nonparametric Methods (3) Measures of association, two-sample tests, analysis of variance with ranked 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 efficient experimental design. Randomization, choice of size 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 the sampling schemes. Some properties of estimators. Determination of sample size. Not available for credit to students with credit for 3410.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise registered during any quarter when such a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated. S/NC only.


5110 Introduction to Probability Theory (3) Classical probability and distribution theory. Prereq: Elementary linear algebra and calculus of several variables.

5120-30 Theory of Statistical Inference (3, 3) Introductory theory underlying common statistical procedures of hypothesis testing and estimation. Prereq: 5110.


5211 Elementary Statistics (3) Introductory statistics for graduate students. Probability, sampling distributions, estimation, and hypothesis testing. Emphasis on interpretation and decision making. Not available for credit in any College of Business Administration degree program.


5311 Fundamental Concepts of Probability Theory (3) Probability axioms, discrete and continuous random variables, joint distributions, functions of random variables, expectation, and sampling distributions. Prereq: 1630 and 1860 or 2512 and one course in computer programming. May not be taken for credit by students who receive credit for 5110.

5312 Statistical Methods (3) Significance testing, applications of Chi-square statistic, analysis of variance, least squares, and linear regression. Prereq: 5311.

5610 Special Topics in Statistics (3) Prereq: Consent of instructor. May be repeated. Maximum 9 hrs.

6080 Applied Multivariate Analysis (3) Canonical correlation; discriminant analysis for several groups, and for equal and unequal covariance matrices; principal component analysis; Hotelling's T², multivariate analysis of variance and covariance. Prereq: 1 yr applied statistics including analysis of variance and multiple regression analysis.

6070 Factor Analysis (3) Principal component analysis and principal factor analysis; estimates of communalities; methods of rotation; interpretation of factors; cluster analysis. Prereq: 6060.
College of Communications

Donald G. Hileman, Dean
B. Kelly Leiter, Associate Dean for Undergraduate Studies
George A. Everett, Assistant Dean for Graduate Studies

The College of Communications offers two graduate degrees with a major in Communications, the Master of Science (M.S.) degree and the Doctor of Philosophy (Ph.D.) degree.

In addition, communications is available as a minor for students majoring in other departments. Required course work will be selected after discussion with the major advisor and an advisor from the College of Communications.

The College is accredited by the American Council on Education for Journalism. It is a member of the American Association of Schools and Departments of Journalism and the Broadcast Education Association.

Masters of Science

The Master of Science degree with a major in Communications is offered for students who primarily desire (1) advanced preparation in effective communication for mass media and other fields of applied communication, or (2) a deeper understanding of the communication process and the social role of the mass media.

The prospective student who is interested only in acquiring basic skills in journalism, advertising, or broadcasting is advised to consider a second baccalaureate rather than an advanced degree. (Note: There is no M.S. in Journalism or Advertising or Broadcasting at this institution.) Students desiring a degree in one of these fields must take the B.S. program.

Applicants must meet admission requirements of the University Graduate School. In addition they must complete the Graduate Record Examination, the California Psychological Inventory, and application forms as required by the College of Communications. All application materials will be screened by an admissions committee authorized by the Graduate Studies Committee of the College of Communications.

New students may be admitted to the program at any time; however, beginning enrollment is limited to the summer and fall quarters each year. Unless necessary materials are received at least six weeks before registration, applications may not be processed in time for admission to full potential candidate status in the first quarter. In these cases, the student may still qualify for non-degree or post-baccalaureate status.

The student may choose either of two tracks, both leading to the M.S. in Communications and both requiring a thesis:

- The academic track is designed for the student who wishes to emphasize advanced study of the theory and effects of communications. A minimum of 45 hours of approved graduate work is required:
  - 12 hours of core courses: Communications 5100, 5120, 5140 and 6100, the first three of which must be taken during the first two quarters of the student's program, except with written approval of the Assistant Dean for Graduate Studies for the College.
  - 9 hours of core courses:
    - 15 hours in a major area within the College, including at least 6 hours at the 5000 level;
    - 9 hours of thesis work (Communications 5000);
  - at least 12 hours in a minor area approved by the major advisor, of which at least 6 hours must be at the 5000 level.

In addition, students with baccalaureate degrees in other cognate areas will be required to complete prerequisites as designated by their advisors. Advising for the professional track will be supervised by the chairperson of the appropriate department of the College. Students who have had no courses in their major areas of concentration may expect to spend six or more full-time quarters in the program.

After the formal program of courses and research in either track is completed, the student must pass an oral examination conducted by his/her parents.

Communications majors in the M.S. program must demonstrate ability to use a typewriter proficiently within their first quarter in residence.

Doctor of Philosophy

The Ph.D. degree with a major in Communications is intended to prepare scholars for teaching, research, administration, and service in the field of human communications.

The program is interdisciplinary, consisting of a required core curriculum and recommended emphasis outside the
College in the related social and behavioral sciences. The program is flexible and will accommodate a wide variety of career goals in communications.

The Master's degree is not required for entry into or completion of the doctoral program. Program planning, however, will permit the Master's degree to be earned if desired. Students lacking academic or professional experience in communications will be required to take prerequisite courses. In general, however, the program may be completed within three academic years of full-time study beyond the Bachelor's degree.

The following are normally minimal requirements for admission to full potential candidate status: (a) a 3.0 (4.0 system) grade point average in undergraduate studies, or 3.5 for graduate work if applicant holds a Master's degree; (b) prerequisite courses for which the program may be completed within a minimum of 15-18 semester hours of course work and, for those students, professional communicators, and others interested in improving the quality of human communications.

**Department of Instruction**

Numbers in parentheses following the course titles indicate quarter hours credit offered.

**Communications**

<table>
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<th>MAJOR Communications DEGREES</th>
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<td>Communications Topics</td>
<td>M.S., Ph.D.</td>
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Professors:
- J. R. Lynn, Ph.D. Southern Illinois.

Associate Professors:
- G. A. Everett, Ph.D. Iowa; H. H. Howard, Ph.D. Ohio; E. F. Shaw, Ph.D. Stanford;
- S. K. Zeigler, Ph.D. Michigan State.

**5000 Thesis**

5002 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise registered during any quarter when such a student uses university facilities and/or faculty time before degree is completed. May not be used toward degree requirements. May be repeated; S/NC only.

5100 Introduction to Graduate Studies (3) Scope and methods of advanced study in communications. Information sources, literature review methods, scholarly background of mass communications. Time management, success in graduate studies.

5120 Research Methods (3) Communications research methods. Theory, process, bases for derivation and verification of hypotheses, and basic methods of designing research communications.

5130 Advanced Principles of Mass Communication (3) Proseminar covering all phases of mass communications including history, development and current status of communication industry, principles of broadcasting, and principles of advertising.

5140 Communications Theory (3) (Same as Speech 5140.)

5150 Seminar in Communications Issues (3) Contemporary topics in communications. Pre-req: 5100 and 5140, or consent of instructor. May be repeated. Maximum 6 hrs.

5970 Independent Study (3) Reading, research, or projects on special topics in communication.

6000 Doctoral Research and Dissertation

6100 Seminar in Communications Theory (3) Intensive analysis of selected theories and supporting research data dealing with source, message, media, receiver, or situational variables in process of communication. Pre-req: 5140. Recommended: 5100.

6200 Seminar in Communication Research Topics (3) Intensive analysis of special issues and problems in human communication. Each term will cover specific professional area, e.g., international communication, public service communication, political communication. Pre-req: 5100. Recommended: 5140. May be repeated.

6300 Survey Research Methods in Communications (3) Survey research data dealing with source, message, media, receiver, or situational variables in process of communication. May be repeated. Maximum 6 hrs.

6310 Experimental Research Methods in Communications (3) Experimental methods applied to communications research problems. Causal inferences from various research designs. Control, single-factor, and factorial experimental designs. Laboratory and field experiment situations. Pre-req: 5120 or consent of instructor. Pre-req or coreq: Basic statistics.


**Advertising**

Professors:
- R. Joel (Head), M.A. Wisconsin; D. G. Hileman, Ph.D. Illinois.
- D. Bagley, Ph.D. Tennessee.

Assistant Professors:
- R. L. Hane, M.A. Wisconsin; D. G. Hileman, Ph.D. Illinois.

**3650 Advertising Copy and Layout (4)** Ideas and their translation into persuasive words and pictures. Principles and techniques of copy and
layout. Lecture and labs. Prereq: 3000 or Market-
ing 4150.

4000 Advanced Advertising Copy and Layout (4) Creative strategy and execution of advertise-
ments for mass media. Problems in idea creation for
different media. Lectures and labs. Prereq: 3650 or
consent of instructor.

4380 Advertising Media (3) Media, markets, and
audiences. Evaluation of media in relationship to
communication needs of advertisers. Prereq: 4000
or Marketing 4150 or consent of instructor.

4460 Advertising Courses and Problems (3) The
case approach to the study of advertising prob-
lems: Analysis of campaigns and trends. Prereq:
4000 and 4360 or consent of instructor.

4470 Advertising Campaigns (4) Application of
theory in planning and execution of campaigns.
Market and consumer research; development and
allocation of budgets. Choice of appeals and ap-
proaches; media selection; preparation of advertise-
ments. Prereq: 4000 and 4360 or con-
sent of instructor.

5310 Current Issues in Advertising (3) Cur-
rent socioeconomic, legal, ethical, and cultural
issues in advertising and communication to
determine advertising's role in and responsibil-
ty toward society. Emphasis on both marketing
and behavioral science aspects of advertising. Con-
sumers, decision-making, management, and
research. Extensive individual reading; prepara-
tion and delivery of papers.

5350 Advanced Advertising Research (3) Nature,
scope, and methods of advertising research. Empha-
sis on measurement of advertising, media audiences,
and evaluation of messages. Prereq: 4460 or
consent of instructor.

5510 Creative Projects (3) Creative or problem-
solving projects related to advertising. De-
signed for the advanced student who wishes to apply
theory and skills to specific problems. Pre-
req: 4460 or consent of instructor. May be
repeated.

5970 Independent Study (3)

Broadcasting
Professor:
D. W. Holt (Head), Ph.D. Northwestern.

Associate Professors:
H. H. Howard, Ph.D. Ohio; I. G. Simpson, M.S. Syracuse.

Assistant Professors:
F. A. Lester, M.A. Tennessee; R. A. Shirley,
M.A. Northwestern; M. K. Sidel, Ph.D. Northwestern.

3360 Television and Radio Advertising (3) Prin-
ciples of successful radio-television advertising;
emphasis on media research, rate structure, pro-
gramming, creativity; television commercials.

3650 Radio-Television Writing (3) Theory and
principle of writing broadcasting scripts except
news and dramatics. Special events, interviews, mechanical
scripts, radio talks, documentaries, and
promotion material.

4010 Speech for Broadcasting (3) Fundamental
broadcast conditions affecting the announcer;
perception and oral interpretation of general
American speech; Spanish, Italian, German, and
French pronunciation. Prereq: Strongly recom-
mended but not mandatory. Prereq 2150, 3050.

4020 Radio Production (3) Study of radio produc-
tion, past and present. Familiarization with pro-
duction tools and techniques. Group and individ-
ual production activities. Prereq: 2750 or consent
of instructor. Cannot be taken for graduate
credit by communications majors.

4030 Television Production (3) Overview of ele-
ments of television production: cameras, sound,
lighting, film, videocassette recording, optics, and
studio control centers. Presented with the lay-
man and professional broadcast student in mind.
Prereq: 4020 or consent of instructor. Cannot be
taken for graduate credit by communications majors.

4040 Advanced Television Production (3) A semi-
independent course in program origination, pro-
duction, directing, and performing with orienta-
tion to the professional broadcast student. Prereq:
4030 or consent of instructor.

4610 Broadcast News Operation (3) Theory and
practice in covering local news and public affairs
events for print and television. Gathering and
production of news broadcasts, using tools of
broadcasting. Prereq: 3610 and 3670 or
consent of instructor. 2 hrs and 1 lab.

4670 Radio-Television Management (3) Business
practices and policies of networks and stations.
Departmental functions, cost and income figures,
sales techniques, promotion, advertising agen-
cies, and governmental regulations. Lectures by
commercial broadcasters. Prereq: 2750 or con-
sent of instructor.

4680 Broadcast Sales Management (3) Prob-
lems and practices of radio and television sales,
case studies in sales development pricing, pro-
duction, and other areas of sales management.
Prereq: 2750 or consent of instructor.

5410 Educational Broadcasting (3) Summary, an-
alysis, application, and evaluation of television
and radio broadcasting for educational purposes.

5510 Creative Projects (3) For students who have
specialized broadcasting interests or those who
wish extensive directed study in creative writing or
production projects. May be repeated.

5610 Public Affairs Broadcasting (3) News and
public affairs function in broadcasting stations
and networks, including management, econom-
ic, personnel utilization, sources of program
materials, and legal aspects. Public af-
fairs program development particularly press
conferences, interviews, and news specials. Pre-
req: 3610 or consent of instructor.

5620 Broadcast Law and Regulations (3) Socio-
political control of broadcasting; effect of laws,
regulations, and public pressures upon station
policies. Emphasis on unique situation of broad-
casting among media in terms of regulation. Pre-
req: Journalism 4410 or 5210 or consent of in-
structor.

5650 Broadcast Documentary Writing (3) Role of
documentary in radio and television. Research,
writing, and editing of documentary programs.

5660 Radio-Television Program Development (3)
Planning, directions, and production for broad-
casting stations. Historical trends in programming
and current programming practices as related to
audience requirements, governmental policy,
and competitive conditions. Individual studies of pro-
gram development on both local station and net-
work levels. Prereq: 2750 or consent of instructor.

5970 Independent Study (3)

School of Journalism

Professors:
D. C. Cade, Ph.D. Iowa; J. B. Haskins, Ph.D.
Minnesota; J. Hohenberg, B. Litt. Columbia;
K. Leiter, Ph.D. Southern Illinois; J. R. Lynn,
Ph.D. Southern Illinois.

Associate Professors:
J. A. Crook (Director), Ph.D. Iowa State;
J. K. Adamson, M.S. Tennessee; G. A. Everett,
Ph.D. Iowa; S. S. Pette, M.S. Tennessee; E. F. Shaw,
Ph.D. Stanford; F. B. Thurnburg,
M.A. Florida.

Assistant Professor:
P. G. Ashdown, Ph.D. Bowling Green.

3120 Writing Feature Articles (3) Instruction and
practice in writing articles, especially front-page
features, news analysis, and editorial feature
articles. Staff and published assignments.

3210 Writing Free-Lance (3) Instruction and
practice in writing free-lance articles, special-ized
articles, and postal regulations.

3310 Communications Law (3) Statutory law and
judicial precedents affecting mass communica-
tions media. Liberal, contempt of court, invasion
copying, broadcasting, advertising, and
postal regulations.

3560 Investigative and Specialized Reporting (3)
Investigative and interpretive reporting of com-
plex issues or specialized subjects, or public affairs
reporting. Emphasis on writing for publication. Prereq:
2220.

3710 Public Relations (3) Theories and principles
of public relations. Overview of PR as a manage-
m't tool of business, government, institutions,
and organizations. Cannot be taken for graduate
credit by communications majors.

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 profes-
sions. Prereq: 3720.

3810 Specialized Publications (3) Business and
industrial publications. Emphasis on writing for
newspapers or magazines such as agricultural,
business and industry, engineering, home and
furnishing economics. Prereq: 2220 or consent of in-
spector.

4130 Editorial Writing (3) Analysis of editorial
policies, practices, pages of editorials, columns,
paragraphs, and interpretative articles.

4140 Reporting Public Affairs (3) Reporting news of
courts, politics, government, finance, labor
d and social agencies. Prereq: 2220, 2 hrs and 1
lab.

4160 Journalism in the High School (3) Functions
and methods of high school publications. Staff
organization, writing and editing techniques,
editorial problems, and business management.

4410 News and Feature Photography (3) Advanced
principles and methods in black-and-white
photography. Emphasis on news and feature
photographs, and picture stories. Prereq: 3610 or
consent of instructor.

4450 International Communications (3) Commu-
nications media in the world. Historical perspec-
tives or to clarify situations. Emphasis on
broadcasting among media in terms of regulation.
Prereq: Journalism 4410 or 5210 or consent of in-
spector.

4530 Broadcast Documentary Writing (3) Role of
documentary in radio and television. Research,
writing, and editing of documentary programs.

4560 Radio-Television Program Development (3)
Planning, directions, and production for broad-
casting stations. Historical trends in programming
and current programming practices as related to
audience requirements, governmental policy,
and competitive conditions. Individual studies of pro-
gram development on both local station and net-
work levels. Prereq: 2750 or consent of instructor.

5970 Independent Study (3)

College of Communications
5560 Magazine Article Writing (3) Techniques of writing in-depth articles for mass circulation magazines. Organizing and presenting material. Problems in specialized areas, such as business, science, agriculture, the humanities. Prereq: 3120 or consent of instructor.

5710 Studies in Public Relations Communications (3) Problems of communication between institutions and organizations and their publics. Case histories and evaluations of programs. Prereq: 3710 or consent of instructor.

5810 Magazine Editing and Production (3) Analysis of editorial and production problems of general, regional, and specialized publications. Reader interest evaluation. Individual editorial projects. Prereq: Consent of instructor.

5950 Communications and International Development (3) Seminar emphasizing mass media in national and international development. Communications and change in developing countries. Problems in international and cross-cultural communications. Prereq: 4950 or consent of instructor.

5970 Independent Study (3)
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 College of Education holds membership in the American Association of Colleges for Teacher Education. All certification and degree programs through the doctoral level are fully accredited by the National Council for Accreditation of Teacher Education, the Southern Association of Colleges and Schools, and the Tennessee State Department of Education.

The College of Education, through the Graduate School, offers programs leading to the Master of Arts in College Teaching, the Master of Science degree, the Specialist in Education degree, and the Doctor of Education and Doctor of Philosophy degrees.

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 College of Education holds membership in the American Association of Colleges for Teacher Education. All certification and degree programs through the doctoral level are fully accredited by the National Council for Accreditation of Teacher Education, the Southern Association of Colleges and Schools, and the Tennessee State Department of Education.

The College of Education, through the Graduate School, offers programs leading to the Master of Arts in College Teaching, the Master of Science degree, the Specialist in Education degree, and the Doctor of Education and Doctor of Philosophy degrees.

MASTER OF SCIENCE

On the Master's level professional study may be planned (1) in one of the areas listed on page 8, (2) in appropriate combinations of these areas, or (3) in combinations of one or more of these areas with appropriate subjects or areas in other colleges.

SPECIALIST IN EDUCATION DEGREE

This degree may be earned in Educational Administration and Supervision, in Educational Psychology and Guidance, in Curriculum and Instruction, in Safety Education and Service, or in Vocational-Technical Education.

DOCTORAL DEGREES

The College of Education offers programs of advanced study leading to the Doctor of Education degree in the major areas listed on page 8, and to the Doctor of Philosophy degree in Health Education.

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 relate to the development of research proposals in the College of Education. Developmental activities relate to change efforts in curricular content and instrumental methodology. Educational services include a wide list of activities such as in-service educational programs, consultant 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 and the School Planning Laboratory are integral parts of the Bureau of Educational Research and Service.