JANUARY 1980

THE UNIVERSITY OF TENNESSEE RECORD

GRADUATE STUDIES 1980 KNOXVILLE

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Student Calendar For 1980-81

Winter Quarter, 1980

January 3-4 (Thursday-Friday)
January 7 (Monday)
February 11 (Monday)
March 12-15 (Wednesday-Saturday)
March 15 (Saturday)
March 16 (Tuesday)

Spring Quarter, 1980

March 24-25 (Monday-Tuesday)
March 26 (Wednesday)
April 4-5 (Friday-Saturday)
April 29 (Tuesday)
June 2-5 (Monday-Thursday)
June 5 (Thursday)
June 9 (Monday)

Summer Quarter, 1980

June 12-13 (Thursday-Friday)
June 16 (Monday)
July 3 (Thursday)
July 4 (Friday)
July 18 (Friday)
July 21 (Monday)
July 21 (Monday)
August 7 (Thursday)
August 22 (Friday)
August 25 (Monday)

Fall Quarter, 1980

September 22-24 (Monday-Wednesday)
September 25 (Tuesday)
October 29 (Wednesday)
October 31 (Friday)
November 1 (Saturday)
November 27-29 (Thursday-Saturday)
December 5-9 (Friday-Tuesday)
December 9 (Tuesday)
December 12 (Friday)

Winter Quarter, 1981

January 5-6 (Monday-Tuesday)
January 7 (Wednesday)
February 10 (Tuesday)
March 13-17 (Friday-Tuesday)
March 17 (Tuesday)
March 20 (Friday)

Registration
Classes Begin
Change of Registration Deadline
Alternative Period
Classes End
Commencement

Registration
Classes Begin
Easter (No Classes)
Change of Registration Deadline
Classes End
Commencement

Registration, First or Both Terms
Classes Begin
Change of Registration Deadline, First Term
Independence Day (No Classes)
Classes End, First Term
Registration, Second Term
Classes Begin, Second Term
Change of Registration Deadline, Full Term
Classes End
Change of Registration Deadline, Second Term
Classes End
Commencement

Registration
Classes Begin
Change of Registration Deadline
East. Tenn. Educ. Assoc. (No Classes)
Homecoming (No Classes)
Classes End
Alternative Period
Classes End
Commencement
The University of Tennessee, Knoxville

Main Campus

A — Ayres Hall (Liberal Arts)
AA — Art & Arch. Bldg. (under construction)
AC — Art Center
AD — Art Annex 1
AH — Alumni Hall (Alumni, Placement Offices)
AHT — Andy Holt Tower
AP — Austin Peay Memorial Bldg. (Psych.)
APG — Administration Parking Garage
AQC — Student Aquatic Center
AX1 — Art Annex 1
AX2 — Art Annex 2
AX3 — Art Annex 3
BC — Black Cultural Center
BH — Barry Hall
BT — Tom Black Track and Recreation Area
BU — Buehler Hall
C — Claxton Education Building
CAH — Camack Hall (Residence)
CBT — Clarence Brown Proscenium Theatre
CD — Communications Design (Briscoe House)
CH — Clement Hall (Residence)
CN — College of Nursing
CO — Conference Department
CDM — Communications and University Extension Bldg.
CR — Craft House
CT — Carousel Theatre
CU — Credit Union
DAH — Dabney Hall
DES — Design House
DQ — Dougherty Engineering Bldg.
DJH — Dunford Hall (Residence)
DTH — East Stadium Hall
EST — Estabrook Hall (Architecture)
EMP — UT Employment Office
F — Fraternity House
FH — Ferris Hall
FL — Family Life Center
G — Geology and Geography Bldg.
G&G — Geology and Geography Bldg.
GIB — Gibbs Hall (Residence)
GPH — Greve Hall (Residence)
GSP — Graduate School of Planning
H — Henson Hall
HSS — Humanities and Social Sciences Bldg.
HE — Hess Hall (Residence)
HEH — Hess Hall (Residence)
HPR — Health, Physical Education & Recreation Bldg.
HSS — Humanities and Social Sciences Bldg.

Agricultural Campus

AE — Agricultural Engineering Bldgs.
AEL — Agricultural Engineering Lab
ASB — C.E. Brehm Animal Sciences Bldg.
CC — Corn-Cotton Bldg.
CVM — College of Veterinary Medicine
DP — Dairy Products Bldg.
FOR — Tennessee Division of Forestry
FT — J.H. McLeod Food Technology Bldg.
GH — Greenhouses
MC — McCord Hall
MH — Morgan Hall
PB — Plot Barn
PO — Poultry Diagnostic Laboratory
PPL — Ag. Campus Power Plant
PS — Elington Hall Plant Sciences
PSX — Plant Sciences Annex
SL — Spinning Lab

Agricultural Campus Map
Graduate School Office Hours
Monday - Friday 8:00 A.M.-5:00 P.M. (All Year) 115 Student Services and Administration Building
Telephone - (615) 974-3251

The Graduate School Administration
L. Evans Roth, A.B. M.S. Ph.D., Vice Chancellor for Graduate Studies and Research
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Dr. Luther H. Keller
Dr. Gleb Mamantov
Dr. James W. White

College or Unit
Elected Members
Date of Expiration
Proxy

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Dec. 31, 1980
Dr. Luther Wilhelm

Col. of Bus. Admin.
Dr. H. Dudley Dewhirst
Dec. 31, 1979
Dr. Norman E. Dittrich

Dr. Jan R. Williams
Dec. 31, 1979
Dr. Charles H. Garrison

Dr. George Everett
Dec. 31, 1979
Dr. Sherilyn Zeigler

Dr. Jerry J. Bellon
Dec. 31, 1979
Dr. Woodrow Wyatt

Dr. John Peters
Dec. 31, 1981
Dr. Paul C. Burns

Dr. Madge M. Phillips
Dec. 31, 1980
Dr. Charles Hargis

Dr. John Ray
Dec. 31, 1981
Dr. A. Montgomery Johnston

Dr. Gerald Ubben
Dec. 31, 1979
Dr. Peyton Z. Peebles

Dr. Bruce R. Dewey
Dec. 31, 1981
Dr. David W. Goodpasture

Dr. Pietro F. Pasqua
Dec. 31, 1980
Dr. Betty L. Beach

Dr. David B. Eastwood
Dec. 31, 1980
Dr. William Bull

Dr. Jeffrey Becker
Dec. 31, 1979
Dr. Fred Martinson

Dr. Dale Cleaver
Dec. 31, 1980
Dr. Thomas Bell

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Dec. 31, 1979
Dr. Linda Painter

Dr. Patricia L. Walne
Dec. 31, 1981
Dr. Anne McIntyre

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Apr. 30, 1980
Dr. Mildred Fenske

Mr. Thomas Walden
Apr. 30, 1980
Ms. Ann Wachter

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Dr. Sylvia E. Hart
Dec. 31, 1981
Dr. Robert Bonovich

School of Social Work
Dr. Gideon Fryer
Dec. 31, 1980
Dr. Maurice A. Wright

Dr. Roger M. Nooe
Dec. 31, 1981

UT Space Institute
Dr. James Wu
Dec. 31, 1979

Regulations Subject To Change
Any and all course offerings, academic requirements and other information contained in this publication are subject to change and/or revocation without notice. Anyone interested in the precise course offering, academic requirement at a given time, or other special information should make inquiry in advance.
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From Hamilton County
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Student Member
Steven Gill June 1, 1980

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Brodie Baynes, Treasurer
Beauchamp Brogan, Secretary
Carol Bailey, Assistant Secretary
### Majors and Degrees Available

<table>
<thead>
<tr>
<th>College of Agriculture</th>
<th>DEGREE</th>
<th>APT.</th>
<th>ADV.</th>
<th>G.R.E</th>
<th>G.M.A.T</th>
<th>LETTERS OF RECOMMENDATION</th>
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<td>Agricultural Biology</td>
<td>M.S.</td>
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<td>Agricultural Economics</td>
<td>M.S., PH.D.</td>
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<td>*Animal Science</td>
<td>M.S., PH.D.</td>
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<td>Food Technology and Science</td>
<td>M.S.</td>
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<td>*Forestry</td>
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<td>Ornamental Horticulture</td>
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<td>*Wildlife and Fisheries Science</td>
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<td>*Accounting</td>
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<td>*Economics</td>
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<td>3-Former Professors</td>
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<table>
<thead>
<tr>
<th>College of Engineering</th>
<th>DEGREE</th>
<th>APT.</th>
<th>ADV.</th>
<th>G.R.E</th>
<th>G.M.A.T</th>
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<tbody>
<tr>
<td>*Aerospace Engineering</td>
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<th>College of Home Economics</th>
<th>DEGREE</th>
<th>APT.</th>
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<th>G.M.A.T</th>
<th>LETTERS OF RECOMMENDATION</th>
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<td>*Child and Family Studies</td>
<td>M.S.</td>
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<td>*Consumer Studies and Housing:</td>
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All M.S. and Ph.D. applicants obtain special application form from Associate Dean, College of Home Economics.
### DEGREE
- Intercollegiate
  - Aviation Systems
  - Ecology
  - Industrial and Organizational Psychology
  - Management Science

### ADMISSION TEST REQUIRED
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<th>DEGREE</th>
<th>G.R.E.</th>
<th>APT. ADV.</th>
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### LETTERS OF RECOMMENDATION
- 2-Former Professors
- 3-Departmental Rating Forms

### College of Liberal Arts
- Anthropology
- Art
- Audiology
- Biochemistry
- Biology
- Botany
- Chemistry
- Computer Science
- English
- French
- Geography
- Geology
- German
- German Language and Literature
- History
- Mathematics
- Microbiology
- Music
- Philosophy
- Physics
- Political Science
- Psychology
- Public Administration
- Radiation Biology
- Romance Languages
- Sociology
- Speech
- Speech and Hearing Science
- Speech Pathology
- Speech and Theatre
- Zoology

### College of Nursing
- Nursing

### School of Biomedical Sciences
- Biomedical Sciences

### School of Library and Information Science
- Library Science

### School of Planning
- Planning

### School of Social Work
- Social Work
  - (Memphis, Nashville and Knoxville)

### College Letters of Recommendation

- 1-Letter of Recommendation and Personal Data Form
- 2-Letters of Recommendation and Personal Statement
- 3-Obtain Forms from Department
- 4-Obtain Forms from Department

### Non-Degree and Provisional Students
- Must obtain permission from the department/program head in order to register for courses in these fields.
- 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.
- International applicants only.
- Interdisciplinary Ph.D. applicants only.

### Offered Also at Off-Campus Locations
- American applicants only.
- Ed.D. applicants only.
- International applicants only.
- Interdisciplinary Ph.D. applicants only.

### Departments with Doctoral Option
- Economics
- Interdisciplinary

### Ph.D. Applicants Only
- American applicants only.
- Ed.D. 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 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 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 known, 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.

Energy, Environment, and Resources Center

R. A. Bohm, Acting Director, Ph. D.
Washington (Missouri)

The Energy, Environment, and Resources Center was created to encourage and support UT faculty and students' involvement 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 materials for the program.

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:
W. A. Goodwin, P.E., Interim Director,
M.S., Kentucky
R. A. Mundy, Ph.D., Pennsylvania State;
M. S. Bronzini, P.E., Ph.D., Pennsylvania State,
Associate 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
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 with majors in Aerospace Engineering, Aviation Systems, Computer Science, Electrical Engineering, 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 course work are available to permit specialization in many aspects of the atmosphere and space flight such as subsonic to hypersonic aerodynamics, aerospace vehicle design, control and guidance, modern materials and structures, propulsion systems, aircraft noise and sonic boom, flight simulation, avionics, plasma dynamics, flow diagnostics including spectroscopic and electrooptic means, and systems management. Work is also in progress in remote sensing and magnetohydrodynamic power generation of coal utilization. Course and research work in related areas of environmental pollution control, earth resources, energy conversion, materials and systems and simulation are also available. The research personnel and facilities of the Center and those available at the Arnold Center through appropriate contractual arrangements provide an outstanding opportunity for meaningful research in these characteristics areas. Students who enroll at UT must be admitted to the Graduate School, University of Tennessee, Knoxville. Further information concerning the Institute may be obtained from the Dean, The University of Tennessee Space Institute, Tullahoma, Tennessee 37388.

The Institute is operated by The University of Tennessee in close cooperation with numerous departments at The University of Tennessee, Knoxville and the office of the Vice Chancellor for Graduate Studies and Research.

Water Resources Research Center

W. F. Brandes, P.E., Director, M.S. Illinois

The Water Resources Research Center is a federally-designated institute for the conduct of water research for the state. The purposes of the Center are: (1) to assist and support all the academic institutions of the state, public and private, in pursuing water resources research programs addressed to areas of concern to the state; (2) to provide information, dissemination and technology transfer services to state and local government bodies, academic institutions, professional groups, environmental organizations, and others, including the general public, who have an interest in water resources matters; (3) to promote resources and to encourage the entry of promising students into careers in these fields.

The Center is operated through the office of the Vice Chancellor for Graduate Studies and Research.

Off-campus Graduate Centers

Kingsport University Center: The University of Tennessee, Knoxville offers at Kingsport resident graduate programs in science, engineering, and business at both the Master's and doctoral levels. The program is operated under the guidance of the Graduate Council of the University of Tennessee, Knoxville and is administered by the Vice Chancellor for Graduate Studies and Research. It is coordinated with the graduate and undergraduate offerings of East Tennessee State University. Students who enroll in this program must be admitted to the Graduate School of The University of Tennessee, Knoxville.

Information on application forms may be obtained from Marvin K. Goodman, Director, Kingsport University Center, The University of Tennessee, University Boulevard, Kingsport, Tennessee 37660.

Oak Ridge Resident Graduate Program: The University of Tennessee, Knoxville 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 statistics; the Master's and doctoral degrees are available in engineering, mathematics, and physical and biological sciences. Courses are given at Tennessee at Chattanooga, evenings, and Saturdays, with research facilities provided by and used in cooperation with the Oak Ridge Associated Universities and the Union Carbide Corporation, Nuclear Division. This program is supported under a subcontract with Oak Ridge Associated Universities with principal support coming from Union Carbide Nuclear Division. The University of Tennessee is one of the forty-three colleges and universities which sponsor ORAU, a nonprofit education and research management corporation. Information and applications to the Graduate School may be obtained by writing the Director, UT-Oak Ridge Graduate School, Post Office Box 117, Oak Ridge, Tennesses 37830.

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

Information concerning this program may be obtained from Lynn D. Russell, Director, Chattanooga Graduate Engineering Program, The University of Tennessee at Chattanooga, Chattanooga, Tennessee 37403.

Nashville Graduate Engineering Program: Opportunities for graduate study leading to the degree of Master of Science in Civil Engineering, Engineering Administration, and Industrial Engineering are offered by The University of Tennessee, Knoxville and are administered by the Vice Chancellor for Graduate Studies and Research.

Students who enroll in these programs must be admitted to The University of Tennessee, Knoxville Graduate School. Information and appropriate forms may be obtained from the Director, Nashville Graduate Engineering Program, Tenth 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 conjunction with the Biology Division of the Oak Ridge National Laboratory.

For complete information concerning the program, see page 141.

School of Social Work: The University of Tennessee, Knoxville 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, Memphis, and Chattanooga.

For complete information concerning the program, see page 148.

Admission and Registration

Admission to the Graduate School requires a Bachelor's degree with a satisfactory grade point average from a college or university accredited by the appropriate regional accrediting agency. A minimum B average is required for international students. Meeting the minimum grade point average does not insure acceptance into a degree program since other factors may affect admission in some programs. An application must be accompanied by the $10 fee (payable to The University of Tennessee). If permission to enter The University of Tennessee Graduate School is given prior to graduation, this admission is automatically withdrawn if the Bachelor's degree is not awarded before the date of registration. The file is destroyed after one year if an applicant does not enter Graduate School the quarter in which admission is requested, unless permission is requested and granted to enter in a future quarter. To reapply after a file is destroyed, applicants must submit a new application and fee.

Admission to the Oak Ridge Graduate School does not imply admission to candidacy for the degree desired; admission to candidacy must be obtained after entry but at least one full quarter prior to receipt of the Master's degree and three quarters prior to receipt of the doctorate.

Types of Admissions

Admission to a Graduate Degree Program: Master's degree—Admission to a degree program requires a minimum grade point average of 2.5 out of a possible 4.0 or 3.0 during the senior year. However, many departments require a higher average. (Refer to pages 8-9 for items required for admission.)

Doctoral degree—in addition to meeting the minimum requirements for admission to the Graduate School, students 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 capabilities, and similar evidences of scholarly achievement. (Refer to description of doctoral programs for specific requirements for admission.)
Non-Degree Admission: Applicants may apply for non-degree status who, for example:
1. do not desire to pursue a degree
2. have received an advanced degree
3. need additional time to fulfill admission requirements for a degree program. In this case, the Graduate School will accumulate the number of graduate credits which may be accumulated. However, only 18 quarter hours (including hours taken in the provisional status) may be used toward a Master's degree and only if approved by the student's committee. The graduate application, $10 application fee, and two (2) official transcripts from each institution previously attended are required for consideration as a non-degree student. The minimum requirements are a Bachelor's degree with a 2.5 grade point average on a 4.0 scale (or a 3.0 the senior year) from a college or university accredited by the appropriate regional accrediting agency. A major area does not have to be declared, but some departments will not permit non-degree students to register for graduate courses. (See pages 9-10 for information on restricted programs.) Inquiries concerning applicants should contact the Graduate Office or the department concerning registration for specific courses. Permission for registration in courses allowed may be obtained from the department or from the Graduate School. Admission to the non-degree status does not assure admission to a degree program. The student who hopes to enter a degree program will be directed to the appropriate department. The student who fails to complete provisional admission within the seven-week conditional registration period (see page 17 “Graduate Credit”) will NOT be permitted to enter as a graduate student. Any attempt to use the transcripts showing the course work taken, until all admission requirements are met. No international student on a non-immigrant visa may enroll in the provisional status.

Admission of international Students: The Graduate School can accept only students who have outstanding records. An international student must have the equivalent of at least a B average on a 4.0 undergraduate course work and a B+ on all previous graduate work. On various grading scales, this would indicate:
- A 3.0 and 3.5 on 4.0 scale;
- A 4.0 on a 5.0 scale;
- A 80.0 from Chinese institutions;
- A 1st Class or Division from Indian institutions.

No international student on a non-immigrant visa may enroll in the provisional status.

Provisional Admission: Applicants may be admitted as provisional students for one quarter (or, one course in each of two quarters) who, for example:
- desire graduate credit for a limited number of courses
- do not meet the minimum grade point average requirements
- wish to register for graduate courses while meeting any additional requirements for the non-degree admission.

The graduate application, $10 application fee, and proof of a Bachelor's degree from a college or university accredited by the appropriate regional accrediting agency are required. Copies of official proof are acceptable.

Eligibility of Seniors: A senior in The University of Tennessee system administration holding rank of assistant professor and above or equivalent status at the University of Tennessee, Knoxville; b. Staff in the Institute of Agriculture personnel as specified in item "b" above.

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:
- 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;
- Any member of The University of Tennessee system administration holding the rank of associate professor and above or equivalent status and occupying full-time research and extension positions;
Any exceptions to this policy shall be made by petition to the Graduate Council of The University of Tennessee, Knoxville. Evasion of these restrictions through temporary resignation, acceptance of a lower rank, or leave of absence is not allowable.

If a student applies 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 $172

TUITION (additional for out-of-state students): PER QUARTER $334

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 $25 per quarter hour or fraction thereof; minimum charge $75.
Out-of-State $58 per quarter hour or fraction thereof; minimum charge $174.

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 $25

All graduate students taking in excess of 6 quarter hours per quarter will be assessed a University programs and services fee of $25 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 $18. 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 pay the appropriate University Programs and Services Fee.

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

Knoxville campus 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 valid registration 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 quarter ............................................................... $40
Payable by students receiving individual instruction in music.

GRADUATION FEE:
Master's degree candidates ...................................................... $16

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 desired reentry date. A student who has attended another accredited institution before readmission to 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 readmission 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 see a department advisor to plan a program and obtain a signature. If admitted as a non-degree or provisional student, permission for registration may be obtained from the department or from the Graduate Office.

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.

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 arranging for an examination and for transmission of these scores directly from the Educational Testing Service to the Vice Chancellor for Graduate Studies and Research. Application forms may be obtained from the 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.

Readmissions
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 desired reentry date. A student who has attended another accredited institution before readmission to 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 readmission 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.

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.

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 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.)
Deferrable Payment Service Fee: $3

This fee is applicable when the payment of any balance on 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 charges (out-of-state tuition, music fee, room and board adjustments) are not paid within five regular business days after the date it was incurred.

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

AUDITORS FEE:

Fees for courses being audited are the same as courses taken for credit. For fee purposes, courses in credit seminars are considered as one-hour courses.

REFUND OF FEES FOR WITHDRAWAL:

Withdrawal from school for the quarter after regular registration, and before the last day designated for regular registration permits a 20 percent fee refund. A 40 percent fee refund is made for courses dropped during the first 5 calendar days following regular registration. A 60 percent fee refund is made for courses dropped during the first 14 calendar days following regular registration. A 80 percent fee refund is made for courses dropped during the first 21 calendar days following regular registration.

The above refund policy does not apply to the summer quarter fees and expenses. Part-time students may pay fees computed at the quarter-hour rate for the hours continued plus the percentage assessed for the hours dropped results in an amount less than that paid. A course on a student's schedule is officially dropped and becomes effective on the date that the drop/add slip is 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.

Rental charges and adjustments are determined by the Office of Residence Halls in accordance with the terms of the housing agreement or contract.

NOTE: All charges and refunds will be made to the nearest even dollar. All charges are subject to subsequent audit and verification.

The University reserves the right to correct any errors in fee or rental payments 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 permits and the student's 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 as noted above.

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

The refund policy covering withdrawals and dropped courses for the summer quarter is based on the length of the term for the course(s) dropped. No refund is applicable to term courses dropped later than 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, notification of the 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, but resides in Tennessee, is a full-time employee in the state, 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 this state shall be entitled to classification as an in-state student for fee and tuition purposes. No person having domicile elsewhere than in this state shall be eligible as an in-state student for tuition purposes.

(2) The domicile of an unmarried person is that of the parent.

(3) Unmarried student or wife, an emancipated person who provides persuasive evidence of domicile may apply for in-state classification for said person's unemancipated children; and provided that said person remains domiciled in this state at the time the parent applies for in-state status.

(4) A person who remains in this state when the parent, having theretofore been domiciled in this state, removes from this state shall be entitled to classification as an in-state student so long as attendance at a school or schools in this state shall be continuous.

(5) An unmarried person whose parent is a member of the armed forces stationed in this state or at Fort Campbell, Kentucky, pursuant to military orders shall be classified as an out-of-state student but shall not be required to pay out-of-state tuition. The student, while in continuous attendance toward the degree, when the parent thereafter is transferred on military orders.

(6) Part-time students who reside in Tennessee and are employed full-time in the state or at Fort Campbell, Kentucky, pursuant to military orders and who would be classified out-of-state in accordance with other provisions of these regulations, will be classified out-of-state but will not be required to pay out-of-state tuition while enrolled as part-time students. (Students must apply for this status each quarter).

Presumption. Unless the contrary appears from clear and convincing evidence, it shall be presumed that:

(1) No emancipated person shall be 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 these regulations independent 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 so classified, the in-state residency classification shall be effective at the beginning of the quarter or semester in which application for reclassification was submitted.

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**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 financial 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 family 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 Financial Form the Financial Aid Office determines the amount the parents and student can contribute, 20% 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. Successful applicants need better than an overall 3.2 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. Awards will be announced March 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.

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**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. However, 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 2 years while the borrower is serving in the Armed Forces, Peace Corps, or Vista. Interest is 3% per year on the unpaid balance. The maximum repayment period is 10 years with the current minimum annual repayment of $360 or 10% 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 as having 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 five years, with 30 percent per year 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 a full school year, 15 percent of principal plus interest will be cancelled for each year of service. Cancellation for up to 50 percent of the loan will also be given at the rate of 12½ percent of the total principal plus interest for each year Armed Forces service in an area of hostility.

Graduate level students may be extended annual loans of $2500 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 $1000 can be extended. One surety or cosigner is required for each promissory note and a new promissory note must be completed each year. The interest is 3% per annum payable annually on July 1.

Repayment begins on the fourth month following the last day the student ceases to be enrolled on a half-time basis. 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.

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**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 who must earn a part of their educational expenses. Eligible students prepare in jobs on- or off-campus where they work approximately 15 hours per week.

The Student Employment Service operates as a central referral agency. It coordinates listings of part-time employment from both University and private employers with the requests of students seeking part-time employment. Referrals are made in accordance with the student's skills and qualifications. Part-time jobs average from 15 to 20 hours per week.

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

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**Other Assistance**

**Guaranteed Student Loans** to help meet educational expenses may be available through the federal government or a state guaranteeing agency. Local banks or 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 which begins no less than nine months after graduation or withdrawal from the University, 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 most banks and credit unions. In the state of Tennessee, write the Tennessee Student Assistance Corporation, 707 Main Street, Nashville, Tennessee 37206.

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**Application Procedures**

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

1. Complete and submit the Application for Student Financial Aid on or before April 1.
2. Complete and submit a financial statement to the College Scholarship Service.

Applications for financial aid are processed by the College Scholarship Service approximately three weeks prior to the priority deadlines.

Financial aid programs, policies, and procedures are subject to annual change. Therefore, those interested in applying for financial aid should refer to the current information brochure, "Financial Assistance for Students," distributed by the Financial Aid Office.

Applications for financial aid can be obtained by writing to The Financial Aid Office, 301 Student Services Building, The University of Tennessee, Knoxville, Tennessee 37916.

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**Veterans' Benefits**

Students applying for veterans' benefits should contact the Veterans Affairs Office, Room 209, Student Services Building.

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**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 community living units for groups of six to ten students with personal responsibility emphasized. The Holt Avenue Apartment community living units for groups of six to ten academic achievement and personal services building.

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

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, requiring commitment on a 9 1/2-month basis. Summer employment may be possible. 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 college tuition and 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 student. 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 on 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." The large volume of vehicles operated in and around the University campus necessitates strict adherence to the "University Traffic and Parking Regulations." As a corollary, a system of fees for violations of these regulations is established by the University of Tennessee. The 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." Any staff member or student who has failed to pay traffic citations 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 a 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 fee will be assessed. This penalty does not apply to fire lane and handicap violations. For these violations, a fee of $25 is assessed, plus the $20 impoundment fee.

Computing Center
The University of Tennessee Computing Center (UTCC) offers facilities and services for the University's teaching, research, public service, and administrative activities. UTCC maintains close contact with the UT academic community by supporting research administration, computer science, education, and administrative work. UTCC also has an IBM 360/65-370/3031 and the DECsystem-10. These seminars are 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 computer science, programming languages and special purpose programs. These courses are announced in the Newsletter and in the UT News section of the UT Daily Beacon.

Computing services can be requested via the request for services form available from the receptionist, 200 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 contact the Office of the Chancellor for Graduate Studies and Research, 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 is a social and recreational center where
domestic and international students 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 facility is open during all vacation periods. It fills a vital need, especially between sessions when most University facilities are closed.

The University Library

The University of Tennessee, Knoxville Library owns approximately 1,436,000 volumes, 2,000,000 manuscripts, 60,000 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. It assists all graduate students and includes borrowing monographs, obtaining copies of needed materials, and providing access to bibliographic services offered by other institutions, such as computer-based data searches and information retrieval.

Library holdings in Knoxville are housed in the James D. Hoskins (Main) Library and its four branches: Agriculture-Veterinary, Basic Science, Social Sciences, and the John C. Hodges Undergraduate Library. The Special Collections section, located in the Main Library, is a repository of regional and local materials, Tennesseana, and other specialties, including legislative papers and mementoes of many Tennessee political figures, and the Radiation Biology Archives, comprising the files of a group of internationally renowned scientists. Special Collections 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 Students' Rights 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.

Graduate School News

The Graduate School Newsletter 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.

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 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.

Graduate Credit

No student may receive graduate credit for a course unless properly admitted to the Graduate School. It is 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 allowed 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 then be filed with the Graduate Office at once if seeking admission to a degree program or as non-degree. If applying for admission in the provisional status, proof of the Bachelor's degree is the only requirement. The student must be admitted to the Graduate School within seven weeks after the last official day of registration. No future registration will be permitted nor a copy of the transcript obtained until the student is properly admitted.

Explanation of Course Listings

Each course listing in the Graduate Catalog contains much valuable information in an abbreviated form. The course number indicates the level at which the course is taught. All 5000-6000 level courses are graduate courses. The 3000-4000 level courses are upper division courses available for graduate credit if listed in the Graduate Catalog and if a "G" is indicated on the registration material at the time of registration for upper division courses. (A "G" will also be placed on the transcript beside the hours credit.)

The official course title appears in bold-faced type following the course number. Numbers in parentheses following the course title indicate the quarter hours credit. If the credit is variable, to be determined in consultation with the instructor, the minimum and maximum are shown (2-3). The course description follows indicating the content to be covered in the course.

Prerequisite courses may be stated indicating that these courses must be taken prior to the course in question. Corequisite courses may be taken prior to or concurrently with the specific course, and recommended prerequisites should be taken previously but are not required.

Many courses may be repeated for a maximum number of hours which may be used toward a degree program and which is stated. Teacher on contact in appropriate department/program head concerning courses to be offered in future quarters.

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.

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 must register for a number of hours that is compatible with the maximum 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.

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 consecutive instructional 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 to make their spaces available to other students. Students have the responsibility to assure that they have been dropped; otherwise, they are liable for a grade of F in the course.

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 advisor'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 and on the final class report. The student must present evidence that they have completed the work up to the withdrawal date, and the examination must be recommended for passing by the advisor and the examination committee.

Proficiency Examination

A proficiency examination may be given in any academic course offered for graduate credit. To be eligible, a student must be currently 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

Law courses are not available for graduate credit; however, 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 the major chairperson. The graduate student must register for the law course during regular registration at the College of Law requesting an S/NC grade only. If a 2.0 or above is obtained in a law course, an S will be recorded on the transcript. If a student earns below a 2.0, an NC will be recorded and the course cannot be repeated as a law course. An S can be earned according to the grading system of the respective college, e.g., numerical grades for law courses, letter grades for graduate courses. Refer to page 37 for the grading scale applicable toward meeting degree requirements. Cumulative GPA for law courses only will be carried until graduation, at which time both the graduate and the law cumulative will be shown on the permanent record.

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 examinations and recitations, or use laboratory equipment and materials.
Correspondence Study

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

Transfer Credits

A maximum of 9 quarter hours (6 semester hours) may be transferred into a student's Master's program from work taken at accredited institutions. (Extension courses at other universities are not applicable.) One-half of a student's program may 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 Master's program may consist of 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 in 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 course 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 before any transfer of credit will be approved. Credits accepted in either the Master's or doctoral program will not affect the minimum residence requirements, nor will they be counted in determining the student's grade average. Neither will they count toward meeting 5000- or 6000-level requirements for an advanced degree.

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 or provisional 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 the Specialist in Education degree must also be earned within a period of six 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.

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.

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.

Theses and Dissertations

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 Thesis and Dissertation 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 technical errors in format, 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.

Academic Termination

Continuos registration is not automatic. Graduate education (particularly at the doctoral level) requires continuous evaluation of the student. This evaluation includes not only objective academic 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 various indicators 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 this 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.

Appeals Procedure

Normally grievances should be handled at the departmental level through the student's advisor or the department or program head. Further appeal may be made to the Vice Chancellor for Graduate Studies and Research, then to the Graduate Council and then to the Chancellor. The By-Laws of the University (Article V, Section 7) provide that any individual may ultimately appeal to the Board of Trustees, through the President. A copy of the detailed procedure is available in the Graduate Office and in each department.

Requirements for Advanced Degrees

Master's Degrees

Master's degree programs offered in the Graduate School are listed under "Majors and Degrees Available" on pages 8-9. 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 the 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 credit 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 (unless officially dropped) before the last one-half of the total hours in the graduate program must be at or above the 5000-level, of which no more than 9 may be thesis hours. These courses must be completed at the University of Tennessee. (5000- and 5000-numbered courses are open to graduate students only; 3000- and 4000-numbered courses may be taken for graduate credit if listed in the Graduate School 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 college teaching assistants. 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, and to test 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 minor, 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 course work 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 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 until the thesis is being pursued on the quarter in which the student registers for the last 3 hours of 5000, the candidate shall continue to register for a minimum of 9 hours of 5000 each quarter until 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: Non-thesis students using University facilities or faculty time must 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 exams will not be scheduled until one of the above is met.

Final Examination for 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 re-examination 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 shall 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, in a form approved by the major professor, shall be distributed to all committee members at least one week before the date of the final oral examination. This examination will be conducted by a committee of no fewer than three faculty members, with the student's 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 non-thesis student must pass a final 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 no 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 expectation of the thesis are 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 office before 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 Educational 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 area in which 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 shall include 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 residency. A student without a Master's degree is required to have two consecutive quarters of full-time residency. 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 met by the recommendation of the student's committee and approval of the Vice Chancellor for Graduate Studies and Research, except that no modifications shall be permitted with respect to 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 majoring, which 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 objectives. Undergraduate qualifications 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 coursework and the thesis or dissertation 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 major's degree was earned six or more years prior to admission to the doctoral program. This 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 organization, 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 this course (minimum of 3 hours) each quarter until the thesis is accepted, or doctoral candidacy is established by formal application to the Vice Chancellor for Graduate Studies and Research. 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 in which 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, normally during or immediately following the quarter in which the student is responsible for filing the Application for Admission to Candidacy, which must be approved by the committee after completion of the preliminary examination. The final examination must be given 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 collaborative fields. The dissertation is defined as a minimum of 9 quarter hours of graduate coursework in a given area outside of the department of the student's major field. The selection of specific courses is 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, preferably before beginning the second year of graduate study.

**Doctoral Committee:** The student's committee is nominated by the student's major professor who serves as the chairperson of the committee, 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 and examination credit and provide 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 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. (NOTE: Continuous registration is interpreted to include the summer quarter.) If a student must be away from the University during the doctoral study the student must make petition to the department head and approval of the Vice Chancellor for Graduate Studies and Research, or be granted a leave of absence from the requirement for periods not exceeding eight quarters.

**Final Examination:** A final examination (oral, written, or both written and oral) is given at the final step in the program of study. Some programs require two languages and some none. Language requirements must be met at The University of Tennessee and cannot be transferred from another institution. Refer to the departmental descriptions of each Ph.D. program. The student's faculty committee will determine, with the approval of 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 in lieu of language examination.)

**Admission to Candidacy:** A student may be admitted to candidacy after passage of the preliminary examinations, fulfillment of the language requirements, and the 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 approved by the committee members and approved by the Vice Chancellor for Graduate Studies and Research. The student will be notified when admission to candidacy has been approved.

**Research Requirements:** Research is an essential part of the program of every candidate for the Ph.D. and Ed.D. degrees. For the Doctor of Philosophy and Doctor of Business Administration degrees, original research forms the basis of the dissertation. The completion of a doctoral program 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, 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 committee for approved candidate 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.

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**Summary of Procedures for Master's Degrees**

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>UNDER DIRECTION OF</th>
<th>DATE</th>
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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>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>Faculty committee</td>
<td>At least one quarter prior to Commencement*</td>
</tr>
<tr>
<td>Approval of admission to candidacy</td>
<td>Faculty committee and Vice Chancellor for Graduate Studies and Research</td>
<td>Prior to Commencement</td>
</tr>
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**GRADUATION REQUIREMENTS**

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<tr>
<th>PROCEDURE</th>
<th>UNDER DIRECTION OF</th>
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</thead>
<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 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>
</tr>
</tbody>
</table>

*Dates are printed in Graduate School News quarterly.*
### Summary of Procedures for Specialist in Education Degrees

<table>
<thead>
<tr>
<th>PROCEDURE</th>
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<td>Major departmental advisor and Vice Chancellor for Graduate Studies and Research</td>
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<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>Faculty committee</td>
<td>At least one quarter prior to commencement*</td>
</tr>
<tr>
<td>Approval of admission to candidacy</td>
<td>Faculty committee and Vice Chancellor for Graduate Studies and Research</td>
<td>Prior to Commencement</td>
</tr>
</tbody>
</table>

### GRADUATION REQUIREMENTS

| Placement of name on graduation list          | Student                                                                           | Indicate on registration material              |
| Application for diploma                      | Vice Chancellor for Graduate Studies and Research                                   | See deadline notice available at registration* |
| Scheduling of oral or written examination    | Major professor, Vice Chancellor for Graduate Studies and Research, student        | Not later than one week prior to oral or written examination* |
| Submission of thesis or problems to faculty committee | Faculty committee                                                                  | At least one week prior to oral examination    |
| Oral examination                             | Major professor and committee                                                      | Not later than ten days prior to thesis/problems deadline* |
| Removal of incompletes                       | Instructor of course                                                              | Not later than one week before Commencement*   |
| Submission of final copy of thesis and thesis card | Major professor, candidate’s committee, and Vice Chancellor for Graduate Studies and Research | After oral examination and no later than two weeks before Commencement* |

*Dates are printed in Graduate School News quarterly.*
## Summary of Procedures for Doctoral Degrees

<table>
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<tr>
<th>PROCEDURE</th>
<th>UNDER DIRECTION OF</th>
<th>DATE</th>
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</thead>
<tbody>
<tr>
<td>*Appointment of faculty committee</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>*Preliminary examination</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>Submission of application for admission to candidacy (forms at Graduate Office)</td>
<td>Faculty committee</td>
<td>At least three quarters prior to Commencement**</td>
</tr>
<tr>
<td>Approval of admission to candidacy</td>
<td>Faculty committee and Vice Chancellor for Graduate Studies and Research</td>
<td>At least three quarters prior to Commencement</td>
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### GRADUATION REQUIREMENTS

<table>
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<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 no later than two weeks before Commencement*</td>
</tr>
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*The order of these items varies with individual programs.
**Dates are printed in Graduate School News quarterly.
***Not required in some programs.
Institute of Agriculture

W. W. Armistead, Vice President
Bobby H. Pentecost, Assistant Vice President

The Institute of Agriculture traces its history to 1889 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 1889, 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 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.

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 located at Jackson, Spring Hill, Springfield, Lewisburg, Crossville, Greeneville, and Martin. In addition, field stations are located 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 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 impact on society. The student must demonstrate the ability to plan, conduct, analyze, and report original research. More importantly, emphasis is given to intellectual growth and to the development of scholarly habits of
study, reasoning and analysis to the end that the graduate will continue to grow and develop professionally throughout his/her career.

MASTER OF SCIENCE PROGRAMS

Programs of graduate study leading to the Master of Science degree are offered through all departments within the College of Agriculture. The general rules of the Graduate School apply to all graduate work in the college. The graduate program may be entirely in one major subject or may include matters relating to several majors.

Both majors and minors are available in Agricultural Biology, Agricultural Economics, Agricultural Engineering, Agricultural Extension, Agricultural Mechanization, Animal Science, Food Technology, and Wildlife and Fisheries. The minor in General Agriculture requires 18 hours of course work. A complete listing of majors is shown on pages 8-9.

For admission to a graduate degree program, the student must have a satisfactory academic average and have completed the substantial requirements for an undergraduate major in his/her field of study or have completed sufficient undergraduate work in related areas to satisfy the department that he/she can successfully pursue graduate study in the chosen field. Prerequisite courses may be required when the student's preparation is deemed to be inadequate.

Each program of course work and thesis research is planned by the major professor and the student. The program will depend upon the student's background, interests, and professional objectives. For example, a student majoring in Agricultural Biology may apply for admission to the Department of Agricultural Economics and Science, Ornamental Horticulture and Landscape Design, and Plant and Soil Science. Majors only are available in Forestry and Wildlife and Fisheries Science, and minors are available in Agricultural Economics and Rural Sociology. The minor in General Agriculture requires 18 hours of course work. A complete listing of majors is shown on pages 8-9.

DOCTORAL PROGRAMS

Graduate study programs leading to the Doctor of Philosophy degree in Animal Science, Agricultural Economics, Agricultural Engineering, and Plant and Soil Science are offered in the college.

General Graduate School requirements relative to admission, faculty advisory committees, residence, grades, research, and admission to candidacy for degree apply to all doctoral programs. Special departmental requirements are listed in the following paragraphs.

Agricultural Economics and Rural Sociology

Subject Area Requirements: All candidates pursuing the Doctor of Philosophy degree will be required to demonstrate competence in examinations in the following areas of specialization:

1. Agricultural policy
2. Agricultural marketing and price analysis
3. Farm management and production economics
4. Natural resource economics
5. Rural development

Core areas:
1. Agricultural economics
2. Economic theory
3. Mathematical and quantitative methods in agricultural economics

Course Requirements: A 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 at least 36 quarter hours in 6000 level or above, exclusive of research and dissertation. A minimum of 24 quarter hours credit must be taken in departments outside of the Department of Agricultural Engineering. The specific program of a candidate for the degree of Doctor of Philosophy in Agricultural Engineering will depend upon the 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 of specialization:

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, exclusive of credit for the Master's thesis. Of this number, students are required to complete at least 36 quarter hours in 6000 level or above, exclusive of research and dissertation.
2. At least 36 quarter hours credit in courses numbered 5000 and 6000, exclusive of Doctoral Research and Dissertation.
3. A minimum of 24 quarter hours credit must be completed in related fields outside of animal science.

The specific program of a candidate for the degree of Doctor of Philosophy in Animal Science depends upon the interest and previous training of the candidate. Each candidate is required to prepare a dissertation. The actual course content of the program is planned with each student in consultation with a faculty advisory committee to meet requirements in the various areas of concentration.

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 credit for the Master's thesis. Of this number, students are required to complete at least 36 quarter hours in 6000 level or above, exclusive of research and dissertation.
2. Minimum of 36 quarter hours credit in courses numbered 5000 and 6000, exclusive of Doctoral Research and Dissertation.
The specific program of a candidate for the degree of Doctor of Philosophy in Plant and Soil Science will depend upon the interest and qualifications 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 chairperson of the faculty advisory committee and will direct the research and the preparation of the dissertation.

Departments of Instruction

Agricultural Biology

MAJOR: Agricultural Biology

DEGREES: M.S., Ph.D.

Professors:
- C. J. Southards (Head), Ph.D. North Carolina State; J. W. Hilny, Ph.D. Ohio State; L. F. Johnson, Ph.D. Louisiana State; C. D. Press, Ph.D. Clemson.

Associate Professors:

Assistant Professors:
- E. C. Bernard, Ph.D. Georgia; M. R. McLaughlin, Ph.D. Illinois.

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 history, 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 (1-15) E

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.

5100 Plant Disease Diagnosis (3) Diagnosis of plant diseases, disease symptoms, causal agents and control measures. Prereq: 3130.

5120 Insect Diagnostic Clinic (3) Identification of insects and insect damage to crops, livestock and residences. Obtaining of insects and damaged specimens, diagnostic characteristics and control measures. Prereq: 3210 or Zoology 3110.

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: 3130.

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 animals. Ecology and behavior of vectors in relation to pathogen transmission. Prereq: 3210, general entomology, or 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 or Entomology 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

MAJOR: Agricultural Economics

DEGREES: M.S., Ph.D.

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

Associate Professors:

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 to meet changing technologies; tenancy arrangements and use of credit; risks; measures of success. Use and analysis of records; exercises in planning 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. W

4240 World Agriculture and Trade (3) Economic bases of world agricultural production and trade: resource location, land tenure systems, international trade and commercial policy. Prereq: Agriculture 1110 and Economics 2120, or consent of instructor. F

4250 Agricultural and Rural Planning (3) Decision-making principles applied to design and implementation of local action programs. Case examples from the U.S. and other countries. Prereq: Agriculture 1110 and Economics 2120, or consent of instructor.

4310 Agricultural Finance (3) Nature and source of capital; credit problems of farmers; kinds and sources of farm credit. Agricultural insurance and taxation. Prereq: Agriculture 1110 and Economics 2120. W

4320 Agricultural Policies (3) Meaning of agricultural policy in democratic society; relationship of farm groups to purposes of public policy; agricultural policy and appraisal of results; policy problems. Prereq: Agriculture 1110 and Economics 2120. F

4330 Land Economics (3) Problems and policies of land use, conservation, development, taxation, and tenure; population growth and demand for land; principles that can be used to stimulate economic activity and income. Prereq: Agriculture 1110 and Economics 2120. F

4510 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. Sp

5200 Agricultural Production Economics (3) Theory of production organization and costs. Application of economic principles to the analysis and design of marketing and marketing policies. Prereq: 3320. W

5300 Agricultural Policy Analysis (3) Survey of law and application to the farmer, 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. W

5000 Thesis (1-15) E

5002 Non-Thesis Graduation Completion (3-15) Required for the non-thesis student not otherwise required during the term in which 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. E

5011 Special Problems in Lieu of Thesis (3) E

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. W

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

5210 Seminar: Agricultural Policies (3) Sp

5220 Seminar: Methodology of Research (3) W

5230 Seminar: Adjustments to Industrialization (3) F

5310 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/NC only. E

5410 Agricultural Marketing Analysis (3) Application of tools of economic analysis and measurement to problems at all levels of marketing system for agricultural commodities. Prereq: 4630 or equivalent. Sp

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

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 agricultural development under conditions of economic change. Prereq: 4240 or consent of instructor. F

5510 Quantitative Methods in Agricultural Economics (3) Analytical techniques useful in estimation of functions-supply, demand and production functions and estimation of economic variables. Emphasis on application of multiple regression model specification, estimation technique using computer and computer orientation. Prereq: Statistics 4310 or Economics 5510 or consent of instructor. W

5710 Quantitative Methods in Agricultural Economics (3) Linear programming techniques with em-
Agricultural Engineering

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


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

4640 Design of Agricultural Machinery (3) Functional requirements of agricultural machinery. Elements of machine design component design; synthesis of mechanisms, mechanical and hydraulic drives. Team effort in completing machine design project. Prereq: 3640 or consent of instructor. 1 hr and 2 labs. Sp.

4640 Environmental Control in Agricultural Structures (3) Development of building 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. Sp.

5240 Field Studies (3, 3) Supervised work experience in specialized developments in power and machinery. Prereq: Engineering Science and Mechanics 3311. 2 hrs and 1 lab. F.

5410 Agricultural Machinery Systems Analysis (3) Systems approach to design of engineering systems; applications to include linear programming, computer applications, statistical evaluations, and feedback control of agricultural problems. Prereq: Mathematics 6450 or 6470. Coreq: 5710 or equivalent. 2 hrs and 1 lab. F.

6610 Selected Topics in Agricultural Engineering (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. F.

Agricultural Mechanization

4160 Agricultural Waste Utilization and Disposal (3) Techniques, equipment, and structures for utilizing, treating, and disposing of agricultural wastes by land spreading, laxing, and liquid and solid waste disposal. 2 hrs and 1 lab. W.

4180 Equipment and Techniques for Application of Agricultural Chemicals (3) Equipment for application of pesticides, fertilizers, and gaseous chemicals; system components; operational characteristics; safety and legal considerations; calibration and adjustment of systems and disposal methods. 2 hrs and 1 lab. Sp.

4210 Agricultural Machinery and Tractors (4) Agricultural machinery and power units; adaptation to agricultural practices; field and processing structures; and environmental systems for plant and animal production, crop processing, and materials handling. Prereq: 3220 and 3510. 2 hrs and 1 lab. F.

5410 Agricultural Machinery Systems Analysis (3) Analysis of current field machinery; adaptation planning for sequential operations; machinery for unique and alternate production and harvesting systems; operational management. Prereq: 4210. 2 hrs and 1 lab. Sp.

5410 Agricultural Machinery Systems Analysis (3) Analysis of current field machinery; adaptation planning for sequential operations; machinery for unique and alternate production and harvesting systems; operational management. Prereq: 4210. 2 hrs and 1 lab. Sp.

5410 Agricultural Machinery Systems Analysis (3) Analysis of current field machinery; adaptation planning for sequential operations; machinery for unique and alternate production and harvesting systems; operational management. Prereq: 4210. 2 hrs and 1 lab. Sp.

5610 Selected Topics in Agricultural Mechanization (3) Lecture, group discussion, and individual study on specialized agricultural mechanization developments. May be repeated. Maximum 9 hrs. F.

Agricultural Extension Education

MAJORS

Agricultural Extension

DEGREES

M.S. Ph.D.

Professors:

R. S. Dotson (Head), Ph.D. Pennsylvania State
L. H. Dickson, Ed. D. Cornell.

Associate Professor:

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

PSYCHOLOGY

H. L. R. M. P. H. N. S. T. L. E. E. N.

DEGREES

Ph.D.

Dominion College of Education

DEGREES

A. B. B. M. E. D. M.

Professors:

Dean: M. E. Doxey, Ph.D. Oklahoma State, P.E.

F. D. Tompkins, Ph.D. Tennessee, P.E.

L. M. Safely, Jr., Ph.D. North Carolina State, P.E.

L. R. Wilhelm, Ph.D. Tennessee, P.E.

B. L. Bledsoe, Ph.D. Oklahoma State, P.E.

D. O. Baxter, M.S. Missouri; L. M. Safely, Jr., Ph.D. North Carolina State, P.E.

D. H. Luttrell (Head), Ph.D. Iowa State; F. D. Tompkins, Ph.D. Tennessee, P.E.

Z. A. Henry, Ph.D. North Carolina State, P.E.

D. O. Baxter, M.S. Missouri; L. M. Safely, Jr., Ph.D. North Carolina State, P.E.

L. R. Wilhelm, Ph.D. Tennessee, P.E.

B. L. Bledsoe, Ph.D. Oklahoma State, P.E.
null
5344 Ruminant Animal Nutrition (3) Digestive physiology of the ruminant stomach, rumen fermentation, determination of nutrient requirement and feed evaluation for regularity of ruminant animals. Prereq: 3330. F

5410 Genetics of Animal Populations (3) Population and individual, gene and zygotic frequencies; statistical descriptions of populations; forces influencing genetic changes; application to animal breeding. Prereq: 3420 or consent of instructor. 2 hrs and 1 lab. F, W.

5510-20 Advanced Animal Physiology (5, 5) Advanced animal physiology (primarily mammalian physiology); 5510—Membrane neuron, central nervous system, cardiovascular system; and control mechanisms. 5520—Respiratory, renal, gastrointestinal, and reproductive physiology, acid base mechanisms, and metabolism. Should be taken in sequence if both courses are taken. Prereq: General undergraduate anatomy and physiology and Biochemistry 4110 or equivalent or consent of instructor. Biochemistry 4120 also recommended. (Same as Zoology 5510-20) 4 hrs and 1 lab. W, Sp.

5710 Methods of Evaluating Experimental Data in Animal Science (3) Interpretation of data from experiments in animal science based upon such statistical procedures as analysis of variance, covariance, linear and nonlinear correlation, and multiple regression. Prereq: Statistics 5211 or equivalent. 2 hrs and 1 lab. W.

5720 Design and Interpretation of Experiments in Animal Science (3) Design and interpretation of experiments in animal science based upon such statistical procedures as analysis of variance, covariance, linear and nonlinear correlation, and multiple regression. Prereq: Statistics 5211 or equivalent. 2 hrs and 1 lab. W.

6160 Topics in Dairy Microbiology (3) Microbiological problems related to various phases of the dairy industry. W.

6211 Advanced Topics in Animal Physiology (1-6) Recent advances and concepts, research techniques, current problems. May be repeated. Maximum 6 hrs. E

6811 Advanced Topics in Animal Products (1-6) Recent advances and concepts, research techniques, current problems. May be repeated. Maximum 6 hrs. E


Food Technology and Science

MAJOR

Food Technology and Science

DEGREE

M.S.

Professors: J. T. Miller (Head), Ph.D. Wisconsin; J. L. Collins, Ph.D. Maryland; H. O. Jaynes, Ph.D. Illinois; C. E. Melton, Ph.D. Kansas State; W. W. Overton, Ph.D. Iowa State.

Associate Professors: B. J. DeMott, Ph.D. Michigan State; S. L. Melton, Ph.D. Tennessee.

Assistant Professors: M. P. Davidson, Ph.D. Washington State; G. W. Davis, Ph.D. Texas A & M; F. A. Draughon, Ph.D. Georgia; J. R. Mount, Ph.D. Ohio State.

5420 Animal Growth and Development (3) Physiological and nutritional aspects of growth of farm animals; effects of growth rates on physiological and productive functions. Prereq: 3344, 5510, 5520 or consent of instructor. Sp, A

5340 Meat Science (3) Processing methods, carcass characteristics of meat animals; slaughter, cut, selection, curing, freezing and cooking. 2 hrs and 1 lab. W, Sp.


4030 Dairy Products II (4) Principles in the manufacture of butter, cheese and special dairy products. Prereq: 3020. 3 hrs and 1 lab. Sp.

4130 Food Chemistry I (3) Minerals, fats, oils and vitamins in food as affected by processing and storage. Prereq: Nutrition 3320 or equivalent. 2 hrs and 1 lab. Sp.

4140 Food Chemistry II (3) Reactions of proteins, carbohydrates and natural food colorants in food materials. Protein structure, food enzymology and browning reactions. Effects of storage and processing on proteins and carbohydrates with emphasis on nutritional value and functionality. Prereq: Nutrition 3320 or equivalent. 2 hrs and 1 lab. F.

4200 Food Processing II (4) Prevention of deterioration and spoilage of foods. Prereq: 2200 and Agricultural Mechanization 3510. 3 hrs and 1 lab. F.

4210 Food Additives (3) Substances used in food manufacturing, their applications, and functions. Prereq: Nutrition 3320 or equivalent.

4300 Food Processing III (1) Water, sanitation and waste control in food industry. Prereq: Agriculture 1150 and Microbiology 2910-19 or equivalent. W.

4410 Food Crop Products (3) Food products from crops with emphasis on types, manufacturing systems, quality attributes, and utility.

4420 Bakery Products (3) Baking ingredients and their interactions during production and storage of bakery products. Prereq: 4130 and Chemistry 2320 or equivalents. 2 hrs and 1 lab. Sp.

4480 Microbiology in Food Manufacturing (3) Rela- tionship of growth of common food microorganisms in fermentative and enzymatic changes occurring during processing and manufacturing of foods. Prereq: Microbiology 2910-19 or equivalent. 1 hr and 2 labs. F.

4820 Fermented Foods (3) Role of microorganisms in preparing foods with emphasis on development of certain desirable characteristics, flavor, aroma, texture, and acceptability. Prereq: Microbiology 3810. 2 hrs and 1 lab. Sp.

4840 Meat Products Manufacturing (3) Prepared meat products with emphasis on sausage making and information relating to cost controls, inspection, and meat science. Prereq: 3840 or consent of instructor. 1 hr and 2 labs. W.

4920 Analysis of Physical Properties of Foods (4) Physical, chemical, and sensory properties of foods; water, viscosity, colloids, gels, foams, crystals, color. Quantitation and changes induced by processing. Prereq: 4200 and Agricultural Mechanization 3510 or consent of instructor. 3 hrs and 1 lab. W.

4940 Advanced Meat Quality (3) Qualitative and quantitative characteristics of meat and poultry as related to palatability, cookery, preservation, packaging and merchandising. Prereq: 3840. F.

5000 Thesis (1-15) E

1010 Seminar (1) Reports and discussions of selected topics from literature may be repeated. Maximum 3 hrs. F, W, Sp.

5120 Food Color (3) Chemistry of natural food pigments and measurement, notation, and preservation in food. Prereq: Nutrition 3320. 2 hrs and 1 lab. W.

5130 Food Enzymology (3) Commercial and native enzymes in manufacturing, processing, and spoilage of food. Prereq: Nutrition 3330. Sp, A.

5140 Food Flavors (3) Food flavor maintenance and improvement. Natural and synthetic compounds in manufacture of foods with predictable consumer acceptance. Technology of flavor manufacture and formulation. Techniques for determining flavor profile. Prereq: 4210. 2 hrs and 1 lab. W.

5150 Fats and Oils (3) Application of scientific principles to the commercial technology of fats and oils. Prereq: 3210. 2 hrs and 1 lab. W.

5200 Research (1-5) Research in selected areas. Consent of department head. Credits and hours to be arranged. May be repeated. Maximum 10 hrs. E.

5310 Food Products Development (3) Fundamentals of art, science, and technology applied to research, development, and marketing of new food products and products. Prereq: 4210 or 4310. 2 hrs and 1 lab. F.

5320 Food Thermobiology (3) Fundamentals of heat transfer as related to rate of destruction of microorganisms and to rate of loss of food quality through calculation of minimum safe thermal processes for hermetically-sealed packages of foods. Prereq: 3220. 2 hrs and 1 lab. W.

5420 Advanced Food Quality Assurance (3) Applications of current instrumental methods used to control food manufacturing processes. Prereq: 4120. 2 hrs and 1 lab. F.

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

5530 Microorganisms Common in Food Products (3) Identification of desirable and undesirable microorganisms in food products and relationship 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. Sp.

Forestry, Wildlife and Fisheries

MAJORS

Wildlife and Fisheries Science

DEGREES

M.S.

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

Emeritus
Forestry

*3200 Forest Environments and Ecology (3) Environments and ecology of forests and associated lands; emphasis on application of ecological principles to contemporary problems. Prereq: 8 hrs of biology, botany, or zoology. F

*3300 Principles of Silviculture (4) Principles of silviculture. Prereq: 3410. 4 hrs and 1 lab. S

*3400 Silvicultural Methods (4) Methods and applications of silvicultural management. Prereq: 3410 or consent of instructor. F

4000 Silvicultural Methods (4) Methods and application of intermediate and regeneration cuttings: site preparation, selection, modifications of cutting methods to obtain desired goods and benefits. Prereq: 3320, 4002, 4003. Sp

4020 Forest Watershed Management (3) Watershed management. Prereq: 3200, 4003 or consent of instructor. F

4100 Forest Resource Management (3) Analysis of forest resources management. Prereq: Consent of instructor. F

4200 Forest-Resource Management Plans (4) Field problems and case studies in forest-resource management. Prereq: Consent of instructor. Sp

4210 Forestry Organization and Administration (3) Planning, organizing, and leadership concepts and cases: problem analysis and decision making in forest-resource management. Prereq: Consent of instructor. F

4220 Forest-Resource Management (4) The forest as a resource; role of forest enterprises as a producer of timber, recreation services, watershed services, and wildlife; producing multiple services; preparation of a complete plan based on optimizing forest uses. Prereq: 4210. W

4230 Forest-Resource Management Plans (4) Field problems and case studies in forest-resource management. Prereq: 4210 or consent of instructor. Sp

4240 Interpreting Forest Resources (3) Principles and techniques of interpreting forest resources; importance of environmental interpretation to management of forest resources; development and administration of interpretive services. Possible overnight field trips required. Prereq: 4240 or equivalent. 2 hrs and 1 lab. Sp

4300 Forest Policy (3) History of forestry in the United States with emphasis on development of forest resources policies; current policies influencing development and management of forest resources; brief survey of policy implications of forest resource organizations in public and private sectors. Prereq: 4004. W

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

4400 Forest Recreation (3) Forest lands as a recreation resource; the interrelationships of forest recreation and other management activities; development and management of forest recreation areas; sociocultural factors; problems of forest recreation development and management. Prereq: 4210. 6 hrs and 2 labs. Sp

5000 Thesis (1-15) Under the direction of the student's thesis committee, may be repeated. S/NC only. E

Wildlife and Fisheries Science

*3200 Wildlife Management (3) Lives and ecological responses of game birds, mammals, and fish, with emphasis on the decision-making aspects of their management. Prereq: 1 hr of zoology. F

*3300 Game Mammals (4) Classification, identification, distribution, natural history, and management principles of game mammals in North America. Prereq: 3320 or 1 yr of zoology. 2 hrs and 1 lab. W

*3400 Game Birds (4) Biology, classification, identification, distribution, and management of game birds in North America. Prereq: 3320 or 1 yr of zoology. 3 hrs and 1 lab plus one weekend field trip. W

4100 Fish Populations (4) Principles and methods of fish population ecology and demography. Prereq: 3130. 8 hrs and 1 lab. F

4420 Fisheries Management (4) Methods of warm and cold water fisheries management including techniques of biological assessment, public relations, habitat manipulation, and stocking. Prereq: 4004 or consent of instructor. 3 hrs and 1 lab or field period. Sp

5000 Thesis (1-15) Under the direction of the student's thesis committee, may be repeated. S/NC only.
5110 Special Problems in Wildlife and Fisheries Science (1-6) May be repeated. Maximum 9 hrs. E
5210 Seminar in Wildlife Conservation (3) Current studies, problems and issues in wildlife agencies and organizations and their programs. Prereq: 3230 or consent of instructor. W. A
5310 Seminar (1) Current developments in wildlife and fisheries science. Required of each graduate student registered with a quarter instructor. May be repeated. Maximum 2 hrs. S/NC only. W
5400 Advanced Topics in Wildlife 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. Sp
5450 Wildlife Diseases (3) Necropsy of 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 qtr microbiology, pathology or parasitology, 4450 or 4460, or consent of instructor. 2 hrs and 1 lab. Sp
5500 Advanced Topics in Fishery Science (3) Recent advances and concepts, research techniques and analysis of current problems. Prereq: 4520 or consent of instructor. May be repeated. Maximum 6 hrs. Sp
5550 Fish Physiology (3) Mechanisms of circulation, and analysis of current problems. Prereq: 4450 and 4460 or equivalent. Consent of instructor. W, Sp
4180 Park Design (4) Design criteria for parks and outdoors recreation systems. Park site selection, analysis of visitor use, and recreational opportunities as related to public land, natural resources and behavior of colloidial soil materials; relationships of fish physiology in water pollution assessment, fish culture, and fish management. Prereq: Consent of instructor. 2 hrs and 1 lab.
4220 Advanced Turfgrass Management (4) Principles and practices employed in producing horticultural crops in pots and other containers. Analysis of problems associated with growing plants in a very restricted soil volume. Prereq: 4120 or equivalent. Prereq: 3110 and 3160 or equivalent. 2 hrs and 1 lab. Sp
4310 Floriculture I (3) Principles and practices employed in producing cut flower crops. Application of principles of plant physiology as they control flowering, plant quality, and harvesting schedules. Prereq: 3110; Plant and Soil Science 3040 or equivalent. 2 hrs and 1 lab. Sp
4320 Floriculture II (3) Principles and practices employed in producing horticultural crops in pots and other containers. Analysis of problems associated with growing plants in a very restricted soil volume. Prereq: 4120 or equivalent. Prereq: 3110; Plant and Soil Science 3040 or equivalent. 2 hrs and 1 lab. W
4400 Individual Problem Study (1-5) May be repeated. Maximum 10 hrs. E
5000 Thesis (1-6) E
5100 Special Problems in Ornamental Horticulture and Landscape Design (3) May be repeated. Maximum 9 hrs. E
5210 Golf Course Design, Development, and Management (4) Principles and applications in design, development, and management of golf courses. Selection and utilization of grass varieties and other plant materials and development of specifications for nutrition, watering, mowing, maintenance. Prereq: 3110 and 3160 or equivalent. 2 hrs and 1 lab. W
5410 Histological Microtechnique (4) Preparation of plant tissue for microscopic examination, paraffin and plastic embedding, microscopy and mounting of sections, evaluation of procedures by micro- graphic location; site, heat, light, water and inorganic minerals. Prereq: Consent of instructor. 2 hrs and 2 labs. W
5500 Seminar (1) Current literature and development in ornamental horticulture and landscape design. May be repeated. Maximum 3 hrs. F, W, Sp

Ornamental Horticulture and Landscape Design

MAJOR DEGREE

Ornamental Horticulture and Landscape Design M.S.

Professors:
D. B. Williams (Head), Ph.D. Pennsylvania State; L. M. Callahan, Ph.D. Rutgers.
Associate Professors:
T. W. Cunningham, Ph.D. Pennsylvania State; G. L. McDaniels, Ph.D. Iowa State; G. S. Smith, Ph.D. Purdue; D. S. Green, Ph.D. Rutgers.
Assistant Professors:

3030 Plant Propagation (3) Physiology, methodol- ogy, and environmental requirements for propaga- tion. Prereq: 8 hrs of biological science. 2 hrs and 1 lab. F, Sp

3110 Greenhouse Management (3) Factors in- volved in management of greenhouses for produc- tion and research. Structures, soils, pest control measures, heating, ventilation, lighting, water sup- ply, crop succession. Prereq: Consent of instructor. 2 hrs and 1 lab. F, Sp

4120 Landscape Design I (4) Design and develop- ment of properties: planning, organization, struc- ture, selection and use of plant and structural mate- rials, methods of presentation, specification, Prereq: Consent of instructor. 2 hrs and 2 labs. F, Sp

4140 Landscape Design II (4) Advanced theory of design. Pictorial and abstract approach to land- scape design. Emphasis on recreational design from top to bottom. Trends and objectives, projected needs and development of plans. Prereq: Consent of instructor. 2 hrs and 2 labs. W

4150 Wholesale Nursery Management (3) Produc- tion of ornamental trees and shrubs, management, location, layout, culture, equipment and facilities. Prereq: 3030 or equivalent. 2 hrs and 1 lab. W

4160 Retail Nursery Management (3) Essentials of good nursery management, location, layout and op- eration of landscape nurseries, garden centers and chain store outlets. 2 hrs and 1 lab. F, Sp

Plant and Soil Science

MAJOR DEGREE

Plant and Soil Science M.S., Ph.D.

Professors:
L. F. Seitz (Head) Ph.D. North Carolina State; F. F. Bell, Ph.D. Iowa State; B. V. Conger, Ph.D. Washington State; H. A. Fribourg, Ph.D. Iowa State; D. C. Sloan, Ph.D. Wisconsin; W. L. Parks, Ph.D. Purdue; J. H. Reynolds, Ph.D. Wisconsin; N. G. Todd, M.S. Kansas State; M. E. Springer (Emeritus), Ph.D. California (Berkeley); H. D. Swingle (Emeritus), Ph.D. Louisiana State.

Associate Professors:
D. L. Coffey, Ph.D. Purdue; L. S. Jeffery, Ph.D. North Dakota State; W. A. Butler, Ph.D. Illinois; D. A. Leitzke, Ph.D. Michigan State; G. M. Lesman, Ph.D. Michigan State; R. P. C znalewski, Ph.D. North Carolina State; L. W. Reich, Ph.D. Iowa State.

Assistant Professors:

3020 Crop Ecology (3) Crops and environment, geo- graphic location; site, heat, light, water and inorganic minerals as a basis for judgment of cultural practices used to modify environmental factors. Prereq: 8 hrs of biological science. 2 hrs and 1 lab. W

3110 Soil Fertility and Fertilizers (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: 4240 or equivalent. 2 hrs and 1 lab. W

3120 Grain and Oil Crops (3) Distribution, improve- ment, morphology, culture, harvesting, and utilization of corn, small grains, grain sorghum, soybeans and oil crops. Prereq: 3130. 8 hrs biological science. 2 hrs and 1 lab. W

3140 Forage Crops (4) Characteristics, adaptation, improvement, management and utilization of grasses and legumes for pasture, hay, and silage. Prereq: 2130. 8 hrs biological science. 3 hrs and 1 lab. F, Sp

3150 Cotton and Tobacco (4) Characteristics, adap- tation, improvement, culture, harvesting, and mar- keting of cotton and tobacco. Prereq: 2130. 8 hrs biological science. 3 hrs and 1 lab. F

3180 Fruit Crops Management (4) Soils, planting, cultivation, development of fruit crops plantations; pest control, harvesting, packing, storage, and processing. Prereq: Agricultural Biology 3130 and 3120. 3 hrs and 1 lab W

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

3250 Soils in Forestry (3) Soil as a medium for tree growth; relation of physical, chemical, and bio- logical properties of soils to tree growth and manage- ment of forest stands as a basis for judgment of importance of soil composition in location, development of recreational, and watershed management. Prereq: 2130. Forestry 3320. 2 hrs and 1 lab. W

3510 Commercial Production of Cool Season Vegetables (3) Characteristics, economic importance, adaptability, and production for fresh and processing markets; emphasis on greens, salad, cole, rutabaga, bulb crops, perennials, and Irish potatoes. Prereq: 8 hrs biological science. 2 hrs and 1 lab. F

3520 Commercial Production of Warm Season Vegetables (3) Characteristics, economic importance, adaptability, and production for fresh and processing markets; emphasis on greens, salad, cole, rutabaga, bulb crops, perennials, and Irish potatoes. Prereq: 8 hrs biological science. 2 hrs and 1 lab. Sp

3610 Interpretation of Agricultural Research (3) Statistics as applied to agriculture. Statistical methods in interpretation of research results. Prereq: Mathematics 1550. F, W

3710 Principles of Weed Science (4) Basic prin- ciples of weed science, identification, economic, ecology, organic chemistry; and consent of instructor. 2 hrs and 3 hrs organic chemistry. 3 hrs and 1 lab. Sp

4110 Soil Chemistry (4) Colloidal systems; properties and behavior of colloidial soil materials; rela-
tions of chemical properties to plant nutrient availability. Prereq: 2310 and Physics 1210. 3 hrs and 1 lab. F

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. W

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. F

4320 Soil Formation, Morphology, and Classification (4) Soil formation; properties, distribution, and classification of soils; interpretation of morphology; use of soil surveys. Prereq: 2310. 3 hrs and 1 lab. W

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

5000 Thesis (1-15) E

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

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

5240 Soil Productivity and Management (3) Concepts of soil productivity and management, quantitative evaluation of factors and their interaction affecting soil management decisions, cropping 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. Sp, A

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: 4320 or consent of instructor. 3 hrs and 1 lab. W, A

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. W

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: 4410. 2 hrs and 1 lab. W, A

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 management. Prereq: 4110. W, A

5390 Soil Physical Chemistry (3) Structural properties of soil minerals determining physicochemical reactions, ion exchange. Donnan Equilibrium, double layer theory. Prereq: 4110; Chemistry 4110 or consent of instructor. Sp. A

5600 Seminar (1) May be repeated. Maximum 3 hrs. E

5710 Advanced Plant Genetics (3) Importance of polyploidy in plants; detailed study of genome relationships, genetic recombination, mutation, heterosis, quantitative inheritance, heritability selection, and self-incompatibility systems in relation to genetic principles. Prereq: Basic genetics or consent of instructor. F, A

5720 Quantitative Genetics (3) Genetic constitution of population and changes in gene frequency; recognition and measurement of continuous variation; estimation of variable components and genetic advance under different breeding procedures. Prereq: Basic genetics or consent of instructor. W, A

5750 Advanced Plant Breeding (4) Historical development of plant breeding concepts and methods, effects of heterosis, inbreeding, hybridization and selection. Improvement of self- and cross-pollinated crops. Prereq: 5710. 3 hrs and 1 lab. W, A

5810 Crop Climatology (4) Meteorological factors affecting crop plants; crop distribution and centers of origin; general and specific climatic, weather, and vegetative systems; microclimatic influences on plant growth. Prereq: 3020, 3040; or Botany 3210, 4310 or consent of instructor. 3 hrs and 1 lab. F, A

5820 Advanced Crop Physiology and Ecology (4) Historical development of research in crop physiology and ecology. Interrelationships between physiologic processes and environmental factors. Crop adaptation to specific environmental conditions. Prereq: 3020, 3040; or Botany 3210, 4310 or consent of instructor. 3 hrs and 1 lab. W, A

5850 Mechanisms of Herbicide Action (3) Principles of the uptake, translocation, mode of action and basis of selectivity of herbicides. Effects of herbicides on plant morphology, metabolic systems and enzymatic activities. Prereq: Botany 3210 and Biochemistry 4110 or consent of instructor. Sp. A

6000 Doctoral Research and Dissertation (3-15) E

6100 Special Topics in Soil Science (3) May be repeated. Maximum 9 hrs. E

6200 Special Topics in Plant Breeding (3) May be repeated. Maximum 9 hrs. E

6300 Special Topics in Crop Physiology and Ecology (3) May be repeated. Maximum 9 hrs. E

6410 Experimental Designs (3) Principles of experimental designs used in agricultural research. Completely randomized, randomized complete block and Latin square designs; factorial experiment and confounding; lattice designs and covariance. Prereq: 5310. F, A

6510 Growth Control with Chemicals (3) Character, theories of action and use of auxins, gibberellins, cytokinins and inhibitors. Range of effects on growth. Prereq: Botany 3210 or equivalent. 2 hrs and 1 lab. W, A

6600 Seminar (1) May be repeated. Maximum 3 hrs. E
School of Architecture

Roy F. Knight, Dean
William J. Lauer, Associate Dean

Professors:

Assistant Professors:

Lecturers:

4031 Accelerated Historical Studies I (4) Introduction to evolution of architectural periods with selected illustrations from local examples. Advanced examination of relationship of historical and cultural developments to the built environment from antiquity through Byzantine period with applications to present-day design issues. Independent student projects on topics related to course material. Prereq: 4031 and 4032. Sp
4170 Introduction to Preservation and Restoration (4) History and theory of restoration and preservation. Prereq: Consent of instructor. F
4175 Technology of Preservation (4) History and technology of materials, methods analysis and dating, techniques of preservation. W
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. F, W, Sp
4731-32 Earthquake Resistant Structure I, II (4, 4) Analysis and design of structures to resist earthquake effects. Earthquake phenomena, vibration of a single degree structural systems. Resonance and damping, introduction to dynamic analysis of structures. Instrumentation and structural response. Frame and shear wall behavior. Ground-structure interaction. Prereq: Consent of instructor. (Same as Civil Engineering 4731-32.) Su, W
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. F
4739 Aesthetics of Engineering Structures (4) Architecture in engineering; theory and utilization of space, design, and materials in large structures. Bridges, exhibition halls, power plants.
4850 Elementary Structural Matrix Methods (4) Introduction to generalized matrix methods of analysis of structures. Review of matrix algebra and vectors; development of member stiffness and flexibility matrices; assembly of structure stiffness and flexibility matrices. Prereq: Consent of instructor. (Same as Civil Engineering 4850 and Engineering Science and Mechanics 4850.) Su
4900 Aspects of Urban Environment (4) Interdisciplinary course in urban problems. Prereq: Consent of instructor. (Same as Psychology 4900 and Real Estate 4900.) S/NC only, E
4910 Architectural Photography (4) Photography as a design, research and presentation medium. Emphasis on architectural photography using black and white media. E
4920 Advanced Architectural Photography (4) Application of special photographic techniques with emphasis on color printing and processing. Prereq: Consent of instructor. F, W, Sp
4940 Proxemics (4) Seminar for graduate students and upper division students. Introduction to proxemic research. Definition of proxemic variables. Proxetic notation exercises. Analysis of etic data and the identification of emic categories. Observers bias and methods of bias reduction. Members of seminar required to design, conduct, and present original proxemic research. Prereq: 2000 or consent of instructor.
4950 Environment as Code (4) Advanced lecture of graduate students and upper division students. Advanced lecture course of theoretical issues involved in considering environment as a medium of human communication. Codes and nature of coding behavior in animals and humans. Relationship between coding behavior and the organization of the central nervous system. Coding and social behavior. Communication process as a generic model of human environment relations. Hierarchical aspects of environmental communications. Prereq: 2000 or 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 Science in Business Administration, 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 Organization Psychology leading to the Master of Science and Doctor of Philosophy degrees. (See page 93). Also, the department of Management Science offers an intercollegiate program leading to the Master of Science degree. (See page 94.)

The MBA Program

The MBA program is designed for students with undergraduate degrees in the social and natural sciences, the humanities, and professional fields such as engineering, business, agriculture, and architecture. A full-time student can complete the program in six academic quarters. Those with degrees in business earned at an institution accredited by the American Assembly of Collegiate Schools of Business (AACSB) should be able to complete the program in five quarters.

The complete MBA program with a concentration in management is offered by the regular graduate faculty of the College for part-time students on the Knoxville campus, at Oak Ridge and at the Kingsport University Center. The part-time student carries two courses per term in classes scheduled in the evening hours and, like the full-time student, typically is enrolled in each of the four quarters of the year.

The typical program consists of the MBA core (12 to 17 courses depending upon exemptions based on prior studies) and a concentration/electives block of 8 courses. Unless there is a requirement for the mathematics course and/or the computer science course, the total program would amount to from 60 to 75 quarter hours of graduate credit.

Prerequisites. An entering student must have completed college level mathematics through at least one course in calculus and a course in computer science (preferably FORTRAN) or equivalent, or include these subjects in the MBA program. Those applying for the management science or statistics concentration should have completed the second year of college level calculus before matriculation. Those admitted to the accounting concentration should plan on an additional two quarters for undergraduate course work in accounting which is taken during the first year of the program.

MBA Core. The following courses are required in each student's program unless an exemption from one or more courses is granted as provided below. All courses are 3 credit hours. The core courses are:

- Accounting 5010, 5020, 5030; Business Administration 5310; Business Law 5010; Economics 5010, 5020, 5030; Finance 5010, 5020; Management Science 5010; Marketing 5010, 5020; Statistics 5010, 5020.

\[ \text{See course description for Mathematics 5051 and 5052 and Office Administration 5050.} \]

A student may be required to take a mathematics placement examination prior to the first quarter of enrollment.
The following diagram illustrates the required sequence of core courses in order to satisfy course prerequisites. Matriculating students are expected to plan their programs with their concentration area advisors at or prior to their initial registration.

### Concentration and Electives

An applicant for admission must select a concentration area. However, a change to another area may be requested at any time after entering the program. Among the 8 courses in the concentration/electives block, at least 4 but not more than 6 must be in one of the following concentration areas:

- Accounting
- Economics
- Finance
- Forest Industries Management
- Governmental Financial Administration
- Management Science
- Marketing
- Real Estate and Urban Development
- Statistics
- Transportation and Logistics

The remaining elective courses (2 to 4) must comprise a second concentration area of 4 courses. Up to 2 courses (6 hours) in this block may be taken outside the College of Business Administration. No more than 3 courses numbered below 5000 may be included in this 8-course block. Courses numbered below 4000 normally are not approved for the MBA program. Before beginning the concentration/electives part of the curriculum the student must have his/her program approved by the appropriate faculty advisor.

### Exemptions from Core Courses

A student may be exempt from taking Economics 5010, Accounting 5010 and/or Business Law 5010 if equivalent undergraduate courses in these subjects have been completed with grades of C or higher at a regionally accredited institution no more than five years prior to matriculation in the MBA program. In addition to the above, a graduate of an AACSB accredited undergraduate business program may request exemption from one or both of the core courses in the area of his/her undergraduate major field, provided at least 30 quarter hours (20 semester hours) of course work were completed in the major area no more than five years prior to matriculation, and a grade average of 3.0 or higher (on a 4.0 scale) was earned for all courses in the major. Students requesting such an exemption must petition the appropriate department head. The department may require the student to pass a proficiency examination over any course for which exemption is requested. (See page 18.)

### 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 in the College of Business Administration, signed by the department head, and submitted 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 required 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.

**Application and Admission**

Application materials may be requested from the Graduate Programs Office, College of Business Administration, The University of Tennessee, Knoxville, Tennessee 37916. Applicants whose undergraduate degree is in a field other than business may matriculate in either the summer or fall term. Those with a business degree from an AACSB-accredited institution may matriculate in either the fall or winter term. Application materials, including GMAT scores, should be submitted not later than the following dates:
- Summer matriculation—April 1
- Fall matriculation—August 1
- Winter matriculation—November 1

For admission to the MBA program, consideration is given to the applicant's academic record with particular attention to the last two years of undergraduate work and previous graduate studies, to scores on the Graduate Management Admission Test (GMAT) and the Test of English as a Foreign Language (TOEFL) for those whose native language is not English, to work experience and other activities which demonstrate potential for leadership, and recommendations from professors or work supervisors. The admission decision is based on all factors which make up the total application; therefore, there is no automatic cut-off for either grade point averages or GMAT scores.

**Dual J.D.-MBA Program**

The College of Business Administration and the College of Law offer a coordinated dual program leading to the conferment of both Doctor of Jurisprudence and the Master of Business Administration degrees. A student pursuing the dual program may save up to 12 quarter hours of approved courses offered by the College of Business Administration. Three of the 12 quarter hours must be earned in Accounting 5030 or a more advanced accounting course. If College of Law credit is given for such an accounting course, the student may not 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.

**Awarding of Grades**

For grade recording purposes in the College of Law for graduate business courses, grades will be awarded and recorded on a letter basis, and will be used when 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 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 programs is to provide the student with the intellectual competence necessary to attain 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 knowledge in this area. Moreover, the student's educational experience should develop perspective toward education for business in a manner that will enable the student to spearhead 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 educational experience should be capable of responding to individual needs and interests yet be 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 descriptive aspects of business administration. Fourth, the student does advanced work in the basic disciplines of economic theory, behavioral science and quantitative techniques to provide the necessary foundations for the student's concentration area.

**Foundation Requirements**

Although the program is designed for students who have completed an accredited MBA program, the program provides for outstanding undergraduate work in any area that may be admitted directly to the DBA program subject to satisfactory performance in the following areas:

1. Business Functional Areas
   - One quarter hour in one of these areas may enroll in courses in each of the following areas must be completed: managerial economics, management, organization theory and behavior, and policy. Students who have completed an accredited MBA program and meet the requirements of this area must have taken these courses.
   - Each student must demonstrate proficiency in the following areas by completing course work indicated or by passing appropriate examinations:
     - **Economics**: Economics 5111, 5121.
     - **Behavioral Science**
     - **Management**: Management 5610, 5620.
     - **Quantitative Science**
     - **Accounting**
     - **Finance**
     - **Marketing**
     - **Transportation and Logistics**

2. Students who choose this field as a supporting area take Management 5170 and 5180.

**MBA Core courses in this area may not be included.**
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 unless 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 three 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 and the Graduate Programs Office 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 11-13. MBA and DBA applicants are required to take the Graduate Management Admission Test (GMAT). Applicants for programs in economics, management science, and statistics by submission of either the GMAT or the Graduate Record Examination (GRE) aptitude portion. 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).

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 faculty committee and request the concentration area department head to recommend their appointment by the Vice Chancellor for Graduate Studies and Research. There must be one advisor from the College of Business, one of whom must be from a department (or discipline) outside the concentration area.

Research and Dissertation (minimum of 36 quarter hours). The purpose of the segment is to provide the candidate with a research experience that meets the general standards of the profession. The dissertation is supervised by the candidate's faculty committee, who must certify its completion and acceptability after the candidate's oral defense of his/her research effort.

Other Requirements. For information concerning program admission requirements, academic performance standards, fellowships and assistantships, and general rules and regulations of the Graduate School, see other parts of the College of Business Administration section and the first section of the catalog, "The Graduate School."
Each course is in the areas of accounting as indicated below. Courses in selected business disciplines and programs encompass a background in business and related disciplines to prepare students for the actual operation in business and industry. The TEDP faculty is augmented by outstanding practitioners in their fields of business and industry.

Departments of Instruction

Accounting and Business Law

J. E. Kiger (Head), Ph.D. Missouri, C.P.A.

Accounting

MAJOR

DEGREE: Accounting M. Acc.

Professors:
N. E. Ditterich, Ph.D. Ohio State, C.P.A.;
J. E. Kiger, Ph.D. Missouri, C.P.A.;
J. R. Williams, Ph.D. Arkansas, C.P.A.

Associate Professors:
H. C. Harper, Ph.D. Alabama, C.P.A.;
F. A. Jacobs, Ph.D. Georgia, C.P.A., C.M.A.;
W. R. Morris, Ph.D. Michigan State, C.P.A.;
E. E. Michalski, Ph.D. Louisiana State, C.P.A.;
J. A. Posey, M.S. Tennessee, C.P.A., C.M.A.;
W. L. Slagle, M.S. Tennessee, C.P.A.;
K. G. Stange, Ph.D. Louisiana State, C.P.A.;
R. L. Townsend, Ph.D. Texas, C.P.A.;
F. W. Watkins, Ph.D. Louisiana State, C.P.A.

Assistant Professors:
U. J. Gelinas, Jr., Ph.D. Massachusetts;
M. C. Latsinger, M.S. Tennessee, C.P.A.;
J. H. Schiefer, Ph.D. Ohio State, C.P.A.

THE MASTER OF ACCOUNTANCY PROGRAM

The objective of the Master of Accountancy (M.Acc.) program is to provide persons having an undergraduate accounting background and a high level of ability and motivation with the depth and understanding of accounting which will enhance their probability of success in a career in professional accounting. Moreover, the student's educational experience should develop perspective toward the discipline of accounting in a manner that will enable the student to spearhead innovation and change in response to needs in public accounting, business, and government.

Foundation Requirements. Although the program is designed for students who have completed an accredited baccalaureate degree program in Accounting, those with outstanding undergraduate records in any area may earn the M.Acc. degree by completing prerequisites in accounting and by including courses in other business and related disciplines to supplement the applicant's undergraduate background.

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.

Business Core (21 quarter hours):

- Economics 5030: Financial 5010: Management
- Management Science 5010: Marketing
- Accounting 5100

Accounting Core (15 quarter hours):

- Accounting 5110, 5120, 5140, 5210, 5420, 5900

- Accounting Electives (Select five) (15 quarter hours): Accounting 5130-40, 5160, 5220, 5430, 5440, 5460, 5000

Each student must pass a final written comprehensive examination during the final quarter of study for the degree.

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.

5010 Financial Accounting (3) Introduction to accounting model of firm and accounting information system. Not available to students with credit for 2110-20 or equivalent. F, S

5020 Corporate Reporting Problems (3) Analysis of uses and limitations of accounting model of firm. Emphasis on internal and external uses of general purpose financial reports. Prereq: 5010 or equivalent. F, W

5030 Managerial Accounting (3) Analysis of accounting model of firm as vehicle for planning and controlling. Development of cost data appropriate to managerial decision models. Prereq: 5020. Prereq or coreq: Management Science 5010.

5110 Seminar in Accounting Theory (3) Evolution of accounting theory, concepts underlying financial reporting models, and authoritative accounting literature. Incorporation of periodic performance and financial position. Prereq: Consent of department head. May not be taken by students with credit for 5210 or equivalents.

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: 4990 or equivalent.

5160 Graduate Internship in Accounting (3) Full-time professional employment for one academic quarter involving qualified job experience, written report of responsibilities, and evaluation of student performance. Prereq: Consent of instructor.

5210 Seminar in Advanced Managerial Cost Accounting (3) The development and formulation of management accounting systems. Prereq: 5110, 5120, 5210, 5420. (Not available to MBA students.)

5220 Seminar in Advanced Managerial Cost Accounting (3) Seminar in advanced managerial cost accounting. Prereq: 5110, 5120, 5210, 5420. (Not available to MBA students.)

5230 Advanced Auditing Concepts (3) Concepts and theory of auditing, environment of internal and external auditing, nature of evidence, internal control evaluation, and reporting. Not intended for persons who have credit for auditing course. Prereq: 3130. Prereq or coreq: Statistics 5410 or equivalent. (May be taken concurrently.)

5320 Advanced Accounting (3) Case-oriented, including audit of specific asset liability, revenue and expense accounts. Experience on reporting, data processing, statistical sampling, and internal auditing. Prereq: 4110 with C or better. (Available only to MBA students who do not have credit for 4120.)

5330 Advanced Income Tax (3) Federal income tax with emphasis on tax planning and research.

5340 Consolidations and Business Combinations (3) The effect of business combinations on consolidated income statements of affiliated business enterprises. Domestic and foreign. Not intended for persons who have credit for a course with a similar content. Prereq: 3130.

5420 Tax Research (3) Development of expertise in tax research utilizing tax service, tax periodicals, legal cases and other available sources. Includes individual research projects. Prereq: 4430 or equivalent.

5430 Tax Planning (3) Advanced study of income tax planning emphasizing alternatives available to minimize tax liabilities with achieving taxpayer objectives. Prereq: 5420.

5460 Taxation of Estates and Gifts (3) Transfers at death, inter vivos transfers, life insurance, annuities, employee death benefits, marital and other deductions and exemptions, and estate and gift tax returns. Prereq: 4430 or 5330 and 5420. (Not available to students with credit for 4440.)

5510 Not-for-Profit Accounting (3) Theory and practice of budgeting and fund accounting, financial reporting, measures of output and accomplishment, and financial and performance auditing for non-profit entities. Prereq: 9 hrs of accounting and consent of instructor.

5530 Accounting Systems and EDP Concepts and Control (3) Elements and operation of computer in business environment, accounting system design, implementation, documentation, and control of accounting systems. Prereq: 2130 and knowledge of a computer programming language.

5640 Seminar in Accounting Information Systems (3) Literature on accounting information systems and advanced systems analysis and design concepts. Informational needs of other functional areas of business and interfacing of these areas. Prereq: 4630 or equivalent.

5810 Accounting for Control (3) User-oriented survey of contemporary managerial cost accounting topics. Prereq: 5060 or equivalent of consent of instructor. Not available for accounting majors.

5910-20-30 Accounting Seminar (1, 1, 1) Research and discussion of contemporary issues in practice of accounting. May be repeated. Admission by consent of department head. S/NC only.

5950 Seminar in Accounting Research (3) Integration of areas of financial, managerial, tax, and auditing, including directed problem-oriented research in selected topics. Prereq: 5110, 5120, 5160, 5420. (Not available to MBA students.)

5990 Individual Research in Accounting (3) Directed research in a topic of mutual interest to student and faculty advisor. Prereq: Consent of department head in quarter prior to anticipated enrollment. May be repeated. Maximum 6 hrs.

6000 Doctoral Research and Dissertation (3-15) E

6110-20-30 Doctoral Seminar (3, 3, 3) Analysis of issues reflected in accounting literature. Prereq: 9 hrs of graduate credit in accounting and consent of instructor.

Business Law

MAJOR

DEGREE: Business Administration MBA, DBA

5310 Business Policy (3) Case studies covering policy formulation and administration. Point of view and policy formulation and administration. Point of view and implementation.
departure—top and middle management, where company-wide objectives are set and departmental policies are coordinated; sizing up the company's situation, determining objectives, developing sound policies, organizing and administering personnel, and reaching company objectives, continuous administrative reappraisals. Enrollment priority given MBA students in last quarter of their program. Prereq: All core courses. F, W, Su.

5410 Business and Its Societal Environment (3) Analysis of current forces and changes in society and interrelation of plans and actions in business firms with environmental factors. Prereq: Consent of instructor.

5610 Seminar in Applied Business Analysis (3) Application of business concepts and analytical skills to the examination of small businesses in the community. Students work in teams under supervision of participating prof. Prereq: Consent of instructor. May be repeated. Maximum 6 hrs.

Business Education
See College of Education

Economics
MAJOR
Economics

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

Professors:
P. D. Qurilla (Head), Ph.D. California (Berkeley); R. L. Browby, Ph.D. Texas; E. W. Cole, Ph.D. Mar States; D. W. H. Weeks, Ph.D. Maryland; C. B. Garrison, Ph.D. Kentucky; J. F. Holly (Emeritus), Ph.D. Clark, H. E. Jansen, Ph.D. Texas; F. Y. Lee, Ph.D. Michigan State; J. S. Moore, Ph.D. Cornell; W. C. Neale, Ph.D. London School of Economics; G. A. Spiva, Ph.D. Texas; H. R. Wolf, Ph.D. Vanderbilt.

Associate Professors:
S. L. Carroll, Ph.D. Harvard; H. S. Chang, Ph.D. Vanderbilt; E. Giustff, Ph.D. Stanford; H. R. Granade, Ph.D. Florida; H. W. Herzog, Ph.D. Maryland; A. Mayhew, Ph.D. Texas; K. E. Phillips, Ph.D. Washington (Seattle); A. M. Schiottman, Ph.D. Washington (St. Louis).

Assistant Professors:
D. P. Clark, Ph.D. Michigan State; S. P. Coelen, Ph.D. Syracuse; C. B. Dorn, B.S. Cornell; D. L. Kaserman, Ph.D. Florida; N. C. Modeste, Ph.D. Florida; G. E. Schuler, Ph.D. Houston.

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 5121-22, (2) 9 additional hours in economics at the 5000 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 final written comprehensive examination.

The requirements for a graduate minor in Economics as are follows: Either (1) 5111-12 and 5121, or (2) 5111 and 5121-22, or (3) with the consent of the head of the economics department, an alternative sequence of 9 hours to meet unusual conditions.

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 6 hours in economic history at the 5000 level or above with an average grade of B or better by satisfying an examining committee.
   c. History of economic thought, by completing Economics 5150 and 3 additional hours in the department at the 5000 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 5111, 5121, and 5121-22 with the 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; economics of centrally planned economics of labor and manpower; international organization; international economics. A thesis is required by the department, combining two or three of the above.

Exceptions to the foregoing are discouraged but may be petitioned by writing directly to the department. Students who have limited training in analytic geometry and calculus. Must be taken in sequence.

The minimum requirements for a graduate minor in Economics are as follows: Either (1) 5111-12 or 5121, or (2) 5111 and 5121-22, or (3) with the consent of the head of the economics department, an alternative sequence of 9 hours to meet unusual conditions. Students who have limited training in analytic geometry and calculus. Must be taken in sequence. May be repeated. Maximum 6 hrs.
5800 Monetary Theory and Policy (3) (Same as Finance 5810) W
5830 Commercial Bank Management (3) (Same as Finance 5830) F, Sp
6111 Seminar in Advanced Microecononmic Theory (3) Topics in microeconomic theory. May be repeated with permission. Prereq: 5111, 5112 and consent of instructor. W
6121 Seminar in Advanced Macroeconomic Theory (3) Topics in macroeconomic theory. May be repeated with permission. Prereq: 5121, 5122 and consent of instructor. Sp
6150-60 History of Economic Doctrines (3, 3) Important ideas of economic thinkers from Middle Ages to present. W, Sp
6170-80-90 Econometric Methods (3, 3, 3) Theory and techniques of statistical testing of economic hypotheses and construction and estimation of econometric models. Review of classical least squares regression model, extensions of least squares regression model, and approaches to simultaneous equation models with application to current econometric research. Prereq: 5180-90 and 5510 or equivalent. F, W, Sp

INTERNATIONAL TRADE AND ECONOMIC DEVELOPMENT

4230 Problems in International Trade and Economic Development (3) Problems or problem areas of current importance in fields both of international economics and economic development. Prereq: 3510 or 3520. W
4231 The Political Economy of Latin America (3) Description, analysis, and comparison of major economics problems and policies of various Latin American countries. W
4222 The Political Economy of Asian Development (3) Description, analysis, and comparison of major economics problems and policies of China, India, and Southeast Asian countries. W
4260 Economics of Resources and Environmental Policy (3) Economic analysis of environmental policy and allocation of resources. Benefits and costs of development of natural resources and impacts of growth on environment. Prereq: 2130. W
5210 Seminar in International Trade Theory (3) Pure theory of international trade. F
5220 Seminar in Economic Development (3) Economic problems of developing countries.

5250 Economic History of Europe (3) Nature and functioning of economic systems and policies in history of western civilization; examination of some major issues of method and interpretation. F
5260 Economic History of the U.S. (3) Interpretation of historical economic structure and policies from colonial times. W
5610 Location and Regional Development Theory (3) Theory of industrial, agricultural, and residential location; economic basis for land use patterns and central places; examination of regional inequalities and national assistance for regional economic development. F
5620 Methods of Regional Analysis (3) Theory of regional structure and growth. Examination of regional models for impact analysis and economic forecasting. Methods of analysis include regional descriptive statistics, gravity and potential concepts, regional income and product accounts, shift and share analysis, travel cost studies, and regional input-output, linear programming, and econometric models. W
6211-12, 6221-22 Seminar in International Economics (3, 3) Theory of specialization and trade, Balance of payments, exchange rates, monetary problems, capital movements, and foreign trade policy. F, W, Sp
6231-32, 6241-42 Seminar in Economic Development (3, 3, 3) Development and application of analytical tools to problems of economic policy faced by developing regions and countries. W, A, Sp; F
6250 Seminar in European Economic History (3) Selected topics in European economic history. Prereq: Consent of instructor. May be repeated with consent of instructor. F, Su
6260 Seminar in American Economic History (3) Selected topics in American economic history. Prereq: Consent of instructor. May be repeated with consent of instructor. W
6270 Seminar in 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. F, A
6610 Seminar in Regional Analysis (3) Selected topics in regional economic theory and analysis. May be repeated. Maximum 6 hrs. Sp, A
6820 Regional Economics Workshop (3) Selected topics in applied regional research. Emphasis on student participation in model design and estimation, forecasting, simulation, and mathematical and computer programming. May be repeated. Maximum 6 hrs. Sp, A
6650 Seminar in Environment and Resource Economics (3) Topics in environmental quality, natural resource allocation by private markets, and issues in formulating public policy towards environmental problems. Prereq: Consent of Instructor. May be repeated. Maximum 9 hrs. Sp, A

INDUSTRIAL ORGANIZATION

3450 Industrial Organization Analysis (3) Monopoly and competition in the United States economy; market structure, market behavior, and economic performance and interrelationships. Prereq: 9 hrs of introductory economics. W
3540 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. F
6351-52, 6361-62 Seminar in Industrial Organization (3, 3, 3) Organization of industry in American economy. Emphasis on empirical and analytical techniques used in investigating structure, conduct and performance. 6361-62—Public policy in the United States with respect to industrial structure and business conduct; examination, appraisal, and proposals for change. Sp, A; W, A

ECONOMICS OF CENTRALLY PLANNED ECONOMIES

5310 Economic Systems (3) Study and appraisal of underlying theories and operation of capitalism, socialism, communism, and other economic systems. W
5331 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. F

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 analysis of important manpower problems. Prereq: 2110-20. Sp
4430-40 Labor Legislation (3, 3) 4430—Economic background and effects of governmental regulation of labor relations. Prereq: 2110-20. F
5410 Seminar in Labor Manpower Economics (3) Intensive examination of theoretical and empirical problems in labor-manpower economics literature. Emphasis on problems, analysis and possible solutions. Prereq: Consent of instructor.
5420 Seminar in Wage and Employment Theory (3) Current and past theories of wage and employment determination. Prereq: 5410, equivalent or consent of instructor. F
6411-12, 6421-22 Seminar in Labor Economics (3, 3, 3) Selected problems chosen for their current interest of continuing significance—development and application of problems and techniques. W, A, W, Sp, A

Finance


Associate Professors: A. L. Auxier, Ph.D. Iowa; A. B. Bisce, Jr., Ph.D. Florida; J. C. Golden, Ph.D. George Washington; W. D. Edmundson (Milwaukee); R. E. Shrives, Ph.D. California (Los Angeles); D. L. Stevens, Ph.D. Michigan State.


5002 Non-Thesis Graduate Completion (3-15) Required for the non-thesis student not otherwise required 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. E
6000 Doctoral Research and Dissertation (3-15) E

FINANCE AND INVESTMENTS

5010 Financial Management and Asset Valuation (3) Analysis of decision making in financial management. Process by which a firm is valued; roles of investors, financial markets, instruments, risk and expected return. Capital budgeting process with respect to identifying relevant variables, understanding alternative capital budgeting tools, decision rules and decision-making criteria. Capital budgeting decision examined under conditions of uncertainty. Alternative risk methods. Prereq: Economics 5100; Statistics 5010. Prereq or coreq: Accounting 5030. W, Sp
5020 Financial Decision Making and Analysis (3) Decision making relating to management of short-term assets and liabilities. Development of theory of capital structure, financing and divided policy. Introduction to quantitative models for management of firm's assets and liabilities. Prereq: Statistics 5030. May be repeated for credit under conditions of uncertainty. May be repeated with instructor consent. W
5120 Quantitative Techniques in Financial Management (3) Applications of mathematics, probability, and statistics to model building and testing in financial management. Prereq: Statistics 5311. W
5130 Financial Administration (3) Cases and readings within firm: refined techniques of analysis; optimal financing decisions; capital cost measurement; and present value analysis. Prereq: Basic corporate financial theory. Prereq: 5020. W, Sp
5140 Seminar: Managerial Finance (3) Applications of theory and quantitative techniques to solution of problems in managerial finance. Prereq: 5120 or 5130. Sp
with no background in risk and insurance.) Risk management and manageable risks facing individual and firm. Analysis of risk management techniques with emphasis on 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 4900.) S/NC only. E


5120 Real Estate Analysis (3) Analysis of real property investment, real estate finance and appraisal theory. Prereq: Economics 5500 or equivalent. W

5130 Housing and Urban Land Markets (3) Analysis of housing demand, supply and location. Segregation and housing discrimination. Impact of urban renewal and policy on housing markets. Prereq: 5010 or consent of instructor. SP

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

**Management**

Professors:

D. Dewhurst (Head), Ph.D. Texas; R. W. Boiling, Ph.D. Stanford; M. Gordon, Ph.D. California; H. W. Henry, Ph.D. Pennsylvania; A. H. Keally (Emeritus), MBA Pennsylvania; J. A. Laugha, Ph.D. Purdue; S. K. Reed, Ph.D. Indiana; G. H. Whitlock, Ph.D. Pennsylvania.

Associate Professors:

F. A. Chambin, MBA; O. S. Fowler, Ph.D. Georgia; R. C. Maddox, Ph.D. Texas; C. W. Neel, Ph.D. Alabama.

Assistant Professors:

J. A. Bachman, Ph.D. Virginia Polytechnic Institute; M. C. Rush, Ph.D. Akron; J. E. Thiel, Ph.D. Indiana; C. R. Woolfam, M.A.; M. A., M.S., Miami (Florida).

Statistical Procedures Branch:

1. Methods and statistical analysis; surveys and allied data; marketing. Prereq: 5020 or consent of instructor. SP

5000 Theory (1-15) E

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 completion. May not be used toward degree requirements. May be repeated. S/NC only. E

5010 Organization Theory and Behavior (3) Application of organization theory, organizational behavior and management concepts to organizational problems. F, W, Su

5020 Operations Management (3) Management processes of planning, operating and control of production systems. Management concepts and quantitative techniques with systems framework to operating problems. Prereq: 5010; Management Science 5020. F, Sp, Su

5050 Production Management (3) Analysis of production function with emphasis upon application of mathematical-statistical methods. (For MBA students only. Available only. Not stated on page 35.)

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

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

5130 Managerial Planning and Control (3) Processes of management planning and controlling with emphasis on long-range corporate planning. Sp

1. William B. Stokely Professor of Management

2. Alumni Distinguished Service Professor
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, a student must pass a written preliminary 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 course work in 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 completed over the dissertation and such other segments of the program that the faculty committee deems appropriate. This effort, which is beyond the minimum 72 hours of course work, normally is completed in the third year of the program.

Prerequisites for Management Science Courses. The Management Science Program is interdisciplinary and students in other degree programs are encouraged to enroll in management science courses. Course prerequisites are designed to indicate the level at which courses are taught. Interested students whose prior course work does not match the prerequisites are encouraged to seek the instructor's guidance and consent to enroll.

5000 Thesis (1-15) E

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/C only. E

5210 Quantitative Analysis for Management Decisions (3) Assignment, transportation and general linear programming problems; decision theory. Markov chains and queuing. Prereq: Statistics 5100. E


5350 Mathematical Programming Computational Systems (2) Practical aspects of using state-of-the-art mathematical programming systems. Students will write computer 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. 5350 may be taken concurrently. S

5610 Management Science Projects (1-6) Directed study on subject of mutual interest to student and staff member. E

6000 Doctoral Research and Dissertation (3-15) E

6110-20-30 Models for Production Systems (3, 3, 3) Seminar providing research practice to enhance professional development of doctoral students. Investigation of existing mathematical models for production processes and opportunities for original research. 6210-20 Network Flows (3, 3) In-depth treatment of widely applied network optimization algorithms including transshipment, shortest path, primal and dual basis-tree methods, multimodality, multimodal and dynamic flows; flow with gains and other advanced topics. Prereq: 5310 or equivalent. A

6310 Integer Programming (3) Theoretical and computational aspects of linear programming with integer variables, branch and bound, cutting plane, and group theoretic algorithms. Prereq: 5310 or equivalent. A

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

6510 Nonlinear Optimization (3) Solution of constrained and unconstrained nonlinear optimization problems focusing on algorithms that have performed well in recent practice. Prereq: 5310 or equivalent. A

6610 Markovian Decision Models (3) Formulation and analysis of Markov chain models: Markov chain models which incorporate decisions—formulation, application and solution through policy iteration. Stochastic dynamic programming models in continuous time. Prereq: 5330. F

6620 Queuing Models (3) Application and mathematical analysis of models of congestion. Basic birth-death process models, other Markovian models; non-Markovian models for systems with general service or arrival patterns, priority customers or other complicating assumptions: queues in series. Prereq: 5330 or Mathematics 4750-60. Sp

6710 Location Models (3) Application of linear, nonlinear and network optimization techniques to problems of optimal location of new facilities. Prereq: 5310 or equivalent. A

6810 Special Topics (3) Prereq: 5310-20-30 and consent of instructor. May be repeated. Maximum 9 hrs.

6910-20-30 Management Science Seminar (1, 1, 1-3) Subjects selected from current management science literature. F; W; Sp

Marketing and Transportation

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

Marketing

Professors:
D. W. Cravens, DBA Indiana; G. E. Hills, DBA Indiana; R. B. Woodrufl, DBA Indiana.

Associate Professors:
D. J. Reifen, PhD; E. D. Cadotte, PhD; D. S. Smith, PhD; J. J. McGrew, PhD.

Assistant Professors:
F. L. Babcock, Ph.D.; L. R. Dufresne, MS.

Marketing and Distribution Management (3) Analysis of current marketing and distribution structure institutions, functions, and marketing problems. Systems analysis, market research, and sales management practices. Prereq: Business 5810-20-30. F; W; Sp

5200 Marketing Management (3) Management of basic marketing functions. Case problems and marketing decision simulation. Prereq: 5020 or equivalent. F, Sp, Su.

5210 Sales Force Management (3) Basic communication theory affecting objectives and problems of sales force management. Recruitment, selection, training, motivation, evaluation, and control of sales force; sales forecasting, territory design, and route design. Prereq: 5020. F, Sp, Su.


5300 Marketing Research (3) Investigation and solution of problems; application of research methods to the field of marketing. Research on concepts, methods, and techniques. Prereq: 5020. Statistics 5010, F, W.

5350 Buyer Behavior Analysis for Marketing (3) Behavioral processes of individuals and groups in roles as buyers of goods and services. Prereq: Consent of instructor. A

5400 Analyzing Market Opportunity for Marketing Decisions (3) Basic determinants of opportunity within markets, framework for identifying and organizing information required to assess market opportunity. Approaches to analyzing buyers in markets, forecasting economic demand, analyzing industry/channel/competitor service. Emphasis on applying market opportunity analysis results to marketing decisions. Prereq: 5020. W


5450 International Marketing Management (3) Development and management of international marketing programs. Problems involved in marketing goods and services into different foreign markets. Political, cultural, and economic conditions in different countries. Prereq: 5020. W

5590 Research in Marketing (3) Directed research on subject of mutual interest to student and staff member. Prereq: 5020 and 5300. Prereq: 5020. Maximum 6 hrs.

6000 Doctoral Research and Dissertation (3-15) E

6050 Macro/Theoretical Foundations of Marketing (3) Fundamental nature and history of marketing processes. Role of marketing theory in developing marketing discipline and in research process. Environmental/policy dimensions of marketing decision making. Prereq: Consent of instructor. A

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. A

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

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

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

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

6350 Current Topics in Marketing (3) Specific topics with variable content. May not be audited. Prereq: enrollment only; but count towards graduation. May include: non-business marketing applications, macromarketing environment, segment marketing, children's television advertising, international marketing issues, marketing channels, and related issues. Prereq: Consent of instructor. A

Transportation and Logistics

Professors


Associate Professors


Assistant Professor

H. F. Foggia, DBA Indiana.

6002 Non-Thesis Graduation Completion (3-15) Required for non-thesis students. May not be registered 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/N only. E

6500 Survey of Transportation and Logistics (3) Logistical demands made by society and specific users upon nation's transportation system and problems facing carriers and government in meeting these demands. May not be included in a concentration or minor. Prereq: 5020.

5110 Theories and Functions of Economic Regulation (3) Development of economic and philosophical basis of regulation. Critical analysis of impact of regulatory decisions on managerial objectives. F

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

5130 Transportation Management Problems (3) Analysis of significant transportation problems areas with consideration of proposed solutions. Sp.

5210 Business Logistics (3) Development of concepts to guide analysis and design of logistics systems. Scope and importance of temporal and spatial decision-making roles in logistics. Emphasis on planning, design, implementation of physical distribution operations with marketing, production, and other decision areas. W


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

5810 International Transportation Policy (3) Comparative analysis of transport systems in other countries. Analysis of U.S. policy relative to international transportation. Prereq: 5210. W

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. Prereq: 5210. W

5920 Current Topics in Transportation and Logistics (3) Seminar to study current problems and policy issues in transportation and 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.

5000 Doctoral Research and Dissertation (3-15) E

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

6210 Seminar in Transportation and Logistics Management (3) Analysis of current quantitative methodologies used in transportation and logistics research. Prereq. Statistics 5010 and 5020, Management Science 5010, or equivalents. W

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

Office Administration

J. Stallard, Program Director

Professors

D. Reese, Ph.D. Iowa; E. R. Smith, Ph.D. Ohio State; G. A. Wegner, M.S. Indiana.

Associate Professors


Assistant Professors

P. G. Campbell, M.S. Austin Peay; H. Petree, M.S. Tennessee; C. S. Sheddan, M.S. Tennessee.

Courses numbered below 5000 are not available for credit in the MBA program.

4310 Business Letter Writing (3) Principles, practices, and mechanics of effective business letters and memos. Procedures applied to solving communication cases; emphasis placed on letters and memos as initial sources of ideas in communication systems of the business firm.

4320 Business Report Writing (3) Basic principles and procedures of originating and disseminating business reports, both formal and informal in style; writing techniques for short and long reports; graphic presentation and interpretation; use of primary and secondary data for reports.

4420 Advanced Transmission (3) Improvement of ability to transcribe audible copy from dictation of a wide variety of correspondence; emphasis on competencies needed to meet occupational standards. Prereq: 4410.

4510 Office Management (3) Strategic and operations planning of office objectives; relating tasks and human resources to objectives; recruiting, selecting, training, and evaluating office staff; directing of office staff through leadership, motivation, communications; measurement of office performance, comparison to standards, and correction of actions; and applications of decision making to the office. Sp.


4610-20-30 Problems in Office Administration (1-3, 1-3, 1-3) Subjects vary each quarter. May be repeated. Maximum 3 hrs for each course.

5011 Problems in Lieu of Thesis (3) 5050 Data Processing in Business (3) Fundamentals of data processing, computer programming and applications, systems design. (Available only as stated on page 35.) E

Statistics

MAJOR

Degree

Statistics

M.S.

Professors

C. C. Thigpen (Head), Ph.D. Virginia Polytechnic Institute; J. C. Chambers, MBA Texas; R. A. McLean, Ph.D. Purdue.
uses university facilities and/or faculty time before degree is completed. May be repeated. S/NC only. E

5010 Probability and Statistical Inference (3) Fundamentals of probability, discrete and continuous probability models, mathematical expectation, and inference concerning means. Prereq or coreq: Mathematics 5002 or equivalent and a computer programming course. May not be taken for credit by students who receive credit for 5110. F, W

5020 Statistical Methods (3) Regression and correlation models, basic time series analysis and forecasting; inferences about one or more proportions, and tests for independence. Prereq: 5010. W, Sp


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

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


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. F, Sp


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.

6050 Applied Multivariate Analysis (3) Canonical correlation; discriminant analysis for several groups, and for unequal and unequal covariance matrices; principal component analysis; Hotelling's T2; multivariate analysis of variance and covariance. Prereq: 1 yr of applied statistics including analysis of variance and multiple regression analysis. W

6070 Factor Analysis (3) Principal component analysis and principal factor analysis; estimates of communalities; methods of rotation, interpretation of factors; cluster analysis. Prereq: 6050. Sp

6210 Stochastic Processes II (3) Special analysis, time series, linear and nonlinear systems. Prereq: 5210.
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's news-editorial and advertising sequences are 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 communications, 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 major 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 provisional 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. In addition, students who earned their Bachelor's degrees outside the field of Communications will normally be required to add Communications 5130 to their core;
- 24 hours of selected courses within the College, including at least 9 hours at the 5000 level;
- 9 hours of thesis work (Communications 5000).

The professional track is designed for the student who desires the graduate degree but wishes to emphasize a particular professional area, such as advertising, broadcasting, journalism, or public relations. A minimum of 45 hours of approved graduate course work is required:

- 9 hours of core courses: Communications 5100, 5120 and 5140, 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;
- 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 Bachelor's 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 graduate committee.

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 student 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) above the fifty-fifth percentile in verbal and quantitative aptitude on the Graduate Record Examination; (c) completion of the California Psychological Inventory; (d) endorsement by at least three former teachers or professional colleagues chosen by the Graduate Studies Committee; (e) a statement of the applicant's goals and reasons for pursuing the doctorate. Personal interviews with members of the Graduate Studies Committee may be required. Professional experience in some field of communications is a highly desirable criterion for admission.

The following program represents work normally required for an individual with only the Bachelor's degree and no technical competence: (a) prerequisite courses offered by the College of Communications and approved by the major advisor for applicants lacking the necessary academic and/or professional background; (b) core curriculum: 33 hours of course work; (c) professional experience, an internship the equivalent of 9 credit hours; (f) research tool: a one-week, non-credit course work attempt 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 Studies of the College of Communications upon the recommendation of the student's faculty committee.

Communications Research Center

The Communications Research Center is a vital adjunct to the communications graduate program. Objectives of the Center are: (a) to conduct original research in mass and public communication, (b) to disseminate research-generated information, and (c) to provide research services to faculty and students, professional communicators, and others interested in improving the quality of human communications.

Departments of Instruction

Planned course offerings in the College of Communications for a full calendar year are published in the College newsletter the preceding November. This information is available from the Dean's Office, Communications Building, 974-3031.

Communications

MAJOR

Communications

DEGREES

M.S., Ph.D.

Professors:


Associate Professors:

G. A. Everett, Ph.D. Iowa; H. H. Howard, Ph.D. Ohio; E. F. Shaw, Ph.D. Stanford.

5000 Thesis (1-15) E

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

5100 Introduction to Graduate Studies (3) Scope and methods of advanced study in communications. Information sources, literature review methods, scholarly style, thesis and degree requirements and procedure, overview of traditional and behavioral research methods. S, F

5120 Research Methods (3) Communications research, strategy and methodology. Scientific process, bases for derivation and verification of hypotheses, and basic methods of designing research in communications. S, F

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


5150 Seminar in Communications Issues (3) Contemporary topics in communications. Prereq: 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. On individual basis, under faculty direction, with consent. May be repeated.

6000 Doctoral Research and Dissertation (3-15) E

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. Prereq: 5140. Recommended prereq: 5100.

6200 Seminar in Communication Topics (3) Identification, presentation, and analysis of special issues and problems in communication. Organization and strategy in writing research proposals. Prereq: 5100, 5120, 5140. Recommended prereq: 6100 or consent of instructor.

6300 Survey Research Methods in Communications (3) Survey methods applied to opinion and communications media research problems. Planning, sampling, questionnaire construction, data gathering (personal, mail, and telephone), data processing and interpretation. Attitude measurement and message testing applications. Prereq: 5120 or consent of instructor. Prereq or coreq: Basic statistics.

6520 Seminar in Historical Research Methods in Communications (3) Materials and methods in historical, descriptive, and legal research in communications theory and behavior. Prereq: 5100, 5120. Recommended prereq: 5140, 6100. A

Advertising

Professors:

R. Joel (Head), M.A. Wisconsin; A. D. Fletcher, Ph.D. Illinois; D. G. Hileman, Ph.D. Illinois; S. K. Zeigler, Ph.D. Michigan State.

3650 Advertising Copy and Layout (4) Ideas and their translation into persuasive words and pictures. Principles and techniques of copy and layout. Lectures and labs. Prereq: 3600 with grade of "C" or better or consent of instructor. F, W

4000 Advanced Advertising Copy and Layout (4) Creative strategy and execution of advertisements for mass media. Problems in idea creation for advertisers. Lectures and labs. Prereq: 3630 of grade of "C" or better or consent of instructor. F, W

4360 Advertising Media (3) Media, markets, and audiences. Evaluation of media in relationship to communication needs of advertisers. Prereq: 3000 with grade of "C" or better or consent of instructor. S

4460 Cases and Problems (3) The case approach to the study of advertising problems. Analysis of campaigns and trends. Prereq: 3630, 3650 and 4360 or consent of instructor. F, W

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 approaches; media selection; preparation of advertisements. Prereq: 3650, 4000 and 4360 or consent of instructor. W

5310 Current Issues in Advertising (2) Current socioeconomic, legal, ethical, and cultural issues in advertising and communication to determine advertising's role in and responsibility toward society. Emphasis on both marketing and behavioral science aspects of advertising. Consideration of
creativity, media, management, and research. Ex- 5350 Advanced Advertising Research (3) Nature, 5510 Creative Projects (3) Creative or problem solv- 5570 Independent Study (3) E 5610 Public Affairs Broadcasting (3) News and 5620 Broadcast Law and Regulations (3) Sociopolitical 5630 Broadcast Documentary Writing (3) Role of 5650 Radio-Television Program Development (3) Planning 5700 School of Journalism

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. Laster, M. A. Tennessee; R. A. Shirley, M. A. Tennessee; M. K. Sidel, Ph.D. Northwestern.


4010 Speech for Broadcasting (3) Fundamental broadcast conditions affecting the announcer; pronunciation and oral interpretation of American English. Speech, Italian, German, and French pronunciation. Prereq: Speech 2311. F, W

4020 Radio Production (3) Study of radio productions, past and present. Familiarization with production tools and techniques. Group and individual production activities. Prereq: 2750 or consent of instructor. Cannot be taken for graduate credit by communications majors. E

4030 Television Production (3) Overview of elements of television production: camera, sound, lighting, film, videotape recording, optics, and studio control centers. Presented with the layperson and professional broadcast student in mind. Prereq: 4020 or consent of instructor. Cannot be taken for graduate credit by communications majors. E

4040 Advanced Television Production (3) A self-contained course in program originating, producing, directing and performing with orientation to the professional broadcast student. Prereq: 4030 or consent of instructor. Sp

4100 Broadcast News Operation (3) Theory and practice in covering local news and public events. Emphasis on radio and television. Gathering and production of news broadcasts, using tools of broadcast newswriter. Prereq: 3610 and 3670 or consent of instructor. 2 hrs. and 1 lab. Sp

4670 Radio-Television Management (3) Business policies and practices of networks and stations. Dependent functions, cost and income figures, sales techniques, promotion, advertising agencies, and governmental regulations. Lectures by professional broadcasters. Prereq: 2750 or consent of instructor. F, Sp.

4680 Broadcast Sales Management (3) Problems and practices of television and radio sales, case studies in sales development pricing, promotion, and other areas of sales management. Prereq: 2750 or consent of instructor. Sp

5140 Educational Broadcasting (3) Summary, analysis, application, and evaluation of television and radio broadcasting for educational purposes. Sp

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

5610 Public Affairs Broadcasting (3) News and public affairs function in broadcasting stations and networks, including management, economics, personnel utilization, sources of program materials, ethical and legal aspects of program development, particularly press conferences, interviews, and news specials. Prereq: 3610 or consent of instructor. W

5620 Broadcast Law and Regulations (3) Sociopolitical control of broadcasting; effect of laws, regulations, and public pressures upon station policies, with emphasis on standards and practices of broadcasting media in terms of regulation. Prereq: Journalism 4410 or 5210 or consent of instructor. F

5630 Broadcast Documentary Writing (3) Role of documentary in radio and television. Research, writing, and criticism of documentary programs. Sp

5650 Radio-Television Program Development (3) Planning basic program structures for broadcasting stations. Historical trends in programming and current programming practices as related to audience requirements, governmental policy, and competitive conditions. Individual studies of program development on both local station and network levels. Prereq: 2750 or consent of instructor. Su, F

5670 Independent Study (3) E

5700 School of Journalism

Professors: J. A. Crook (Director), Ph.D. Iowa State; J. C. Cady, Ph.D. Iowa; J. B. Haskins, Ph.D. Minnesota; J. Hoherberg, B. Litt. Columbia; B. K. Leiter, Ph.D. Southern Illinois; R. Lynn, Ph.D. Southern Illinois

Associate Professors: J. N. Adenson, M.S. Tennessee; G. Shaddow, Ph.D. Bowling Green; G. A. Everett, Ph.D. Iowa; E. F. Shaw, Ph.D. Stanford; F. B. Thomburg, M. A. Florida

Assistant Professor: J. P. McKeans, Ph.D. Minnesota

3120 Writing Feature Articles (3) Selection of topics and practice in writing feature articles for newspapers, magazines, and company publications. Prereq: 2220 or consent of instructor. E

3410 Communications Law (3) Statutory law and judicial precedents affecting mass communications media. Legal aspects of communication activity. Prereq: 3110 or consent of instructor. E

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

3720 Advanced Public Relations (3) Preparation of communications materials to gain support from various public relations. Prereq: 3710. F

3810 Specialized Publications (3) Editorial and design considerations for company publications and small magazines. Prereq: 2220 and 3310 or consent of instructor. W, Sp

3990 Journalism Research Methods (3) Use of social science research methods in journalism with emphasis on survey techniques. Interpretation and communication of research findings to public. W, Sp

4130 Editorial Writing (3) Analysis of editorial policies, practices, pages. Writing of editorials and columns, with emphasis on study and use of rhetorical devices and logic. Sp

4150 Issues in Journalism (3) Topics vary. May be repeated. Maximum 6 hrs.

4310 Reporting Public Affairs (3) Reporting news of courts, politics, and government. State, county and local coverage. Prereq: 2250 and senior standing. F, Sp

4400 Newspaper Management (3) Daily and weekly business operations. Developments in newspaper management. Sp

4560 Investigative Reporting (3) investigative and interpretive reporting of complex or specialized subjects to place news in perspective or to clarify situations. Emphasis on writing for publication. Prereq: 2220. W

4710 Public Relations Cases (3) Case studies and application of public relations principles to problems in business and industry, government, institutions, trades and professions; solving problems in public relations situations. Prereq: 3720. Sp

4810 Journalism in the High School (3) Functions and methods of high school publications. Staff organization, writing and editing techniques, editorial problems, and business management. Su

4910 News and Feature Photography (3) Advanced principles and methods in black-and-white photography. Emphasis on news and feature photographs, and picture stories. Prereq: 3910 or consent of instructor.

4950 International Communications (3) Communication of news and opinion among nations and the world. Theoretical and practical approaches to the study of world news organizations, the press as a factor in international affairs, barriers to the flow of information, comparison of world press systems. F

4970 Independent Study (3) May be repeated. Maximum 6 hrs.

5210 Government and the Press (3) Historic and current problems in the relations of executive, judicial, legislative, and regulatory segments of government and press. Prereq: 3110 or consent of instructor. W

5250 Public Opinion and Mass Media (3) Nature of public opinion with emphasis on role of press in its formation and how the press in turn is influenced by public opinion. Prereq: 4410 or consent of instructor. W, Su

5510-20-30 Writing and Editing Projects (3, 3, 3) Specialized writing or editing interests, such as agriculture, politics, labor, finance, science, technical as well as general publications. Prereq: 2220 or 2232.

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. Sp

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. Sp

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. F

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

5970 Independent Study (3)
College of Education

William H. Coffield, Dean
E. Dale Doak, Associate Dean for Undergraduate Programs
Helen B. Watson, Associate Dean for Graduate Studies
Madge M. Phillips, Director, School of Health, Physical Education, and Recreation
Charles M. Peccolo, Director, Bureau of Educational Research and Service

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 degree, the Specialist in Education degree, and the Doctor of Education and Doctor of Philosophy degrees.

MAGOR

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, conducting research, and assisting others in development of research proposals in the College of Education. Developmental activities relate to change efforts in curricular content and 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.

EDUCATIONAL OPPORTUNITIES PLANNING CENTER

The Educational Opportunities Planning Center (EOPC) works with school districts in the Tennessee-Kentucky area to help meet their desegregation and sex discrimination needs by assisting with needs assessment and by helping develop plans to meet the needs. Staff members provide in-service training for local district personnel. Such training is directed toward solutions of curricular, human relations, and other types of problems created or compounded by school desegregation and sex discrimination. On-site evaluation of locally installed practices and continuing cooperative evaluation of the progress of local programs are additional major efforts. This program is funded by the U.S. Office of Education.

SCHOOL PLANNING LABORATORY

The School Planning Laboratory (SPL), located in Claxton Education Building, assists schools and colleges in integrating curriculum offerings with architectural designs, organizing regional institutes to promote innovative construction concepts, encouraging full staff utilization to secure an optimal learning environment, facilitating renovative projects within existing buildings, and conducting custodial clinics on proper maintenance techniques. Course work relating specifically to school planning is offered through the Department of Administration and Supervision, while two-year graduate assistantships are under the administrative auspices of the Laboratory.

Departments of Instruction

Art and Music Education

C. H. Ball, Head

Art Education

DEGREE

MAJOR

Art Education

Professor:
Associate Professor:
H. N. Hall, Ed.S, Peabody.
Assistant Professors:
P. Johansen, Ed.D, Indiana;

The Master of Science degree in Art Education is offered for art teachers, supervisors, and art-trained persons holding
Moreover, it is possible to achieve Tennessee provides both thesis and non-thesis options. The program electives as follows:

**Quarter hours**

1. Art Education 5310, 5320 and electives ........................................... 18
2. Education Curriculum and Instruction 5710, and electives ......................... 9
3. Minor (selected with committee) .................................................. 9
4. Thesis (Art Education 5000) .......................................................... 9

The non-thesis option requires 45 quarter hours as follows:

**Quarter hours**

1. Art Education 5210, 5310, 5320, and electives .................................. 21
2. Education Curriculum and Instruction 5600, and electives .......................... 9
3. Minor (selected with committee) .................................................. 9
4. Electives ............................................. 6

The thesis option requires satisfactory completion of an oral examination prior to awarding the degree. The non-thesis option requires satisfactory completion of a final written comprehensive examination. Both the oral and written exams are conducted by the student’s Master’s degree committee.

Not all courses in art education are offered regularly each quarter, so the student should plan his or her program carefully with a faculty advisor.

### Music Education

**MAJOR**

- **DEGREE**
  - M.S.

**Professors:**
- C. H. Ball (Head), Ph.D. Peabody
- A. W. Humphreys, Ed.D. Illinois; W. J. Julian, Ph.D. Northwestern
- Associate Professors:
- Assistant Professor:
  - M. C. Moore, Ph.D. Michigan.

**Thesis and non-thesis programs lead to the Master of Science degree in music education.**

- **Prerequisite preparation:**
  - undergraduate degree

Both graduate students in music education must pass proficiency examinations in music theory and applied music.

**Requirements for thesis program:**
- 45 quarter hours: 3. Curriculum and Instruction 5610 or equivalent.
- 4. Specific course requirements:
  - a. Curriculum and Instruction 5610 or equivalent.
  - b. Music Education 5710.
  - c. Satisfactory performance of research activities in required courses in music education listed below.
  - 3. Curriculum:
    - a. A major: at least 27 quarter hours in music education.
    - b. A minor: at least 15 quarter hours in music.
    - c. 9 quarter hours in professional education, including Curriculum and Instruction 5610 and Educational Psychology 4760 or equivalents and a 3-hour elective.

With the exception of the required courses listed and with approval of the student’s advisor, courses may be selected (15 quarter hours) including:

- One seminar (3 hours), 5210, 5220, 5250, 5710.
- a. Music: Six quarter hours in applied music (piano; voice; a band or orchestra instrument; or theory and composition).
- b. Education (limited elective of 6 quarter hours): Educational Psychology 4760 or 5050, 5320, or other appropriate course in educational psychology with 3 hours credit.
- c. Electives (with approval of advisor):
  - a. Music Education: 12 credit hours from courses numbered 5000.