Junior

Agricultural Economics Electives .......................... 6
Rural Sociology Elective .................................. 3
Speech 2311 .................................................. 4
Economics 3110 ........................................... 4
Statistics 2100, 3220 and ................................. 6
Nondepartmental Agricultural Electives .............. 6

Senior

Agricultural Economics and Rural Sociology Electives .......................... 15
Economics Elective ........................................ 3
Speech 3021 or Communications Elective .................. 4 or 3
Nondepartmental Agricultural Electives ................. 6
Elections ...................................................... 23 or 24

TOTAL: 198 hours

Or equivalent honors courses.

AGRICULTURAL EDUCATION AND RURAL SOCIOLOGY CURRICULUM

Advisers: Professor Wiegars and Associate Professors Craig and Todd

The curriculum in agricultural education is planned in cooperation with the College of Education. All agricultural education courses are offered in the College of Education. This curriculum is designed to prepare students for entering professional agricultural education service. Graduates are qualified to teach vocational agriculture. The curriculum also provides training for those who wish to enter farming, industry and governmental services associated with agriculture, and other occupations.

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

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

Freshman

Agriculture 1110-20-30-40-50 .............................. 20
English 1510-20 .......................................... 8
Mathematics 1540-50-60 .................................. 12
Biological Science Electives .............................. 8

Sophomore

Chemistry 1110-20-30 or 1510-20-30 and .......................... 8
4 hours geology or physics

Chemistry 1610-20 and 8 hours of geology and/or physics ........................................ 16
Economics 2110-20-30 ................................ 9
Biological Science Elective ............................. 4
English Elective .......................................... 4
Nondepartmental Social Science and Humanities Electives .......................... 12
Elections ...................................................... 9

Hours Credit

Agricultural Education 3450-60-70 .......................... 9
Educational Psychology 3810 .......................... 3
Education C & I 3020 .................................. 3
Animal Science 3310 .................................. 3
Animal Science 4820 .................................. 4
Horticulture Electives .................................. 3
Geology or Physics Elective ............................ 4
English, Journalism, Speech Electives .................. 6
Agricultural Mechanization 3110 .................. 3
Agricultural Electives .................................. 9

Senior

Agricultural Economics 4120 ................................ 3
Agricultural Education 4350-60 .................. 15
Social Sciences and Humanities Elective ................. 4
Agricultural Electives .................................. 10
Health Elective .......................................... 3
Elections ...................................................... 16

TOTAL: 198 hours

*One hour must be in PE.
Requires admission to teacher education.

Agricultural Engineering

AGRICULTURAL ENGINEERING CURRICULUM

Advisers: Professors Luttrel and Sewell

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

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

The curriculum gives training in the fundamentals of engineering applied to problems of agriculture. In the senior year, the comprehensive design of systems and their components is emphasized.

Graduates may pursue careers in design, analysis, or development in these following specialty areas: agricultural power and machinery; agricultural structures and environment; electric power and processing; soil and water conservation engineering; food engineering.

The curriculum provides for elective courses which can be taken in the student's area of interest. Students should check with their advisers each quarter regarding the selection of courses.

Students majoring in agricultural engineering are eligible to participate in the Engineering Cooperative Scholarship program, Engineers' Day program, and other student activities in the College of Engineering. They are also eligible for selection into Tau Beta Pi and Alpha Zeta. Agricultural engineering majors interested in the Cooperative Engineering Scholarship program should consult with the head of the Department of Agricultural Engineering.
Specialized education. Graduates are employed by industry, government and educational institutions generally in the areas of management, promotion, sales and training related to agricultural products, materials and services.

**Freshman Hours Credit**
- Agricultural Engineering 1130: 3
- Basic Technology 120-20-30: 12
- Basic Engineering 1410: 3
- Chemistry 1110-20-30: 12
- English 1510-20: 8
- Math 1840-50-60: 12

**Sophomore**
- Agricultural Technology 110-40: 8
- Biology 1210-20 or 3110-20: 12
- Engineering Science and Mechanization 3311, 3760: 8
- English or Communications Elective: 3
- Graphics 1310-20-30: 6
- Math 2840-50-60: 12
- Physics 2310-20-30: 9

**Junior**
- Agricultural Engineering 3100: 1
- Agricultural Engineering 3610-20-30: 12
- Electrical Engineering 2010-20 or 3110-20: 6
- Engineering Sci. and Mechanics 3100: 3
- Engineering Sci. and Mechanics 3120 or 3320: 3
- English or Communications Elective: 3
- Engineering Sci. and Mechanics 3510 or 3520: 3
- Computer Science 3150: 3
- Mechanical Engineering 3311, 3540: 3
- Speech 2111: 4
- Plant and Soil Science 2130: 4
- Humanities-Social Science Elective: 3

**Senior**
- Economics 2110: 3
- Agricultural Engineering 3840: 4
- Agricultural Engineering Elective Group: 6
- Agricultural Science 4120-30: 2
- Electrical Engineering 3200 or 3310 or 3335: 3
- Humanities-Social Science Electives: 15
- Technical Electives: 6
- Electives: 12

TOTAL: 198 hours

*Or equivalent honors course.

*Students with less than 28 ACT math score must take Math 1500 prior to 1840-50-60.

*Agricultural Engineering elective group: any two of Agricultural Engineering 4610, 4630, 4640.

*Humanities-Social Science electives from such fields as history, economics, government, literature, sociology, psychology, or fine arts (not more than three areas).

*The selection of technical electives must have approval of student's advisor and the department head prior to registration in the course.

**Agricultural Mechanization Curriculum**

Advisers: Professors Luttrell and Shelton

The agricultural mechanization curriculum is administered by the Department of Agricultural Engineering and leads to the degree of Bachelor of Science in Agriculture. The curriculum prepares students to apply principles, techniques and systems of engineering, agricultural science and business to the broad industry of agriculture. Agricultural mechanization courses encompass power and machinery, electrification and processing, structures and environment, and soil and water conservation. By selecting either Production and Processing Option or the Business and Industry Option, students, with assistance from their advisor, may structure their program to obtain either a broad or a highly specialized education.

- Food Technology and Science 3200: 4
- Food Technology and Science 3840: 3
- Food Technology and Science 4140: 3
- Forestry 2610: 3
- Forestry 3200: 3
- Plant and Soil Science 3110: 3
- Plant and Soil Science 3510: 3
- Plant and Soil Science 3520: 3
- Ornamental Horticulture 3010: 3
- Ornamental Horticulture 3020: 3

**Agricultural Extension Education**

Advisers: Professor Dotson and Associate Professor Carter

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

**Animal Science**

Advisers: Professors Johnson, Betner, Chamberlain, McLaren, Merriman, Montgomery, Murphee, Richardson, Shirley, Shrode, Swanson; Associate Professors Barth, Lidwally, and Assistant Professors Conrck, Hitchcock, Holloway, Masinup and Smithing.

This curriculum is designed to prepare students for leadership careers in livestock and in related industries. Swine, poultry, sheep, dairy and beef cattle production and management may be involved, providing the opportunity for special or additional training in the dynamic livestock and husbandry technology (production). Through course selection, the student, therefore, may prepare for general or livestock farming, management, business, or science or elect the pre-veterinary courses preparatory for specialization. Elective selection permits special training for work with feed companies, meat animal, milk, egg or poultry production, managerial or marketing groups, other educational agencies, supply and equipment cooperatives, agricultural extension service, agricultural communication, public relations, and various organizations associated with agriculture.

Students have the opportunity, through course selection, to procure the equivalent of double majors in animal science with vocational education, plant and soil science, agricultural economics, or other available departments.

**Freshman Hours Credit**
- Agricultural Engineering 1110, 1130, 1140: 12
- Biology 1210, 1230: 20
- Chemistry 1110, 1120, or 1510-20: 8
- English 1510-20-30: 8
- Mathematics 1540-50-60 or 1840-50-60: 12

**A Business and Industry Option Courses**

- Accounting 2120: 3
- Agricultural Economics 3320: 3
- Agricultural Economics 4240: 3
- Agricultural Economics 4260: 3
- Agricultural Economics 4280: 3
- Animal Science 3310: 3
- Business Law 4110: 3
- Industrial Management 4830: 3
- Journalism 2220: 4
- Marketing 3110: 3
- Psychology 3450: 3

**B. Production and Processing Option Courses**

- Agricultural Economics 4120: 3
- Agricultural Economics 4270: 3
- Agricultural Economics 4280: 3
- Animal Science 2610: 3
- Animal Science 3310: 3
- Animal Science 3520: 3
- Animal Science 3530: 3
Sophomore

Hours Credit

Agriculture 1120, 1150.......................... 8
Animal Science 2810.......................... 3
1Chemistry 1130 or 1530, and 3211-19 or 2230, or Nutrition 3310.......................... 8
Economics 2110-20.......................... 6
Microbiology 2010.......................... 4
Plant and Soil Science 2130.................. 4
Physics Elective............................ 4
Speech 2311 and
Communications Elective.................. 7
Electives.................................. 6

Junior

Non-Animal Science Agricultural
Electives.................................... 6
Animal Science (Core required: Animal Science 3210, 3220, 3320, 3330, 3410, 3420, 3510)............ 23
Directed Electives - Evaluation............ 3
Communications Elective.................... 3
Electives.................................. 9
Humanities-Social Science Electives....... 6

TOTAL: 198 hours

*Or equivalent honors courses.

Electives allow students to select an area for specialization. Those interested in production would select additional courses in agriculture; in business administration, in economics, agricultural economics, finance and accounting; in research in chemistry, zoology, physics and statistics, etc. Electives should be chosen with career objectives in mind and in consultation with the adviser.

PRE-VETERINARY MEDICINE CURRICULUM

Advisors: Professors Merriman, Blattner, Chamberlain, McClaren, Montgomery, Murphree, Richardson, Shirley, Shrode, Associate Professors Barth, Lidvall. Assistant Professors Cornick, Hitchcock, Holloway, Masinicup, Smalling

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

A suggested schedule for the Pre-Veterinary Medicine—Animal Science student is given below which will allow for the completion of the above pre-veterinary requirements by the end of the third year and 2) allow the student to make normal progress toward completing the requirements for a degree in agriculture with a major in animal science. It is strongly recommended that the student carry a normal load of at least 16 to 18 hours per quarter.

First year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>English 1510</td>
<td>8</td>
</tr>
<tr>
<td>Mathematics 1540, 1550, 1560</td>
<td>12</td>
</tr>
<tr>
<td>Biology 1210-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Agriculture 1130</td>
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<tr>
<td>Humanities electives</td>
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<td><strong>TOTAL</strong></td>
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Second year

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<thead>
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<tr>
<td>Chemistry 3211-21-31</td>
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<tr>
<td>Chemistry 3219-29-39</td>
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</tr>
<tr>
<td>Physics 2210-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Agriculture 1110</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>4</td>
</tr>
<tr>
<td>Speech 2311</td>
<td></td>
</tr>
<tr>
<td>Animal Science 3410, 2810, 3320</td>
<td>12</td>
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<tr>
<td>and 3330</td>
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</tr>
<tr>
<td>Humanities electives</td>
<td>4</td>
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<td><strong>TOTAL</strong></td>
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Third year

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<th>Course</th>
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<tbody>
<tr>
<td>Biochemistry 4110-20</td>
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<tr>
<td>Microbiology 2610</td>
<td>5</td>
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<tr>
<td>Economics 2120</td>
<td>3</td>
</tr>
<tr>
<td>Social Science electives</td>
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<td>Humanities electives</td>
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<td>1Animal Science electives</td>
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<td>2Electives</td>
<td>20</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>52</strong></td>
</tr>
</tbody>
</table>

*Students with a strong math background may omit Math 1540 and start with 1550 or elect to take the 1840-50-50 series.

*Recommended elective for students with limited or no practical animal experience and required for those attempting to obtain the B.S. in Agriculture with a major in animal science in both the regular program and for those accepted to UT College of Veterinary Medicine after 3 years and who wish to obtain the B.S. in Agriculture with a major in animal science after completion of the first year in the College of Veterinary Medicine (see below).

It is recommended that the student include AS 3420, one 3000 level evaluation course and one management course.

*For the student accepted at the end of the third year of pre-veterinary medicine and desiring to receive a B.S. in Agriculture with a major in animal science upon successful completion of the first year in the University of Tennessee College of Veterinary Medicine, the following are required: Agriculture 1150 or equivalent food technology and science course, Plant and Soil Science 2130, other agriculture outside of animal science 6 hrs. (suggested Agricultural Mechanization 4460, Food Technology and Science 3840, Agricultural Biology 3210, Plant and Soil Science 3140).

*Students wanting to complete pre-vet requirements, but wishing to major in a department other than animal science, should consult with the appropriate departmental advisor for a proper selection of electives.

ANIMAL SCIENCE CURRICULUM WITH A PRE-VET OPTION

This program is designed for students accepted by the U.T. College of Veterinary Medicine after the third year who wish to obtain a B.S. in Agriculture with a major in animal science upon completion of the first year in the College of Veterinary Medicine. The student will need to complete the requirements as established by the College of Veterinary Medicine. In addition, the student will need to complete the following courses in the College of Agriculture AG 1110 or equivalent AG Econ. course; AG 1150 or equivalent FT & S course; AS 2810, 3420, one 3000 evaluation course, and one 4-hour management course; P 310, other agriculture other than AS, 6 hours. In addition, the following general requirements must be met in order to meet certain rules of UTK and the College of Agriculture in granting degrees: 1. The last 45 hours of the three-year program must be taken at UTK. 2. At least 18 hours of upper division technical agriculture must be taken at UTK. 3. The student must complete the first year in the U.T. College of Veterinary Medicine and with the substitution of appropriate courses from the first year and the completion of a minimum of 198 hours will be granted a B.S. in Agriculture with a major in animal science. It is the student's responsibility to complete the above requirements and to initiate the request for the degree.
Food Technology and Science
Advisers: Professors Miles and Overcast, Associate Professors Collins and Melton.

Food technology and science is the application of the sciences and engineering to the manufacture, preservation, storage, transportation, and consumer use of food products. Processing of raw food materials into consumer products by canning, freezing, dehydrating, fermenting, preserving, etc., is taught with emphasis on basic principles rather than on specific commodity procedures. Therefore, young men and women who plan to enter food technology must have an interest in the sciences, particularly chemistry, biology, microbiology, and physics.

This curriculum is designed to prepare students for a professional career in positions in the food industry such as food microbiologist, food chemist, quality evaluation and control supervisor, plant foreman and manager, packing specialist, ingredients specialist, etc. The Model Curriculum of the Institute of Food Technologists was used as a guide in developing this curriculum. A special problem course provides opportunity for practical training in food processing plants and laboratories or federal and state laboratories.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1110-30-40-50</td>
<td>16</td>
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<tr>
<td>English 1510-20</td>
<td>8</td>
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<tr>
<td>Mathematics 1540-50-60</td>
<td>12</td>
</tr>
<tr>
<td>Physics 1210-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
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Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture 1120</td>
<td>4</td>
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<tr>
<td>Chemistry 1110-20-30 or 1510-20-30</td>
<td>12</td>
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<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
</tr>
<tr>
<td>Food Technology and Science 2110-20</td>
<td>7</td>
</tr>
<tr>
<td>Microbiology 2610</td>
<td>5</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Communications or English Elective</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>198 hours</strong></td>
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</tbody>
</table>

Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Mechanization 3510</td>
<td>4</td>
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<tr>
<td>Chemistry 2230 or Nutrition 3310, Nutrition 3220-30-39</td>
<td>12</td>
</tr>
<tr>
<td>Food Technology and Science 3210-20</td>
<td>7</td>
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<tr>
<td>Food Technology and Science 4210</td>
<td>3</td>
</tr>
<tr>
<td>Microbiology 3810</td>
<td>4</td>
</tr>
<tr>
<td>Plant and Soil Science 3610</td>
<td>3</td>
</tr>
<tr>
<td>Communications or English Elective</td>
<td>3</td>
</tr>
<tr>
<td>Social Science Elective</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
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Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Food Technology and Science 4010</td>
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<tr>
<td>Food Technology and Science 4110-20, 4310, 4810, 4920</td>
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<td>Food Science 4010</td>
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<td>Nutrition 3410</td>
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<td>Electives</td>
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<td><strong>Total</strong></td>
<td><strong>192 hours</strong></td>
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**FOREST RESOURCE MANAGEMENT CURRICULUM**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Botany 1110-20 or Biology 1210-20</td>
<td>6</td>
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<tr>
<td>English 1510-20</td>
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<tr>
<td>Forestry 1620</td>
<td>3</td>
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<tr>
<td>Mathematics 1540-50-60</td>
<td>12</td>
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<td>Physics 1210-20</td>
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<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Electives</td>
<td>3-4</td>
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**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td>Chemistry 1510-20-30</td>
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<tr>
<td>Computer Science 1410</td>
<td>3</td>
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<td>Economics 2110-20-30</td>
<td>9</td>
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<td>Forestry 3020-40-50</td>
<td>9</td>
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<tr>
<td>Plant and Soil Science 3310</td>
<td>7</td>
</tr>
<tr>
<td>Electives</td>
<td>9-12</td>
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</table>

Students entering the junior year should check with adviser to assure completion of courses prerequisite to spring quarter junior field session.

**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td>Accounting 2110</td>
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<tr>
<td>Agricultural Biology 3130</td>
<td>4</td>
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<tr>
<td>Agricultural Mechanization 2140, 3140</td>
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<tr>
<td>Forestry 3110-20, 3230, 3320</td>
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<tr>
<td>Forestry 4002-03-04-06</td>
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<tr>
<td>Electives</td>
<td>9-12</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>198 hours</strong></td>
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</table>

**Senior**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Agricultural Biology 3210</td>
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<tr>
<td>Forestry 3130, 3210</td>
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<tr>
<td>Forestry 4210-20-30, 4330, 3240</td>
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</tr>
<tr>
<td>Electives</td>
<td>20-27</td>
</tr>
</tbody>
</table>

**FOREST RECREATION OPTION**

The Forest Recreation Option provides students with opportunities to obtain an education in preparation for professional positions in the planning, development, interpretation, and management of private and public forested lands for recreational purposes. Students are also exposed to the basic philosophy and principles associated with leisure time and its use, and the relationship of forest resources to the constructive utilization of leisure time.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Botany 1110-20 or Biology 1210-20</td>
<td>8</td>
</tr>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Forestry 1620</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 1540-50-60</td>
<td>12</td>
</tr>
<tr>
<td>Physics 1210-20</td>
<td>8</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
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<tr>
<td>Electives</td>
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## Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td>Chemistry 1510-20</td>
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<tr>
<td><em>Computer Science 1410</em></td>
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<tr>
<td>Economics 2110-20</td>
<td>6</td>
</tr>
<tr>
<td>Forestry 3040-50</td>
<td>6</td>
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<tr>
<td>Sociology 1510-20</td>
<td>8</td>
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<tr>
<td>Psychology 2130</td>
<td>8</td>
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<tr>
<td>Plant and Soil Science 2130</td>
<td>7</td>
</tr>
<tr>
<td>Journalism 2210</td>
<td>7</td>
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<tr>
<td>Political Science 2200</td>
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<tr>
<td>Electives</td>
<td>6-8</td>
</tr>
</tbody>
</table>

## Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td>Forestry 3020, 3110, 3230, 3240, 3320</td>
<td>16</td>
</tr>
<tr>
<td>Plant and Soil Science 3610</td>
<td>3</td>
</tr>
<tr>
<td>Anthropology 2530</td>
<td>2</td>
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<tr>
<td>Recreation 3140</td>
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<tr>
<td>Journalism 3710</td>
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<tr>
<td>Electives</td>
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## Senior

<table>
<thead>
<tr>
<th>Course</th>
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</tr>
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<tbody>
<tr>
<td>Forestry 3210, 4210, 4230, 4240, 4330, 4440</td>
<td>20</td>
</tr>
<tr>
<td>Planning 4100</td>
<td>9</td>
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<tr>
<td>Ornamental Horticulture and Landscape Design 4120, 4180</td>
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<tr>
<td>Electives</td>
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</tbody>
</table>

**TOTAL: 198 Hours**

1. Or equivalent honors courses.
2. Twenty hours of electives to be taken from the following: Accounting 2110-20, 3510; Agricultural Biology 4030, Agricultural Economics 4330; Agricultural Mechanization 2130, 4290; Anthropology 2510-20; Astronomy 2110-20, 3070; Botany 3000, 3090, 4030, 4310; Business Law 4110; Civil Engineering 4290; Forestry 4220, 4340; Geology 1510-20, 2410; Ornamental Horticulture and Landscape Design 4210; Philosophy 2510-20; Plant and Soil Science 3250; Political Science 3565-66, 3630, 4940; Public Health 3210; Recreation 3100, 3200; Sociology 3910; Wildlife and Fisheries Science 4450, 4460, 4520; Zoology 3040, 4330.
3. *Computer Science 1510 is accepted in lieu of 1410 for those wishing to elect additional courses in this area.*

### WILDLIFE AND FISHERIES SCIENCE

Wildlife and fisheries management is the science and art of maintaining populations of wild animals at levels consistent with the best interest of wildlife species themselves and of the American public. Management goals may be aesthetic, economic, or ecological. Success depends upon wildlife and fisheries biologists giving assistance in attaining the goals for whom they serve; scholarly application of scientific information and methods to these goals; ecological perspective; and execution of programs to maintain past successes, to prevent repetition of past failures, and to prepare for future needs.

Upon completion of the four year wildlife and fisheries science curriculum, the degree of Bachelor of Science in Wildlife and Fisheries Science is awarded.

## Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>Biology 1210-20-30</td>
<td>12</td>
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<tr>
<td>Mathematics 1540-50-60</td>
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<tr>
<td>English 1510-20</td>
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<tr>
<td>Speech 2311</td>
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<tr>
<td>Forestry 1620</td>
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<tr>
<td>Physics 1210</td>
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<tr>
<td>Electives</td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
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</thead>
<tbody>
<tr>
<td>Chemistry 1510-20-30</td>
<td>12</td>
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<tr>
<td>Economics 2110-20</td>
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</tr>
<tr>
<td>Biology 3130</td>
<td>4</td>
</tr>
<tr>
<td>Forestry 3040</td>
<td>3</td>
</tr>
<tr>
<td>Plant and Soil Science 2130</td>
<td>7</td>
</tr>
<tr>
<td>Animal Science 3210</td>
<td>4</td>
</tr>
<tr>
<td><em>Computer Science 1410</em></td>
<td>3</td>
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<tr>
<td>Electives</td>
<td>11</td>
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<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Zoology 3060, 4240</td>
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<tr>
<td>Wildlife and Fisheries Science 3230</td>
<td>3</td>
</tr>
<tr>
<td>Forestry 3110, 3230</td>
<td>3</td>
</tr>
<tr>
<td>Plant and Soil Science 4310</td>
<td>3</td>
</tr>
<tr>
<td>Botany 3030</td>
<td>1</td>
</tr>
<tr>
<td>Agricultural Mechanization 3210</td>
<td>2</td>
</tr>
<tr>
<td>Electives</td>
<td>21</td>
</tr>
</tbody>
</table>

**TOTAL: 198 Hours**

1. Or equivalent honors courses.
2. Sixty hours of electives, approved by the faculty adviser, to include 6 hours of communications electives, with Journalism 2210, 2710 highly recommended.
3. Twelve hours of social science or humanities and 20 hours of electives taken from the following: Ap Biology 3210; Animal Science 3220, 3290, 3510, 3520; Biology 3110, 3120; Botany 4310; Forestry 4430, 4440; Physics 1250; Zoology 3400, 3500, 3510, 4290, 4320, 4670, 4720-29
4. *Computer Science 1510 is accepted in lieu of 1410 for those wishing to elect additional courses in this area.*

### Ornamental Horticulture and Landscape Design

**Adviser: Professor Williams**

*Human needs go beyond food, clothing, and shelter. We require a degree of control over environment, especially immediate surroundings. Ornamental plants and their use are recognized as part of the environment, hence a curriculum in ornamental horticulture and landscape design. The four areas of study within this curriculum are: horticulture, nursery management, turfgrass management, and landscape design.*

**The area of horticulture includes the science of producing flowering plants in field and greenhouse and the art and science of using these plants for the benefit of humans. Opportunities are available as greenhouse managers, floral designers, retail salesmen, garden writers, research workers, and teachers.**

**Nursery management deals with the growing of trees, shrubs, and other ornamental plants for sale. Skills necessary to be a nurseryman include horticultural knowledge and a business sense. Students in this area are prepared to work in nurseries, garden centers, botanical gardens, and arboreta. They may find opportunities also in research, teaching, writing, sales, and landscape design.**

**Turfgrass management includes all aspects of growing and caring for turfgrass, whether it be golf greens or home lawns. The increasing number of golf courses and home lawns and the emphasis on better quality make new opportunities for turfgrass managers. Such opportunities include golf course superintendents, park and recreational turf managers, operation of a lawn maintenance business, producer and seller of sod, research, teaching, and sales.**

**Landscaping means modifying the outdoor environment to the greatest use, comfort, and enjoyment. It not only means the use of trees, shrubs, and other plant material to accomplish this goal, but it also means having an understanding of the requirements for working, recreation, and housing. Emphasis in the area of landscape design is on plant material and design courses. Opportunities in this area include landscape nurserymen, landscape maintenance, garden center operation, allied sales, highway landscaping, park development, research, teaching, and writing.**

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td>Agriculture 1110-20-30-40-50</td>
<td>20</td>
</tr>
<tr>
<td><em>Introductory Biological Sciences</em></td>
<td>12</td>
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<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td><em>Mathematics 1540-50-60</em></td>
<td>12</td>
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<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td><em>Chemistry 1110-20-30 or 1510-20-30</em></td>
<td>12</td>
</tr>
<tr>
<td><em>Economics 2110-20</em></td>
<td>6</td>
</tr>
<tr>
<td><em>Speech 2311</em></td>
<td>4</td>
</tr>
<tr>
<td><em>Physics 1210 or 2210</em></td>
<td>4</td>
</tr>
<tr>
<td><em>Geology 1510</em></td>
<td>4</td>
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<tr>
<td>English or Communications Electives</td>
<td>6</td>
</tr>
<tr>
<td><em>Social Science or</em></td>
<td></td>
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<tr>
<td><em>Humanities Electives</em></td>
<td>6</td>
</tr>
<tr>
<td>Plant and Soil Science 2130</td>
<td>3</td>
</tr>
<tr>
<td>Orn. Hort. and Landscape Design 3010</td>
<td>3</td>
</tr>
<tr>
<td>Orn. Hort. and Landscape Design 3020</td>
<td>3</td>
</tr>
</tbody>
</table>

**TOTAL: 198 Hours**

1. Or equivalent honors courses.
2. Students should consult with departmental adviser for suggestions electives and suggested course of study.
3. Or equivalent physiology course.
4. *Mathematics 1840-50-60 may be substituted for students with high mathematics scores.*
Plant and Soil Science

Advisers: Professors Seatz, Skold and Swingle; Associate Professors Coffey, Reynolds and Smith; Assistant Professor Lessman.

Plant and soil science deals with field and vegetable crops and soils. Plant science includes crop breeding and genetics for crop improvement and the introduction of new varieties; crop management for high yields of high quality products; and weed control for efficient crop production. Soil science includes studies in soil formation and classification for a better understanding of our soil resources; soil management for optimum crop production and conservation; soil fertility for utilizing fertilizers efficiently; and basic studies in chemistry, physics, and biology as they apply to the soil and to a better understanding of its properties and proper use.

The plant and soil scientist must have a knowledge of the basic physical and biological sciences and, in addition, be trained in communication skills. The scientist may be broadly trained or may specialize in a more specific phase of the subject. Regardless of interest, many good jobs are available for the well-trained plant and soil scientist.

Employment opportunities differ depending upon the individual's type of training and interest. For the person who is scientifically inclined, positions are available in research with both public and private agencies. For those who wish to apply their knowledge to the solution of practical problems, positions are available with the Agricultural Extension Service as extension agents or as specialists, with the Soil Conservation Service, Forest Service, Farmers Home Administration, Production Credit Association, and other public agencies. Many plant and soil scientists are employed in private industry as technical specialists, supervisors and salesmen. Banks and other financial institutions employ plant and soil scientists as appraisers and farm managers. Others may farm on their own, manage farms for others, or work in foreign agricultural programs. Certainly, plant and soil science is basic to all agriculture, and people trained in this important field will find many opportunities to serve in modern agriculture.

Each student selecting this major must complete the basic curriculum for agriculture and fulfill the major group requirements. The curriculum in plant and soil science showing the manner in which the required courses may be taken by years is as follows:

**Freshman**
- Hours Credit: 16
  - Agriculture 1110-30-40-50
  - Lower Division Biological Sciences
  - English 1510-20
  - Mathematics 1540-50-60

**Sophomore**
- Hours Credit: 12
  - Chemistry 1110-20-30 or 1510-20-30
  - Economics 2110-20
  - Agriculture 1120
  - Plant and Soil Science 2130
  - Speech 2111
  - Physics 1210 or 2210
  - English and Communications Electives

**Junior**
- Hours Credit: 12
  - Social Science or Humanities Electives
  - Biological or Physical Science Electives
  - Agricultural Biology 3130 or 3210
  - Chemistry 2230 or 3211-19
  - Nutrition 3310
  - Animal Science 3210 or 3320
  - Plant and Soil Science 3215 or 3240
  - Plant and Soil Science Electives
  - Nondepartmental Agricultural Electives

**Senior**
- Hours Credit: 12
  - Botany 3210
  - Plant and Soil Science 4910
  - Plant and Soil Science Electives

**TOTAL: 198 Hours**

- Or equivalent honors courses.
- Student should consult with departmental adviser for suggested courses.
- Only courses taught outside the College of Agriculture will fulfill this requirement.

**GROUP A**
- Plant and Soil Science 3110, 3220, 3610, 4110, 4230, 4320

**GROUP B**
- Plant and Soil Science 3120, 3140, 3160, 3180, 3510, 3520, 3610, 3710, 4120

In addition to the specific courses, students can specialize in areas of their interest by selecting courses from the following groups.

**Agriculture**
- Agricultural Economics 4120, 4140, 4330
- Agricultural Mechanization 3210, 4210
- Animal Science 3410, 3510, 2810
- Food Technology and Science 3840; Rural Sociology 3420

**Business**
- Accounting 2120-20; Business Law 4110-20-30; Economics 2130; Finance 3110; Industrial Management 3010; Marketing 3110-20; Office Administration 4310-20

**Science**
- Biology 3110-20-30; Botany 3030, 4310
- Chemistry 2140-49, 3211-21-31, 3219-29-39; Geology 1510-20; Physics 1220-30

**Credit for Cooperative Work**

A maximum of nine quarter hours credit may be earned by supervised employment on approved jobs. To receive credit, the student must receive the recommendation of the employer, must present a satisfactory written report, and must receive a passing grade from the University professor in charge. Employment periods shall be not less than twelve weeks. At least one quarter must be spent in study on the campus between periods of employment. Prerequisites: Junior classification, with grade point average of 2.2 or above, and permission of the department head and the Dean of the College of Agriculture to register. Three hours credit, each quarter.

Short Courses and Special Events

Practical short courses in agriculture are offered for those who desire special training in certain fields. Some of these short courses are held on the Knoxville campus, others at the Buford Elliott Outdoor Club Training Center, Milan, Tennessee, and at appropriate research stations. The Resident Instruction, Research, and Extension staffs join in teaching these special courses annually and others are offered to meet immediate needs for special instruction. They are service courses and do not carry college credit.

In-service training is provided special groups, such as the teachers of vocational agriculture, through short-term courses which are offered at convenient locations in the state.

A special occasion known as Varsity Visit is held during the year. Delegates from all Future Farmers of America chapters are invited to spend a day on the agricultural campus with their advisers. Approximately 500 attend and inspect each department of the College.

**Departments of Instruction**

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

**Interdepartmental Offerings**

**Agriculture (028)**

1110 Introduction to Social Sciences for Agriculture (4) Social sciences as they relate to agriculture—agriculture in the economy; tools of social science analysis applied to agricultural problems; agriculture, its development, relation to man, industry and government. 4 hrs. and 1 lab.

1120 Introduction to Agricultural Engineering (4) Agricultural power and machinery fundamentals, agricultural structures, soil and water conservation controls, and agricultural uses of electricity. 3 hrs. and 1 lab.

1130 Animal Science for Agriculture (4) Animals in agriculture: Body systems and development, principles of inheritance, fundamentals of feeding, and function of farm animals. Animal sanitation, animal products, and the relationship to public health. 3 hrs. and 2 labs.

1140 Plant Science for Agriculture (4) Plant structure, physiology, heredity and environment in relation to growth, adaptation, and management of crops. 3 hrs. and 2 labs.

1150 Food Technology and Science in Agriculture (4) Utilization, processing, and distribution of food products. 3 hrs. and 1 lab.

4018 Honors: Seminar (3) Selected topics. Offered alternate years. Open to juniors and seniors by invitation.

4110 Agricultural Industry Field Seminar (3) A travel study of the agricultural industry involving agricultural production, processing, marketing and services, and their interrelationships. Written report required. Prior registration and permission of instructor.
Departmental Programs

Agricultural Biology (037)

Professors: L.F. Johnson, Ph.D. Louisiana State; C.J. Southwood (Head), Ph.D. North Carolina State; J.W. Hilty, Ph.D. Ohio State.

Associate Professors: C.D. Pleas, Ph.D. Clemson; H.E. Reed, Ph.D. Ohio State; J.L. Wilson, Ph.D. Tennessee.


3130 Introductory Plant Pathology (4) Principles of plant pathology illustrated by diseases of common agricultural crop plants. Prereq: Botany 1120 or Biology 1220. 3 hrs and 1 lab. (Same as Botany 3130.)

3140 Forest Pathology (4) Etiology, recognition, economic impact, and control of forest tree diseases, including wood decay and other diseases important to urban forestry and forest nurseries. Prereq: Botany 1120 or Biology 1220 or equivalent. 3 hrs and 1 lab. No credit if 3130 previously taken.

3210 Economic Entomology (4) Structure, life history, habits, and principles of control of important pests of crops, 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: 3130 or introductory microbiology. 3 hrs and 1 lab. (Same as Microbiology 4010.)

4030 Forest and Shade Tree Entomology (3) Identification, biology, ecology, and control of forest and shade pests. Prereq: 2210 or equivalent. 2 hrs and 1 lab.

GRADUATE 5000 Thesis

5010 Research Methods and Instrumentation in Plant Pathology and Entomology (3)

5210 Plant Parasitic Nematodes (4)

5220 Plant Disease Control (3)

5230 Field Crop and Vegetable Insects (3)

5240 Insect Pests of Man and Animal (3)

5260 Insect Pest Management (4)

5310 Special Problems in Plant Pathology or Economic Entomology (1-6)

5410 Seminar (1)

Agricultural Economics and Rural Sociology

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; Irving Dubov, Ph.D. California (Berkeley); L.H. Keller, Ph.D. Kentucky; F.O. Leuthold, Ph.D. Wisconsin; W.P. Haney (Emeritus), Ph.D. Minnesota; T.J. (Whitley), Ph.D. Purdue.

Associate Professors: J.R. Brooker, Ph.D. Florida; C.M. Cuskaahen, Ph.D. Michigan State; B.J. Deaton, Ph.D. Wisconsin; T.H. Kidist, Ph.D. Kentucky; B.R. McNamara, Ph.D. Purdue; S.D. Mundy, Ph.D. Tennessee; B.H. Pentecost, J.D. Tennessee; C.B. Sappington, Ph.D. Illinois; J.G. Snell, Ph.D. Michigan State; B.J. Trevena, Ph.D. Tennessee.

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

Distinguished Professor

Agricultural Economics (047)

3120 Agricultural Prices (3) Factors determining prices of farm products. Effects on price of varying degrees of competition and commodity. Sources of information on prices and related market data. Uses of price information and techniques of analysis in determining outlook for farm prices. Prereq: Agriculture 1110 and Economics 2120.

3320 Marketing Farm Products (3) American marketing system; alternative market structures, functions of marketing system, commodity marketing programs, current marketing problems and possibilities for improvement. Prereq: Agriculture 1110 and Economics 2120.

3410 Farm Business Analysis (3) Techniques of analyzing a farm business. Factors affecting farm income and efficiency. Resource acquisition, cash flow, risk, tax, and tenure consideration. Practice in decision making on simulated farm. Prereq: Agriculture 1110 and Economics 2120. 2 hrs and 1 lab.

3510 Commodity Futures Markets (3) Futures market as an instrument in marketing of primary industry products; process of putting to others the risk of adverse price change; price analysis from two view points: supply-demand and history (fundamentalist and chartist). Prereq: Junior standing. 3 hr.

3710 Consumer Demand for Agricultural Products (3) Economic principles, practices and budgeting techniques to use in purchasing of goods and services. Evaluation of advertising and other related information. Prereq: Agriculture 1110 and Economics 2120.

4120 Farm Management (3) Principles of farm organization and operation; allocating land, labor, and capital to meet changing technologies; tenure arrangements and use of credit; risks; measures of success. Use and analysis of records, exercises and planning farms. Field trips arranged. Prereq: Agriculture 1110 and Economics 2120. 2 hrs and 1 lab.

4140 Introduction to Agricultural Production Economics (3) Resource allocation, product selection, scale of operation of agricultural farms; aggregate effects of decisions made by individual agricultural farmers. Prereq: Agriculture 1110 and Economics 2120, and senior standing.

4210 Problems in Agricultural Economics (3) Supervised laboratory course in methods of collecting and analyzing information and in writing a report. Prereq: Agriculture 1110 and Economics 2120. May be repeated to a maximum of 9 hours credit.

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

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

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

4320 Agricultural Policies (3) Meaning of agricultural policy in democratic society; relationship of farm groups to public policy; problems giving rise to policies; types of agricultural policy and appraisal of results; current problem of reform. Prereq: Agriculture 1110 and Economics 2120.

4330 Land Economics (3) Problems and policies of land use, conservation, development, taxation, and tenure; population growth and demand for land; principles and theories of rent, property, value, and income. Prereq: Agriculture 1110 and Economics 2120.

4610 Management of Farm Supply and Marketing Firms (3) Operations of firms selling farm supplies and merchandising agricultural products. Emphasis on accounting data and the economic theories for decision making. Prereq: Agriculture 1110 and Economics 2120.


4710 Agricultural Law (4) Survey of law and application to the farmer, his family, and agricultural industry. Property, contracts, torts, drainage and water rights, landlord-tenant relationships, taxation and insurance, forms of business organization, estate planning, regulatory laws, and other selected topics.

GRADUATE 5000 Thesis

5002 Non-Thesis Graduation Completion (3)

5011 Special Problems in lieu of Thesis (3)

5120 Agricultural Price Analysis (3)

5130 Advanced Agricultural Production Economics (3)

5210 Seminar: Agricultural Policies (3)

5220 Seminar: Methodology of Research (3)

5230 Seminar: Adjustments to Industrialization (3)

5310 Research (3)

5410 Agricultural Marketing Analysis (3)

5420 Advanced Land Economics (3)

5440 Economics of Agricultural Development (3)

5610 Quantitative Methods in Agricultural Economics (3)

5710 Quantitative Methods in Agricultural Economics (3)

6000 Doctoral Research and Dissertation

6120-30 Seminars in Agricultural Economics (3, 3)

6210 Agricultural and Rural Transformation Problems (3)

6410 Agricultural Supply Analysis (3)

6420 Marketing and Resource Use (3)

Rural Sociology (880)

3420 Rural Sociology (3) Nature of rural society; social systems concept; rural-urban differences; nature of social relations; population characteristics and movement; problems of rural people: tenancy, farm labor, health, services, educational facilities, churches, local government; practical of industrialization.

4450 Diffusion of Agricultural Technology (3) Analysis of diffusion process whereby new technology spreads from scientists to final adopters. Topics discussed include: adoption process, communication behavior, mass media, role of professional change agents, opinion leadership, and two-step flow hypothesis. Prereq: Rural Sociology 3420, or consent of instructor.

GRADUATE 5340 Special Problems (3)

5340 Rural Sociology Seminar (3)

5450 Advanced Rural Sociology (3)

5470 Research Problems in Rural Communities (3)

5490 Rural Population Analysis (3)
Agricultural Engineering

Professors:
H. Luttrell (Head), Ph.D. Iowa State; B.L. Bledsoe, Ph.D. Oklahoma State; J.I. Sewell, Ph.D. North Carolina State; P.E., J.J. McDow (Dean of Admissions and Records), Ph.D. Michigan State, P.E.

Associate Professors:
E.A. Hensley, Ph.D. North Carolina State, P.E.; C.H. Shelton, M.S. Virginia Polytechnic; L.R. Wilhelm, Ph.D. Tennessee, P.E.

Assistant Professors:
D.O. Baxter, M.S. Missouri; F.D. Tompkins, Ph.D. Tennessee.

Agricultural Engineering (066)

1130 Introductory Agricultural Engineering (3) Basic of agricultural engineering, field of agricultural engineering. 2 hrs and 1 lab. Prereq: Open only to freshman and sophomore students in agriculture majors.

3100 Seminar (1) Presentations, discussions, reports on research techniques. Prereq: Permission of head.

3610 Soil and Water Conservation Engineering (4) Integration of hydrologic, agronomic and engineering principles for the control of agricultural water management problems involving flood and erosion control, drainage, irrigation, and water quality. Coreq: Plan and Soil Science 2130, Engr. Sci. and Mech. 3110. 3 hrs and 1 lab. Graduate credit for non-majors only.

3620 Structures for Production, Environmental Control and Waste Management Systems (4) Analysis of loads and stresses; design of wood, steel and concrete members; structural and environmental requirements of facilities for livestock and crop production and storage; physiological requirements; heat loads; insulation; moisture relationships; ventilation and waste management. 3 hrs and 1 lab. Graduate credit for non-majors only.


3640 Power Units and Machinery (4) Components and operating characteristics of internal combustion engines and tractor systems; fundamental analysis of agricultural machinery; machinery system performance and cost analyses. Prereq: Engr. Sci. and Mech. 3100. Mech. Engr. 3811. 3 hrs and 1 lab. Graduate credit for non-majors only.

4120-30 Seminar (1, 1) Presentations, discussions, reports. 4120—Professional development topics. 4130—Field trip. Prereq: Permission of department head.

4220 Special Problems in Agricultural Engineering (3) Selection, analysis, solution, and report of research problem. May be repeated for maximum of nine hours credit when engaged in Cooperative Engineering or other approved industry work. Prereq: 3100 and permission of department head.

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

4610 Design of Water Control and Waste Utilization Systems (3) Design of water control and waste utilization systems including earth dams, irrigation, drainage, land grading, hydraulic transport of wastes, and application of wastes of agricultural land. Prereq: 3010 or permission of instructor. 1 hr and 2 labs.

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

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

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

GRADUATE

5000 Thesis

5240 Environmental Control in Agricultural Structures (3)

5340 Hydrology of Agricultural and Forest Lands (3)

5440 Instrumentation in Agricultural Systems (3)

5540 Engineering Properties of Agricultural Materials and Products (3)

5640 Research Problems in Agricultural Engineering (3)

5710-20 Similitude in Design and Research (3, 3)

6000 Doctoral Research and Dissertation

6110 Seminar (1)

6310 Engineering Systems Analysis in Agriculture (3)

6610 Selected Topics in Agricultural Engineering (3)

Agricultural Mechanization (080)

2110 Agricultural Drawing and Mapping (3) Fundamentals of graphics and mapping, with emphasis on applications in agriculture and forestry. 1 hr and 2 labs.

2130 Agricultural Surveying (3) Measurement of horizontal distances and angles; differential and profile leveling; topographic surveying and mapping; area computation. Prereq: Math 1500 or permission of instructor. 1 hr and 2 labs.

2140 Forest Surveying (2) Instruments, methods, and computations used in determining distances, angles, elevations, and area related to forest management problems. Credit cannot be given for both 2130 and 2140. Prereq: Math 1560. 1 hr and 1 lab.

3100 Seminar (1) Presentations, discussions, reports on research techniques. Prereq: Permission of department head.

3110 Agricultural Mechanics (3) Organizing equipment, and managing and selling farm and shop foods; techniques, materials, and procedures in design and construction of shop projects; metal work and welding, 1 hr and 2 labs.

3140 Forest Surveying and Mapping (3) Use of low-precision methods and instruments including pacing, Abney level, topographic target tape, hand compass, and staff compass. Field measurements, computations and layouts involving random and true lines, traverses, topographic mapping and forest roads. Prereq: 2140. Ten periods of six hours period.

3210 Soil and Water Conservation Facilities (3) Leveling, topographic surveying; planning, construction, installation, operation, and maintenance of drainage, irrigation, and erosion-control systems. Prereq: Math 1550. 2 hrs and 1 lab.

3220 Agricultural Structures (3) Functional planning of structures; environmental control, construction methods, properties of building materials, and cost estimation. Prereq: Math 1550. 2 hrs and 1 lab.

3510 Agricultural Utilities and Processing Equipment (4) Electrical equipment, controls, water systems, heating and refrigerating systems; waste disposal systems. Prereq: Agri. 1120; Physics 1220. 3 hrs and 1 lab.

3560 Electrical Systems in Agriculture (3) Electrical terms and fundamentals, distribution, wiring practices, governing codes, controls and motors used in agricultural and residential facilities. Prereq: Physics 1220 or Agriculture 1120. 2 hrs and 1 lab.

4120-30 Seminar (1, 1) Presentations, discussions, reports. 4120—Professional development topics. 4130—Industry trip. Prereq: Permission of department head.

4160 Agricultural Waste Utilization and Disposal (3) Techniques, equipment, and structures for utilizing, treating, and disposing of agricultural wastes by land spreading, lagooning, and processing. Prereq: Senior standing. 2 hrs and 1 lab.

4170 Small Engines (3) Concepts and mechanics of small gasoline engines; selection, operation, adjustment, and repair of single cylinder engines. 2 hrs and 1 lab.

4180 Equipment and Techniques for Application of Agricultural Chemicals (3) Equipment for application of liquid, solid, and gaseous chemicals; system components; operational characteristics; safety considerations; calibration; selection and management; materials handling and disposal methods. 2 hrs and 1 lab.

4210 Agricultural Machinery and Tractors (4) Agricultural machinery and power units; adaptation to agricultural practices; field efficiencies, capacities, adjustment, and servicing. Prereq: Math 1550. 3 hrs and 1 lab.

4220 Special Problems in Agricultural Mechanization (3) Select-escalation, analysis, solution, and report of research problem. May be repeated for maximum of nine hours credit when engaged in approved industry work. Prereq: 3100 and permission of department head.

4290 Forest Utilities and Roads (4) Electrical service and equipment, power sources, water supply, and sanitation systems emphasizing forest recreation facilities; Planning, construction, and maintenance of forest access roads, culverts, and timber bridges. Prereq: 2130 or 2140. 3 hrs and 1 lab.

GRADUATE

5000 Thesis

5110 Research Problems in Agricultural Mechanization (3)

5210 Electro-mechanical Systems in Agriculture (3)

5410 Agricultural Machinery System Analysis (3)

5610 Selected Topics in Agricultural Mechanization (3)

Agricultural Extension Education (075)

Professor:
R.S. Dotson (Head), Ph.D. Pennsylvania State.

Associate Professor:
C.E. Carter, Jr., Ph.D. Ohio State.

3110 Introduction to Agricultural Extension (3) History, philosophy, organization; teaching methods; and relationships with other educational agencies.

4110-20 Field Studies (3, 3) Supervised work experience with county extension agents in a designated county. For senior and graduate students. Prereq: 3110, and permission of instructor. Requires living off-campus for a specified time.

GRADUATE

5000 Thesis

5011-21 Special Problems in Lieu of Thesis (3, 3)

5100 Special Problems in Agricultural Extension (1-6)

5210 Long-Range Extension Program Planning (3)

5220 Seminar (3)
5320 Evaluation in Programs of Agricultural Extension (3)

5310 History, Philosophy and Objectives (3)

5320 Volunteer Leadership in Agricultural Extension Programs (3)

5330 Supervision of Agricultural Extension Programs and Personnel (3)

Animal Science (113)

Professors:
R. R. Johnson (Head), Ph.D., Ohio State; M.C. Ball, Ph.D., Oklahoma State; J.K. Bledsoe, Ph.D., Ohio State; C.C. Chamberlain, Ph.D., Iowa State; S.L. Hart, Ph.D., Oklahoma State; H.M. Jamison, Ph.D., Tennessee; J.B. McLaren, Ph.D., Auburn; M.J. Montgomery, Ph.D., Wisconsin; G.M. Merriman, Ph.D., Missouri; D.O. Richardson, Ph.D., Ohio State; H.V. Shirley, Ph.D., Illinois; R.R. Shreve, Ph.D., Iowa State; E.W. Swanson, Ph.D., Missouri; R.L. Tugwell, Ph.D., Kansas State; C.E. Wylie (Emeritus), A.M., Missouri.

Associate Professors:
W.R. Beck, Ph.D., Tennessee; K.M. Barth, Ph.D., Rutgers; G.L. Bratton, D.V.M., M.S., Texas A&M; W.R. Clement, Ph.D., Kansas State; E.R. Lidwal, M.S., Tennessee; M.J. Montgomery, Ph.D., Auburn.

Assistant Professors:
J.A. Corrick, Ph.D., Tennessee; D.G. Doyle, Ph.D., Cornell; J.P. Hitchcock, Ph.D., Michigan State; R.W. Johnson, Ph.D., Tennessee; F.B. Masinmunc, Ph.D., Kansas State; M.H. Sims, Ph.D., Auburn; J.D. Smalling, Ph.D., Texas A & M.

Instructor:

In addition, academic expertise of staff members at CAFS and Oak Ridge are used on appropriate occasion.

2610 Fundamentals of Meat Animal Evaluation (3)
Criteria for live animal and carcass evaluation; market classes and grades of beef, pork and lamb; understanding and use of methods for determining muscle and fat relationships in cattle, hogs and sheep.

2610 Introduction to Biometrical Aspects of Animal Science (3)
Biometrical concepts for optimum comprehension of material presented in upper division animal science courses. Basic ideas in probability as introduction to concept of distributions. Expected values of variables as most probable values. Bi-normal and normal distributions and their prevalence in agricultural and biological material. Planning effective experiments. Association or relationship of variables. Assessment of validity of hypotheses. 2 hrs and 1 lab.

2610 Farm Animal Management Practices (3)
Integration of management practices and skills into cattle, horse, sheep, poultry and swine enterprises. Practices and skills include dehorning, castrating, docking; foot care; shearing; age determination; identification; preparing for show and sale; vaccinating and immunizing; and controlling parasitism. Facilities needed in livestock management including buildings, fences, corrals, equipment, space requirements and restraining devices. 2-3 hrs lab.

2800 Introduction to Light Horses (3)
Scope and role of light horse industry; breeds—development, function and use; soundness; tack; introduction to management problems. May not be used by animal science majors to meet graduation requirements. 2 hrs and 1 lab.

3210 Anatomy and Physiology of Farm Animals (4)
Skeleton and joints; skeletal muscles, blood and microcirculation, and nervous, cardiovascular, respiratory, digestive, renal and endocrine systems; demonstration of physiocompheno phenomena. Pre-req: Biology 1210 or Agriculture 1130. 3 hrs and 1 lab.

3220 Physiology of Reproduction (3) Comparative anatomy and physiology of reproductive systems of horses, swine, poultry, sheep, dogs, cats, masturbation, implantation, prenatal growth, parturition and initiation of lactation; endocrine regulation of reproductive phenomena. Pre-req: 3210 or permission of instructor. 2 hrs and 1 lab. (Same as Zoology 3220.)

3310 Introduction to Animal Nutrition and Feeding (3) Nutrient utilization, function and requirements of farm animals; chemical and physical parenteral and factors affecting feeding value; balancing rations for beef and dairy cattle, swine and poultry. Not available to students with credit in 3310. Pre-req: Agriculture 1130; Chemistry 1130 or 1530. 2 hrs and 1 lab.

3320 Animal Nutrition (3) Properties, functions, utilization and deficiency symptoms of essential nutrients; nutritive value determinations and their utility. Pre-req: Agriculture 1130 and one quarter of organic chemistry. 2 hrs and 1 lab.

3330 Feed and Ration Formulation (3) Feedstuffs, additives, feeding standards, nutrient requirements and ration formulation for beef and dairy cattle, sheep, horses, swine, poultry and laboratory animals. Pre-req: 3320. 2 hrs and 1 lab.

4100 Herd in Animals (3)
Basic chromosomal mechanism of heredity with emphasis on Mendelian principles and exceptions such as linkage and cytoplasmic inheritance. Introductions to biochemical basis of heredity and to quantitative inheritance. Illustrations of principles related to species familiar to agriculture students. Pre-req: Agriculture 1130. 2 hrs and 1 lab.

3420 Principles of Animal Breeding (3) Genetic principles involved in breeding of economic species. Genetic basis of variation. Partitioning of variance according to various kinds of causative differences such as differences in genetic makeup and environment. Selection and consequences. Matings systems and effects on populations. Planning of breeding programs. Pre-req: 3410 or equivalent. 2 hrs and 1 lab.

3430 Breeds of Farm Animals (3) Study of evolution and formation of breeds; cattle, horses, poultry, sheep and swine. Breeding structure. History, development, characteristics and improvement programs of various breeds. Prospects for purebred industry and impact of crossbreeding programs. 2 hrs and 1 lab.

3510 Animal Hygiene and Sanitation (4) Parasitic, viral and bacterial organisms in farm animals; immunization; control and protection against disease; veterinary regulations and quarantine; herd health programs. Pre-req: Microbiology 2010, 3000 or 2610 or permission of instructor. 3 hrs and 1 lab.

3520 Avian Diseases (3) Major diseases; characteristics, prevention and treatment, management systems and practices for domestic birds, upland game birds and water fowl. 2 hrs and 1 lab.


3620 Dairy Cattle Judging and Classification (3) Comparative judging, oral reasons; typical classification programs. Economic value of classification ratings. 3 labs.

3630 Judging Poultry and Poultry Products (3) Grading of poultry and poultry products according to USDA standards; factors influencing quality. 1 hr and 2 labs.

3640 Horse Selection and Judging (3) Selection, judging, evaluation of soundness and scoring of working and pleasure horses for functional efficiency. Pre-req: Permission of instructor. 1 hr and 2 labs.

3810 Nutrition and Management of Laboratory Animals (3) Principles of feeding, breeding and handling of laboratory animals; specific species' requirements, peculiarities and research for which they may be used and handling of laboratory animals. Pre-req: Agriculture 1130 and permission of instructor. 2 hrs and 1 lab.

4110 Special Problems in Animal Science (1-4) Special research and/or special reports based on supervised independent investigation or review of literature dealing with subjects applicable to field of animal science; approved supervised work experiences in State-Federal laboratories or in private industry. May be repeated for a maximum of 9 hrs credit. Pre-req: Senior standing and permission of instructor and Department Head.

4210 Physiology of Lactation (3) Development, anatomy and function of mammary gland; milk production; hormonON polymorphisms. Pre-req: permission of instructor. 3 hrs and 1 lab.

4220 Avian Physiology (3) Anatomy and physiology of avian species with emphasis on poultry. Pre-req: 3210. 2 hrs and 1 lab.

4230 Applied Reproduction in Farm Animals (3) Application of methods and techniques in collection, evaluating, inseminating, and raising progeny of farm animals. Pre-req: permission of instructor. 3 hrs and 1 lab.

4310 Feeding Systems for Ruminants and Horses (3) Application of nutrition and feeding principles in comparison of feeding systems utilized during the life cycle of cattle, sheep and horses. Pre-req: 3320. 2 hrs and 1 lab.

4320 Feeding Systems for Poultry and Swine (3) Application of nutrition and feeding principles in comparison of feeding systems utilized during the life cycle of poultry and swine. Laboratory feeding trials to demonstrate basic nutrition concepts. Pre-req: 3320. 2 hrs and 1 lab.

4410 Applied Animal Breeding (3) Applications of principles studied in Breeds of Farm Animals. Study by special- ists in breeding of dairy cattle, meat animals and poultry. Pre-req: 3420. 2 hrs and 1 lab.

4610 Advanced Beef Cattle, Dairy Cattle, Horse, Poultry, Sheep and Swine Judging (2) Specialization in judging, evaluation, selection, and presentation of oral reasons on classes of beef cattle, dairy cattle, sheep, horses, poultry, and swine. May not be repeated for credit. Pre-req: Permission of instructor. 2 hrs.

4680 Beef Cattle Production and Management (4) Integration of principles of nutrition, physiology and breeding into complete beef cattle management programs. Topics will include structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Alternatives evaluated in terms of production efficiency and economic returns. Pre-req: Completion of animal science sophomore and junior core courses or permission of instructor. 3 hrs and 1 lab.

4620 Dairy Cattle Production and Management (4) Integration of principles of nutrition, physiology and breeding into complete dairy cattle management programs. Topics will include structure of industry, enterprise establishment, systems of production, production practices, and herd improvement programs. Alternatives evaluated in terms of production efficiency and economic returns. Pre-req: Completion of animal science sophomore and junior core courses or permission of instructor. 3 hrs and 1 lab.

4630 Sheep Production and Management (4) Integration of principles of nutrition, physiology and breeding into complete sheep management programs. Topics will include structure of industry, enterprise establishment, systems of production, production practices and herd improvement programs. Alternatives evaluated in terms of production efficiency and economic returns. Pre-req: Completion of animal science sophomore and junior core courses or permission of instructor. 3 hrs and 1 lab.

4640 Poultry Production and Management (4) Structure of poultry industry, organization and management of poultry enterprises including rearing, housing, feeding, processing and marketing. Pre-req: Completion of animal science sophomore and junior core courses or permission of instructor. 3 hrs and 1 lab.

4650 Light Horse Production and Management (3) Integration of principles of nutrition, physiology and breeding into light horse management programs. Topics include structure of industry, systems and practices of production, individual animal and herd.
Food Technology and Science (390)

Professors: J.T. Miles (Head), Ph.D. Wisconsin; T.B. Harrison (Emeritus), M.S.A. Tennessee; W.W. Overcast, Ph.D. Iowa State.

Associate Professors: J.L. Collins, Ph.D. Maryland; B.J. Demott, Ph.D. Illinois; G.C. Melton, Ph.D. Kansas State.

Assistant Professors: S.L. Melton, Ph.D. Tennessee; M.J. Riemann, Ph.D. Kansas State.

2110 Food Regulations and Standards (3) Federal and state laws regulating food industry. Quality grades and standards and methods of evaluating processed foods. 2 hrs and 1 lab.

2120 Food Manufacturing (4) Preparation of raw materials, grading, slicing, grading, extruding, filtering, dumping, mixing and heat processing. Prereq: Math 1550. 3 hrs and 1 lab.

3020 Dairy Products I (4) Procurement, processing and distribution of fluid milk. Manufacture of frozen and condensed dairy products. 3 hrs and 1 lab.

3210 Food Composition (3) Determination and study of major constituents of fresh and processed foods with emphasis to changes and interactions occurring during processing and storage. Prereq: Chemistry 1120 or 1520 or 1620. 2 hrs and 1 lab.

3220 Food Preservation (4) Survey of food industry and preservation methods for preservation of deterioration of food. Prereq: Microbiology 2610. 3 hrs and 1 lab.

3570 and Grading Dairy Products (3) Market standards and grades of dairy products with practice in grading milk, ice cream, butter, cheese and other specialized dairy products. 1 hr and 2 labs.

3610 Meat Evaluation and Grading (3) Grading standards for quality and quantity and principles of evaluating beef, pork and lamb. Practice in grading and judging carcasses and cuts. 1 hr and 2 labs.

3840 Meat Science (3) Processing methods, carcass characteristics, animal husbandry, slaughter, cutting, selection, curing, freezing and cookery. 2 hrs and 1 lab.

4000 Problems in Food Technology (1-4) Research problems in student's area of interest. Required written report. Supervised experience in state or federal laboratories or approved industries encouraged. May be repeated for a maximum of 9 hours credit. Prereq: Permission of head department.

4010 Food Technology and Science Seminar (1-3) Review of literature; oral and written reports. May be repeated for a maximum of 3 hours credit. Prereq: Junior standing and permission of instructor.

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

4050 Advanced Food Composition (3) Intensive study of food constituents and changes affected by processing and storage. Prereq: 310 and Nutrition 3320 or equivalent. 2 hrs and 1 lab.

4110 Food Plant Sanitation (3) Environment for manufacturing and preserving foods. Prereq: Junior standing. 2 hrs and 1 lab.

4120 Food Quality Assurance (3) Systems for quality assurance in food industries. Various methods including statistics used by food industries to assure desired quality of food products. Prereq: Junior standing and 3 hrs statistics. 2 hrs and 1 lab.

4210 Food Additives (3) Substances used in food manufacturing with emphasis on properties and functions. Prereq: Nutrition 3320 or equivalent.

4310 Food Packaging (3) Characteristics and application of materials and containers to packaging requirements of food. Prereq: 3220. 2 hrs and 1 lab.

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

4810 Microbiology in Food Manufacturing (3) Relationship of growth of common food microorganisms in fermentative and enzymatic changes occurring during processing and manufacture of foods. Prereq: Microbiology 2610 or equivalent. 1 hr and 2 labs.

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

4840 Meat Products Manufacturing (3) Prepared meat products with emphasis on sausage making and information relating to cost controls, inspection and meat science. Prereq: 3840 or consent of instructor. 1 hr and 2 labs.
3120 Wood Technology (4) Wood properties; identification of defects caused by insects and microorganisms. Prereq: 3040, 3050 (3050 may be taken concurrently). 2 hrs and 2 labs.

3130 Forest Protection (3) Destructive agencies; forest insects, disease; chemical, mechanical, and biological control; prevention and suppression.

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

3220 Forest Products and Utilization (3) Harvesting, processing, marketing factors in stand conversion, intensification, and development. Prereq: 3120.

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

3240 Introduction to Forest Recreation (3) Concepts of leisure time in recreation. Historical development of forest recreation. Forest recreation resources. Development, management, and administration of forest recreation areas. 1 hr and 1 lab.

3320 Principles of Silviculture (3) Influence of site factors on reproduction, growth, development, and character of forest vegetation; classification of forest structure; silvicultural laws. Prereq: 3260 or Biology 2130, 3040, Plant and Soil Science 2130. 3 hrs.

3730 Conservation (3) Forest resources of state, nation, and world; forests in soil and water conservation; wildlife management and recreation; conservation programs.

4002 Utilization (3) Wood-using industries; process forest products—sawmills, tree-log-jumber grading, pulpwood operations, flooring plants, treating plants; plant layout, flow diagrams. Prereq: 3120.

4003 Field Methods of Timber Inventory (4) Field measurements of forest trees; timber cruising; determining appropriate sample design for specific purposes; tree and stand growth; site evaluation; field problems. Prereq: 3110 and Agricultural Mechanization 3140.

4004 Forest Practice (3) Management of forest lands by public and private organizations; "multiple-use" concept as it influences management decisions; interaction of public, private, and state organizations in forest management decisions; management prescriptions. Prereq: 4006. Satisfactory-No Credit.

4006 Silvicultural Methods (4) Methods and applications in forest regeneration, site preparation, planting and seeding, modifications of cutting methods to obtain desired goals and benefits. Prereq: 4002, 4003.

4020 Forest Watershed Management (3) Water as a forest resource; role of forests in the hydrologic cycle; control of water quantity, quality, and regimen; watershed planning. Prereq: 3250 or permission of instructor. 3 hrs. Two overnight field trips.

4110-20-30 Problems in Forestry (1-4, 1-6, 1-6) Special research or individual problems in forestry. Prereq: Senior standing. Total not more than 9 hrs.

4210 Forestry Organization and Administration (3) Forestry organization; planning concepts and types of private industrial forest resource management; regional management; management concepts. Prereq: Junior Field Session for seniors in Forest Resources Management or senior standing for majors in the Recreation Option and Wildlife and Fisheries Science.

4220 Forest-Resource Management (4) The forest as an integration of resources; review of traditional timber-management concepts; the multiple-use concept; valuation of forest resources for decision making and planning; taxation of forest firm. Prereq: 4210.

4230 Forest-Resource Management Plants (4) Field problems and case studies in forest-resource management; the forest as a system; management of forest enterprises as a producer of timber, recreation, and wildlife services, watershed services, and wildlife; producing multiple services; preparation of a comprehensive plan based on optimizing forest uses. Prereq: 4210.

4240 Interpreting Forest Resources (3) Principles and techniques of interpreting forest resources; importance of environmental interpretation to management of forest resources; development and administration of interpretive services. Possible overnight field trips required. Prereq: 3240 or equivalent.

4330 Forest Policy (3) History of forestry in United States with emphasis on development of forest resource policies; current policies influencing development and management of forest resources; brief survey of policy implications of forest resource organizations in public and private sectors. Prereq: 4004.

4340 Aerial Photography in Forest-Resource Management (3) Use of conventional aerial photographs in forest-resource management; interpretation of detail, aerial inventories, preparation of cover-type maps, uses of other remotely sensed imagery. Prereq: Civil Engr. 4260 and Forestry 3110 or equivalent. 1 hr and 2 labs.

4420 Forest Tree Improvement (3) Forest tree improvement related to silviculture; nature and purposes of tree improvement; molecular genetics; principles of tree cytology and population genetics; importance of seed source; variation, selection, and breeding programs. Prereq: 4006, Botany 1120, 2 hrs and 1 lab.

4430 Regional Silviculture of the United States (3) Factors that influence silvicultural management of important tree species in North America. Importance of forests and forestry to a region—physiography, geology, soils, climate and weather, sites and site types, ecology, problems of protection, and silvicultural characteristics of the more important species. Prereq: 4006 and 4210.

4440 Forest Recreation (3) Forest lands as a recreation resource; interrelationships of forest recreation and other management activities; development and management of forest recreation areas; socio-economic and political determinants of recreation development and management. Prereq: 6 credits in social sciences and/or economics. Junior standing. 2 hrs and 1 lab.

GRADUATE

5000 Thesis

5110 Special Problems in Forestry (1-4)

5220 Seminar in Forest Tree Biology (3)

5230 Seminar in Forest Management (3)

5240 Seminar in Forest Genetics (3)

5250 Recreation Planning for Forests and Associated Lands (3)

5260 Industrial Forestry (3)

5270 Topics in Forest Industries Management (3)

5310 Seminar (1)

Wildlife and Fisheries Science (993)

3200 Wildlife Resources and Their Conservation (3) Wildlife resources of the United States; their interrelationships with soil, water, and forests and other plant life; contribution to economic and social development; important methods of conserving wildlife. General course for non-wildlife and fisheries science majors.

3230 Wildlife Management (3) Same as Forestry 3230. Available for graduate credit for non-forestry majors in the Recreation Option and non-wildlife and fisheries science majors.

4110 Problems in Wildlife and Fisheries Sciences (1-4) Special research or problems in wildlife and fisheries science. Prereq: Senior standing. May be repeated. Maximum credit 9 hours.

4450 Game Mammals (4) Classification, identification, distribution, natural history, and management principles of game mammals in North America. Prereq: 3230 or one year of zoology. 2 hrs and 2 labs.

4460 Game Birds (4) Biology, classification, identification, distribution, and management principles of game birds in North America. Prereq: 3230 or one year of zoology. 2 hrs and 2 labs.

4500 Problems in Wildlife and Fisheries Sciences (1-6) Special research or individual problem in wildlife and fisheries science. Prereq: Senior standing. May be repeated to a maximum of 9 hours credit.

4510 Freshwater Fishery Biology (4) Principles and methods of fish population estimation; population dynamics; sampling techniques and equipment; warm- and cold-water environments as commercial and sport fisheries. Prereq: 1 year biology and 8 hours mathematics, or consent of instructor. 3 hrs and 1 lab or field period.

4520 Management of Lakes and Ponds (4) Principles and methods of lake and pond management for commercial and sport fishes; design, renovation, and stocking procedures; biology and culture of managed species. Prereq: 4510 or consent of instructor. 3 hrs and 1 lab or field period.

4520 Seminar (1) Review of literature. Oral and written reports. Prereq: Senior standing. May be repeated to a maximum of 3 hours credit.

GRADUATE

5000 Thesis

5110 Special Problems in Wildlife and Fisheries Science (1-6)

5210 Seminar in Wildlife Conservation (3)

5310 Seminar (1)

5400 Advanced Topics in Wildlife Science (3)

5450 Wildlife Diseases (3)

5460 Predator Ecology (3)

5500 Advanced Topics in Fisheries Science (3)

Ornamental Horticulture and Landscape Design (740)


3010 Landscape Gardening (3) Home ground organization and beautification; identification and use of ornamental plants; principles of planting; preparation of plans. 1 hr and 2 labs.

3020 Home Grounds Management (3) Techniques involved in managing plants around the home; outdoor propagation, transplanting, planting site selection and preparation, mechanical and chemical growth control, lawn care practices, and recognition of plant ailments; tools and equipment necessary for care of home plants. Prereq: 1 hr and 2 labs.

3030 Plant Propagation (3) Physiology, methodology, and environmental requirements for propagation. Prereq: 8 hrs. of biological science, 2 hrs. and 1 lab.

3040 Floral Design (3) Principles and techniques in flower arranging with emphasis on arrangements for home, church, and special occasions. 1 hr and 2 labs.

Institute of Agriculture 61
3110 Greenhouse Management (3) Factors involved in production and research. Structures, soils, pest control measures, heating, ventilating, lighting, water supply, crop succession. Prereq: 2 hrs and 1 lab.

3210 Turfgrass Management (4) Practical turfgrass management; cultivar selection, identification, and establishment; basic applied fertility programs, mowing and irrigation practices, and thatch control; pest identification and control. Prereq: Plant and Soil Science 3110 and 8 hrs biological sciences. 3 hours and one lab.

3810 Ornamental Trees (3) Classification, identification, adaptation, and landscape design values. Prereq: 8 hrs biological science or permission of instructor. 3 labs.

3820 Ornamental Shrubs and Vines (3) Classification, identification, adaptation, and landscape design values. Prereq: 8 hrs biological science or permission of instructor. 3 labs.

3830 House Plants (3) Classification, identification, native habitat, propagation, adaptation and care. Prereq: 8 hrs biological science or permission of instructor. 1 hr and 2 labs.

4120 Landscape Design I (4) Design and development of projects, planning, organization, structure, selection and use of plant and structural materials. Emphasis on recreational design from analysis of contemporary trends and objectives to projected needs and development of plans. Prereq: Senior standing and permission of instructor. 2 hrs and 2 labs.

4140 Landscape Design II (4) Advanced theory of design. Pictorial and abstract approach to landscape design. Emphasis on recreational design from analysis of contemporary trends and objectives to projected needs and development of plans. Prereq: Senior standing and permission of instructor. 2 hrs and 2 labs.

4150 Wholesale Nursery Management (3) Production, labor and sales management; location, layout, culture, equipment and facilities. Prereq: 3630 or equiv. 2 hrs and 1 lab.

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

4180 Park Design (4) Design criteria for parks and outdoor recreation systems. Park site selection, analysis, planning and management as related to needs and natural and economic resources. Evaluation of aesthetic and functional quality of parks and their impact on environmental quality of rural and suburban communities. Prereq: 4120. 4140 recommended. 2 hrs and 2 labs.

4220 Advanced Turfgrass Management (4) Principles and scientific basis of turfgrass culture; adaptation, ecology, health, physiology, soil fertility and grass nutrition; climatic influences on grass culture; physiology of clipping and water management; traffic effects and compaction; and the physiological influences of pest infestations and control measures. Prereq: 3210. 3 hrs and 1 lab.

4310 Floriculture I (3) Principles and practices employed in producing cut flower crops. Application of principles of plant physiology as they control flowering, plant quality, and harvesting schedules. Prereq: 3110. Plant and Soil Science 3040 or equivalent. 2 hrs and 1 lab.

4320 Floriculture II (3) Principles and practices employed in producing floricultural crops in pots and other containers. Analysis of problems associated with growing plants in a very restricted soil volume under controlled greenhouse conditions. Prereq: 3110. Plant and Soil Science 3040 or equivalent. 2 hrs and 1 lab.

4400 Individual Problem Study (1-5) May be repeated to a maximum of 10 hours credit.

4610 Seminar (1) Current problems in ornamental horticulture and landscape design. Prereq: Junior standing and permission of instructor.

GRADUATE
5000 Thesis

5011-21 Special Problems in Lieu of Thesis (3-5, 3-5)

5100 Special Problems in Ornamental Horticulture and Landscape Design (3)

5210 Golf Course Design, Development, and Management (4)

5210 Park and Public Grounds Management Systems (4)

5500 Seminar (1)

Plant and Soil Science (792)

Professors: L.F. Seatz (Head), Ph.D. North Carolina State; F.F. Bell, Ph.D. Iowa State; H.A. Fribourg, Ph.D. Iowa State; L.M. Johnson, Ph.D. Wisconsin; W.L. Parks, Ph.D. Purdue; B.S. Pickett (Emeritus), Ph.D. Michigan State; L.N. Skold, M.S. Kansas State; M.E. Springer, Ph.D. California (Berkeley); H.D. Swingle, Ph.D. Louisiana State.


Assistant Professors: F.L. Allen, Ph.D. Minnesota; G.M. Lessman, Ph.D. Michigan State.

*Clyde B. Austin Distinguished Professor.

2130 Soils (4) Nature and properties of soils. Physical, chemical, biological processes in soils and their influence on plant growth. Prereq: Chemistry 1120 or 1520 or 1620. 3 hrs and 1 lab.

3020 Crop Ecology (3) Crops and environment; geographic location; site, heat, light, water and interplant relationships as a basis for judgment of cultural practices used to modify environmental factors. Prereq: 8 hours biological science. 2 hrs and 1 lab.

3110 Soil Fertility and Fertilizers (4) Properties of soils in relation to plant nutrient availability and uptake. Methods of soil fertility evaluation and principles of fertilizer use; manufacture and properties of fertilizers. Prereq: 2130. 3 hrs and 1 lab.

3120 Grain and Oil Crops (3) Distribution, improvement, morphology, culture, harvesting, and utilization of corn, small grains, grain sorghum, soybeans, and related crops. Prereq: 2130. 8 hrs biological science. 2 hrs and 1 lab.

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

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

3180 Fruit Crops Management (4) Soils, planting, cultivation, development of fruit crops plantations; pest control, harvesting, packing, storage and processing. Prereq: Ag Biology 3210, 3310. 3 hrs and 1 lab.

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

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

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

3520 Commercial Production of Warm Season Vegetables (3) Characteristics, economic importance, adaptability, and production for fresh and processing markets; emphasis on sweet potatoes, beans, tomatoes, pepper, cucurbits, sweet corn, okra, and watermelon. Prereq: 8 hrs biological science. 2 hrs and 1 lab.

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

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

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

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

4230 Soil Analysis (3) Analytical techniques used in soil chemistry and soil fertility studies. Prereq: 4110, Chemistry 2140 or concurrent. Two 3-hr labs.

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: One year biological sciences and one year chemistry, 3 hrs and 1 lab.

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

4400 Problems in Plant and Soil Science (1-6) Special research or library problems in some phase of plant and soil science. May be repeated to a maximum of 9 hours credit.


GRADUATE
5000 Thesis

5011-21 Special Problems in Lieu of Thesis (3, 3)

5100 Special Problems in Plant and Soil Science (1-6)

5200 Soil-Crop Relationships (3-6)

5240 Soil Productivity and Management (3)

5250 Pedology (4)

5310 Design and Interpretation of Experiments (3)

5340 Soil Physics (3)

5370 Advanced Soil Fertility (3)

5390 Soil Physical Chemistry (3)

5600 Seminar (1)

5710 Advanced Plant Genetics (3)

5720 Quantitative Genetics (3)

5750 Advanced Plant Breeding (4)

5810 Crop Climatology (4)

5820 Advanced Crop Physiology and Ecology (4)

5850 Mechanisms of Herbicide Action (3)
Excellent opportunities exist also for veterinarians interested in research—both research for the direct benefit of animals and research conducted with animals but for the benefit of humans. Such opportunities are available at colleges and universities, and with governmental agencies, private research institutions, and biological and pharmaceutical companies.

Facilities

Administrative offices of the College of Veterinary Medicine are located in Morgan Hall on the Agricultural Campus. The Department of Animal Science is housed in Brehm Animal Science Building; also on the Agricultural Campus, and the Department of Microbiology is located in Hasler Biology Building on "The Hill" of the University of Tennessee, Knoxville.

The remainder of the College will be housed in a large teaching hospital which is under construction and scheduled for occupancy in 1978. In the interim, the Department of Environmental Practice is housed in the old Agricultural Engineering Building, and the Department of Urban Practice is housed in McCord Hall on the Agricultural Campus. Headquarters of the Department of Pathobiology temporarily is in Morgan Hall.

The College also is developing research farm facilities at Knoxville and several satellite teaching-research facilities in middle and west Tennessee.

Admission Requirements

Admission to the professional program of the College of Veterinary Medicine is limited to that number for which an education of high quality can be provided with the resources available to the College.

To qualify for admission a candidate must have completed at least the following minimum preveterinary requirements:

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Minimum Credits</th>
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<tbody>
<tr>
<td>English, including speech</td>
<td>12</td>
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<tr>
<td>Humanities</td>
<td>12</td>
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<tr>
<td>Social Sciences</td>
<td>12</td>
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<tr>
<td>Mathematics through</td>
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<tr>
<td>introductory calculus</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry: general</td>
<td>12</td>
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<tr>
<td>organic</td>
<td>12</td>
</tr>
<tr>
<td>biochemistry</td>
<td>6</td>
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<tr>
<td>Physics</td>
<td>12</td>
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<tr>
<td>Biology or zoology</td>
<td>12</td>
</tr>
<tr>
<td>Microbiology</td>
<td>4</td>
</tr>
<tr>
<td>Animal Science, including</td>
<td></td>
</tr>
<tr>
<td>nutrition and genetics</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>115</td>
</tr>
</tbody>
</table>

*Excluding laboratory.
Includes history, literature, music or art appreciation, philosophy, religion or foreign language.
*Includes economics, anthropology, political science, psychology, sociology and geography.

Preveterinary requirements may be completed in any accredited college or university which offers courses equivalent to those at The University of Tennessee.

The College of Agriculture of The University of Tennessee offers an excellent 3-year preveterinary curriculum which satisfies all the course requirements for admission to the College of Veterinary Medicine. (For description see Preveterinary Medicine curriculum, College of Agriculture.) Students who are admitted to the College of Veterinary Medicine following completion of this preveterinary curriculum will receive a Bachelor of Science degree in Animal Science upon completion of the first year (3 quarters) of the professional veterinary medicine curriculum. (For the specific description see Preveterinary Medicine curriculum, College of Agriculture.)

Admission Procedure

Admission of new students will be for the fall quarter each year. Applicants will be screened carefully by a faculty committee to determine those best qualified for admission within the College enrollment quota.

Applicants will be considered in the following order of priority: (1) residents of Tennessee; (2) legal residents of states with which the University of Tennessee has contracts for veterinary medical education; (3) residents of other states or foreign countries.

Forms and instructions for making application for admission may be obtained from:
Director of Admissions
320 Student Services Building
University of Tennessee
Knoxville, Tennessee 37916

Applications must be completed and mailed so as to reach the Director of Admissions by January 31 each year. All preveterinary requirements must be completed by the end of the spring term of the year in which the student plans to enroll in the College of Veterinary Medicine.

Course Load

The professional curriculum of the College of Veterinary Medicine requires a specific number of hours for each quarter. A student may enroll for fewer or more than that number only with the permission of the Dean. Because of the sequential and highly integrated character of the professional curriculum, all courses in a given quarter are considered prerequisite to those in the succeeding quarter.

Professional Curriculum

The professional curriculum in veterinary medicine is a three-year, year-round program, including summers. The first year (3 quarters) consists mostly of preclinical subjects such as anatomy, physiology, microbiology, parasitology, and general pathology. The second year (4 quarters) includes the study of diseases, their causes, diagnosis, treatment, and prevention. The final year (4 quarters) is devoted to intensive training in the solving of animal disease problems, including extensive clinical experience in the teaching hospital. The curriculum also provides for education in the science and art of veterinary medicine and in paramedical subjects such as animal behavior, medical communication, professional ethics, jurisprudence, economics, and practice management.
### Departments of Instruction

#### Animal Science (114)—Veterinary Medicine


In addition, academic expertise of staff members at CARL and Oak Ridge are used on appropriate occasion.

ES240-50 Veterinary Physiology (3, 4) Introduction to concepts of physiology which form a base for clinical applications and for formal training in pharmacology, medicine, pathology and surgery. Order: D.O. sequence: respiratory, cardiovascular, digestive, genito-urinary, etc. Three hours of lecture for ES240; 4 hours of lecture for ES250.

ES510-20 History (4, 4) Microscopic anatomy of respiratory, cardiovascular, digestive, urinary, and reproductive systems; integument; and special sense organs. Sequence of presentation as listed above. Correlated with ES240-50. Two hours of lecture and two laboratories.

ES540-50 Gross Anatomy (4, 4) Gross anatomy of common domestic species. Lecture; dissection of embalmed specimens; study of prossections, slides, models, and living animals. Cardio-vascular and respiratory systems are first in sequence. Correlated with ES510-20 if possible. One-hour lecture and two laboratories.

### Environmental Practice (346)

Professor: H. Kitchen (Head), D.V.M. California (Davis), Ph.D. Florida.

Associate Professor: J.W. Oliver, D.V.M., Ph.D. Purdue.

Assistant Professor: D.J. Black, D.V.M. Michigan State.

ES611-12 Pharmacology (1, 2) Theories of transport across membranes. Introduction to principles of drug action and distribution. Receptor theory, adverse drug reactions; correlated with Animal Science 8240-50. One-hour lecture for ES611; Two hours of lecture for ES612.
Urban Practice (886)
Professor: E.D. Gage (Head); D.V.M. Texas A & M.

Interdepartmental Offerings
Veterinary Medicine (897)
8010 Professional Relations (1) Professional speaking and writing, research design and data interpretation, and public relations. One-hour lecture.
8310 Introduction to Veterinary Medical Practice (2) Species, breed identification, basic care, feeding, restraint and handling. Introduction to physical diagnosis, intravenous techniques, blood sampling, etc. One-hour lecture and one laboratory.
8311 Introduction to Veterinary Medical Practice (2) Physical diagnosis, history taking, and client relations; anesthetic principles, agents, and techniques. One-hour lecture and one laboratory.
8312 Introduction to Veterinary Medical Practice (2) Basic surgical principles, preparation for surgery, wound healing and suturing; fundamentals of radiology. Correlated with 8320. Two hours of lecture and one laboratory.
8320 Medical Science Interactions (3) Multidiscipline laboratory. Demonstrations and surgical experiments to illustrate variety of physiologic and pharmacologic principles. Emphasis on anesthetic techniques, basic clinical chemistry. (i.e., acid-base) provides appreciation for survival and emergency techniques and for drug action. Correlated with 8312. Two hours of lecture and one laboratory.
8340 Integumentary System (4) Diseases of integumentary system of animals, with emphasis on laboratory examination, interpretation of pathologic features, diagnosis, and treatment.
8341 Hemopoietic System (3) Pathogenesis, diagnosis, and clinical management of diseases of hemopoietic and lymphoid organs and tissues.
8342 Alimentary Tract (8) Pathogenesis, diagnosis and treatment of diseases of alimentary tract and digestive organs.
8343 Patterns of Disease (5) Host-agent relationship in disease of animals. Pathogenesis, laboratory diagnosis, control, and public health significance are the major components. Principles of epidemiology and their application in the study of diseases in animal populations illustrated.
8344 Focal Problems (1) Series of sessions to consider specific diagnostic problems or paramedical subjects important to veterinary medical practice. Some sessions consider differential etiology, diagnosis, and treatment of certain disease signs or symptoms; others consider implications for veterinarian of medical jurisprudence and ethics, practice economics, and veterinary history. May be repeated. S/NC.
8350 Endocrine—Reproductive System (7) Reproductive diseases of animals with emphasis on anatomic and functional aspects. Biochemical and physiologic basis of endocrine diseases of animals, including diagnosis, treatment, and management. Endocrine interrelationships, including methods of examination of mammary glands and reproductive tract, diagnosis, and treatment.
School of Architecture

Donald D. Hanson, Dean
William J. Lauer, Assistant Dean

The School of Architecture presents a comprehensive program of undergraduate courses, offering opportunities for both general studies and professional specialization.

The intent of the School's program is to complement the University's learning opportunities by providing curricula and course offerings in the art and science of design. Accordingly, the program is composed of informational, analytical, and integrative studies related to the human role in shaping and changing the built environment. The welfare of this environment, which is a vital factor in the well-being of people everywhere, depends upon the knowledge and skill which those educated in the design sciences can contribute to continuing processes of developmental change.

A goal of this revised program is to provide undergraduate studies in scholarly and professional areas related to the knowledge base and methodologies for working with the built environment, while at the same time utilizing the School's resources, faculty, and facilities to their maximum effectiveness.

Facilities

The design laboratories, classrooms, computer room, library, and administrative offices of the School are located in three buildings—Estabrook Hall, Melrose Annex, and Alumni Gym. It is entirely appropriate that one of the newest schools, and particularly architecture, should be temporarily housed in venerable Estabrook Hall constructed in 1898. Other disciplines that share direct interests with the School—engineering, fine arts, and industrial arts—are also located in the building. The Melrose Annex provides additional space for upperclass research and design activities.

The principal library holdings of the School are contained in the James D. Hoskins Library. Extensive general collections and reference volumes in architecture and the fine arts are housed there. These sources are augmented by the branch library of the School where students have access to all the reference books in current use.

Student Sponsorship

A number of $500 sponsorships are made available each year by architectural firms of Tennessee. These grants cover tuition and fees, travel expenses to a designated U.S. city for study purposes, subscription to a foreign architectural journal, purchase of special drafting equipment, and purchase of special reference books for the student recipients' personal libraries. Honor students in all the upper four years are eligible for this aid, but it is primarily awarded to students of third and fourth year standing.

Lecture Program

ROBERT B. CHURCH MEMORIAL LECTURESHIP

The income from the endowment is used to sponsor outstanding speakers from the profession.

General Information

Students are advised to consult the University's general requirements as stated in the front section of this catalog as well as the requirements for the School of Architecture.

Self advising will not be permitted in the School of Architecture. Students must plan their schedule by consulting with an assigned adviser in the student's area of concentration. Electives will be chosen with the concurrence of the adviser and with full consideration of the necessary prerequisites.

Requirements for Admission to Second Year Architecture

(1) satisfactory completion of first year architectural program with grade point average at least 2.3, exceptions may be made by petition only;
(2) a personal interview and evaluation of applicant's work by a designated member of the School of Architecture;
(3) application to the School of Architecture no later than June 15 preceding the start of the second year.

Students must maintain an overall 2.3 grade point average by the end of 48 hours (attempted) in order to maintain "full status" in the program. Delinquent students will be put on "temporary status" for one quarter. These students will have one quarter to raise overall GPA to a 2.3 or have minimum 2.3 on each quarter's work until overall average is raised to 2.3. If GPA is not brought up to a 2.3, the student will be dropped from the architecture program.

Third Year Prerequisites

Students are required to have all first and second year courses satisfactorily completed before entering the third year design courses, Architecture 3011-12. Students who register for a third year design course holding first or second year deficiencies may be required to drop the course at any point during the quarter.

Minor

An undergraduate minor in architecture is offered in order to enable students in other colleges to pursue studies in architecture which are relevant to their major areas of concentration. The minor will consist of not less than 18 hours. Persons interested
must obtain the consent of the Admissions Committee of architecture and dean of the School of Architecture, who will approve specific programs of study proposed by students.

Course Load
The average course load in any quarter is 17-18 credit hours. The minimum which may be taken by full-time students is 12 hours; the maximum which may be taken without approval of the dean is 20 hours.

Satisfactory/No Credit Courses
These courses, if successfully completed, will count as hours for graduation, although neither S nor NC grades will be calculated in the student's grade point average. Satisfactory is defined as C or better work on the traditional grading scale, and no credit is defined as less than C. The following regulations apply: (1) S/NC courses may not count for required courses or controlled electives; (2a) a student who desires to take a course S/NC should indicate this intention at the start of registration. A change from S/NC grading to regular grading or from regular grading to S/NC will not be permitted beyond the add deadline for each quarter. Exception: students who register for a course S/NC in a restricted area will be required to change to regular grading when the error is discovered.

Program Description
The undergraduate curriculum has two major components: a core of general and professional studies, and a range of concentrations for in-depth study. Within the scope of a professional degree program, it thus provides a number of study areas from which students may select according to their individual interests and aptitudes. Four areas of concentration—Administration, Design, History/Humanities, and Technology—each with a subset of paths, are offered; they share a common core which provides the basic prerequisites for entry into one of the study concentrations.

GENERAL CORE
The general core is an introduction to the knowledge base of the School's professional program. The courses are neither highly specialized nor overly technical; thus they are open and accessible to other disciplines within or outside the University. Although it is recommended that the series of core courses be taken in sequence, it is so constituted as to permit flexibility in scheduling, particularly to accommodate transfer students seeking elective credits. Courses in the general core, in addition to English, math, and physics, are from the following five divisions:

- Basic Design and Visual Studies
- Analytical Studies
- Man-Environment Systems
- Physical Systems
- Historical Studies

PROFESSIONAL CORE
Courses in the professional core represent subjects fundamental to professional competence in architecture. The following five divisions constitute this core:

- Structural Analysis and Materials
- Environmental Control Systems
- Professional Practice
- Architectural Design
- Practicum

Through controlled electives, required in this component, students can intensify and extend their professional skills and technical knowledge.

ACCELERATED CORE
Students demonstrating an exceptional proficiency in any of the professional core subjects may be approved for selected accelerated studies, thereby reducing the time needed to complete core requirements and allowing more time for concentration in the student's chosen area. Formal review and approval by the School are required of all accelerated course candidates.

Curricula for Architecture
All students studying for a Bachelor of Architecture degree will include the following requirements in their first three years of study. During the fourth and fifth years, the students' work will be concentrated in one of the following tracts: design, history, criticism, restoration/preservation, management, production, development, structures, systems building, or environmental controls. Refer to numbers in the 4300 sequence for architecture design lab electives. Any exceptions to the curriculum outline have been footnoted. For any additional specialized requirements, the student should inquire at the School of Architecture.

Program for Architecture

**Degree:** Bachelor of Architecture

**Major:** Architecture

<table>
<thead>
<tr>
<th>Concentrations:</th>
<th>History/ Humanities</th>
<th>Administration</th>
<th>Technology</th>
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<tbody>
<tr>
<td>Tracts:</td>
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</tbody>
</table>

Third Year
- Architecture 3011-12: 8
- Architecture 3013-14: 4
- Controlled elective or 'Tract course': 4

Total: 144 hours

**HISTORY/HUMANITIES CONCENTRATION**

**HISTORY TRACT**

<table>
<thead>
<tr>
<th>Fourth Year</th>
<th>Hours Credit</th>
</tr>
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<tbody>
<tr>
<td>Architecture Design Lab Electives</td>
<td>8 8 8</td>
</tr>
<tr>
<td>Architecture 4311</td>
<td>- 4 4</td>
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<tr>
<td>Architecture 3011-02, 3130</td>
<td>4 4 4</td>
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<tr>
<td>History 1510-20</td>
<td>4 4 4</td>
</tr>
<tr>
<td>Controlled Electives</td>
<td>- 4 4</td>
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</tbody>
</table>

**Fifth Year**

| Architecture Design Lab Electives | 8 8 8 |
| Architecture 4110, 5115 | 4 4 4 |
| Controlled Electives | 4 4 4 |
| Electives | - 4 4 |

Total: 240 hours

**CRITICISM TRACT**

<table>
<thead>
<tr>
<th>Fourth Year</th>
<th>Hours Credit</th>
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</thead>
<tbody>
<tr>
<td>Architecture Design Lab Lab Electives</td>
<td>8 8 8</td>
</tr>
<tr>
<td>Architecture 4311</td>
<td>- 8 8</td>
</tr>
<tr>
<td>Architecture 3011-02, 4110</td>
<td>4 4 4</td>
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<tr>
<td>Architecture 4140</td>
<td>- 4 4</td>
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<tr>
<td>History 1510-20</td>
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**Fifth Year**

| Architecture 4313 | 8 8 8 |
| Architecture 3130, 3140 | 4 4 4 |
| Architecture 4115, 4170 | 4 4 4 |
| Controlled Electives | 4 4 4 |
| Electives | - 4 4 |

Total: 240 hours

**RESTORATION/PRESERVATION TRACT**

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<th>Fourth Year</th>
<th>Hours Credit</th>
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<tr>
<td>Architecture Design Lab Electives</td>
<td>8 8 8</td>
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<tr>
<td>Architecture 4311</td>
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<td>Architecture 3011-02, 3140</td>
<td>4 4 4</td>
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<tr>
<td>Architecture 4170</td>
<td>- 4 4</td>
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<tr>
<td>History 1510-20</td>
<td>4 4 4</td>
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</table>

Total: 240 hours
Control Tracts of the Science Concentration will take the following: Architecture Design Lab Elective (8), Arch 3702 (4), and an elective (4).

1Tract is governed by the Controlled Electives.
2The last two quarters of Architecture Design Lab Elective may be substituted by Controlled Electives upon approval of faculty advisor.

Second Baccalaureate Degree Program

A program leading to a Bachelor of Architecture has been initiated to accommodate outstanding students holding a bachelor's degree in another field. The program condenses the major professional courses into a nine- to eleven-quarter curriculum depending on the student's performance and ability. A special committee advises, reviews student progress, and structures individual programs of study subject to approval by the dean.

Applications must show at least a 2.5 overall grade point as well as goals and abilities appropriate to the program. A personal interview is required.

Prerequisite courses include Math 1840-50 and Physics 2240-50, or their equivalents.

The following courses reflect a general advisory model:

<table>
<thead>
<tr>
<th>First Year</th>
<th>Hours / Credits</th>
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</thead>
<tbody>
<tr>
<td>Architecture 4020-21-23</td>
<td>4 4 4</td>
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<tr>
<td>Architecture 4022-24</td>
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</tr>
<tr>
<td>Architecture 4025-26-27</td>
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<td>Architecture 2011-12-13</td>
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<td>Architecture 2015-16</td>
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</table>

<table>
<thead>
<tr>
<th>Second Year</th>
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</thead>
<tbody>
<tr>
<td>Architecture Design Lab Elective</td>
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<tr>
<td>Controlled Electives</td>
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<tr>
<td>Architecture 4029</td>
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</table>

<table>
<thead>
<tr>
<th>Third Year</th>
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<tbody>
<tr>
<td>Architecture Design Lab Elective</td>
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<tr>
<td>Controlled Electives</td>
</tr>
<tr>
<td>Electives</td>
</tr>
</tbody>
</table>

TOTAL MINIMUM REQUIRED: 160

1Electives may be taken any time over the three-year period.

Controlled Electives List

**DESIGN CONCENTRATION**

Accounting 2110-20; Anthropology 2510, 2530, 3410; Audio and Speech Pathology 4750; Architecture 2101, 2102, 3113, 3712, 3910, 4110, 4137, 4160, 4710, 4720, 4721-22, 4725-26-27, 4734, 4735, 4736-37, 4739, 4771-72-73, 4775, 4780, 4785, 4900, 4910; Art 3735, 3736, 3745, 3746, 3765; Botany 1110-20, 3030, 3090; Broadcasting 3650, 4020, 4030; Business Law 4110; Child and Family Studies 2110, 3510, 3515, 3520, 4260, 4430, 4830; Chemistry 1110-20-30; Civil Engineering 4430; Crafts, Interior Design and Housing 3256, 4155, 4156, 3125, 4130, 4310; Communications 1110; Computer Science 2010, 3410, 4410; Educational Curriculum and Instruction 3310; Economics 2110-20-30, 3110, 3340, 4150; Electrical Engineering 4850; Environmental Engineering 3000, 4700; Finance 3110, 3210-30, 4350-60, 4370; Food Systems Administration 3310; Geography 2400, 3000, 3430, 3520, 3530, 4720, 4740; Geology 3510, 3520; History 4760, 4740; Industrial Engineering 4410; Journalism 3710; Law 8490; Marketing 3110, 3120, 3210, Mechanical Engineering 4220; Office Administration 2750; Philosophy 1510-20; Physical Education 3090; Political Science 4580-90; Psychology 2110-20, 2510, 3210, 3430, 4230; Real Estate 2610, 3610, 4120, 4130; Sociology 3010, 3130, 4330, 3410; Statistics 2100, 3220, 3310, Zoology 3010-20-30.

**HISTORY/HUMANITIES CONCENTRATION**

Anthropology 2520, 3610, 4600, 4650, 4740; Architecture 3110, 3113, 3115, 3120, 3125-26, 3130, 3135, 3137, 3130, 4110, 4115, 4120, 4125, 4130, 4135, 4137, 4140, 4150, 4160, 4170, 4175, 4180, 4185; Art 3730, 3711, 3720, 3730, 3755-56-57, 3765, 3755-76-77, 4875-76-77, 5855-56-57, 5770; Classics 4220; History 4670, 4740; Journalism 2210, 3120, 2220; Planning 4100. (Other electives may be accepted upon approval by the History/Humanities Area Committee.)

**ADMINISTRATION CONCENTRATION**

Accounting 2110-20, 2210; Architecture 4510, 4515, 4520, 4525, 4530, 4531, 4532, 4534, 4540, 4545, 4550, 4556, 4565; Business Administration 1110; Business Law 4110, 4120, 4130; Civil Engineering 4230, 4430; Economics 2110-20-30, 3210, 3211, 3340, 3410, 4320, 4110, 4310; Finance 3110, 3120-30, 3610, 4145; Industrial Engineering 4510, 5250, 5260, 5600; Insurance 3020; Industrial Management 3010, 3110, 3430, 4630; Journalism 3280; Marketing 3110, 3120, 4110, 4140; Office Administration 4500, 4540; Real Estate 2610, 3610, 4330, 4110, 4120; Statistics 2100; Transportation 3115, 4720.

**TECHNOLOGY CONCENTRATION**

Architecture 3712, 4710, 4711-12, 4715, 4720, 4721-22, 4725-26-27, 4731-32, 4734, 4735, 4736-37, 4739, 4771-72-73, 4775, 4785, 4875, 4910, 4920; Audiology and Speech Pathology 4750; Civil Engineering 4330, 5110-20, 5270 Computer Science 3410, 4410; Electrical Engineering 4850; Environmental Engineering 3000; Geography 4720; Industrial Engineering 4410; Mechanical Engineering 4220; Planning 4100, 5230, 5450, Statistics 3450, Theatre 3321-22, 4341-42.

**Faculty**


1001 Introduction to Human and Environmental Properties and Transactions (4) Properties and concepts of developmental change and specific "building" processes; historical study of events of human activities and products in context to their contemporary design philosophies and technologies to the present.


1004 Analytical Studies I (4) Introduction to General Systems Theory in relation to environmental analysis and design. Covers theory and application of the general systems approach and introduces problem-solving techniques, statistical analysis and design methodologies.


1006 Physical Systems (4) Introduction to properties of space-spanning and environmental control systems. System properties analyzed include static and dynamic investigations of material composition and component structures, and intra-inter system behavior. Anticipated sensory and environmental response to systems variation shall be studied.


2001 Basic Design and Analysis I (4) Introduction to environmental design analysis, decision making and evaluation methodologies applied to problems of urban and regional scale; problem-solving and prediction. Prereq: Second-year standing. Coreq: 2001.


2005 Historical Studies II (4) Concentrated examination of development of twentieth century design; architectural theory and products as derivative or counterpart to Industrial Revolution. Emergence of post-industrial era and contemporary development.

2006 Physical Systems II (4) Examination of building materials applied to systems of construction; units of mass, structure, materials, behavior and response under loading and stress, section properties. Prereq: 1006 and second-year standing.


2014 Analytical Studies II (4) Introduction to basic research methods and to environmental problem-solving. Theories and methods for collecting, organizing, manipulating and displaying (communicating) a wealth of diverse data for research and evaluation purposes. Course objective is to qualify students with concepts and techniques to utilize electronic data processing technologies as a research tool.


2016 Environmental Control Systems II (4) Design and application of environmental control systems in buildings; space conditioning, electric service and wiring, lightweight, plumbing systems and ventilation. Prereq: 2015.

2101 Pre-modern Survey I (4) Classical Tradition in architecture—Greek and Roman Architecture. Renaissance and Neo-classical revivals.

2102 Pre-modern Survey II (4) Medieval and Byzantine Architecture.

3011 Architectural Design Lab I (8) Controlled exercises designed to demonstrate integration and application of design theory and methodologies into design process. Exercises directed to aspects of architectural issues such as site analysis, and integration of multiple complex architectural systems into comprehensive architectural resolutions.

3012 Architectural Design Lab II (8) Experimental exercises designed to demonstrate integration and application of design theory and methodologies into a creative design process. Exercises directed to aspects of architectural issues such as site analysis and planning, facility programming and problem analysis, and integration of multiple complex architectural systems into comprehensive architectural resolutions.

3013 Professional Practice I (4) Survey of legal responsibilities of architect in servicing contractual arrangements, contracts, contract administration, codes and zoning regulations, liability and insurance factors in building delivery. Prereq: Third-year standing.

3014 Professional Practice II (4) Principles and methods of economics and management, project production and management, costs and analysis, budgeting, programming and construction management. Prereq: 3013.

3015 Service Practicum (16) Employment for one quarter in office of a registered architect or other projects approved by the school. Prereq: 3011 and 3012.

3011 American Architecture I (Architecture in United States since 1867; medieval, neo-classical, and Greek Revival traditions; eclecticism.

3102 History of the City (4) Evolution of town planning theories, modern theory, city of today and tomorrow.

3110 Oriental Survey (4) Architecture of non-Western traditions.

3113 Contemporary Architecture (4) Styles and theories from 1865 to present; design and technology; definition of architecture.

3115 Latin American Survey (4) Native and colonial architecture in Central and South America.

3120 Indigenous Traditions (4) Vernacular building traditions in non-European civilizations.

3125-26 History of Architectural Technology I, II (4, 4) History of construction techniques, hardware, materials and systems; I before 1850, II: 1850 to present.

3130 History of Architectural Theory (4) Philosophies of science, the emergence of technological, and theories of design since 1500.

3135 Tennessee Architecture (4) Immigrant traditions, regional developments, national styles, contemporary architecture.

3137 Architecture Since 1945 (4) New directions and views of the future.

3140 Studies of Architectural Writing (4) Survey of European architectural writers from Pugin to the present; the relation between literature and design. May be repeated. Maximum credit, 8 hours.

3701-02 Application of Computer in Architecture (4, 4) Survey of computer applications in the architectural profession. Computer graphics; use of commercial programs and systems; program planning and implementation. Prereq: 3701 for 3702.

3712 Mathematical Models in Architecture (4) Introduction to use of computer and development of mathematical methods in architectural science. Survey and classification of mathematical models of problems in architectural science including computer numerical methods and use of digital computer.

3910 Research Methods for Designers (4) General introduction to variety of research methods and techniques available to designer, appropriate for uncovering basic user requirements during design process. Prereq: 2000.

3920 Environmental Design Education: Problems, Practice and Structures (4) Focus directed at surveying existing models of learning, educational taxonomies, curricula goals, objectives and implementation formats, and methods of program evaluation. Role of existing architectural professional practice and its relation to design education explored. Required for teaching assistants in architecture. Prereq: Consent of instructor.

3930 Behavioral Approaches to Environmental Design (6) Of major concern in the lecture content of this course is the effect of the built environment on human behavior. Particular emphasis will be placed upon the role of environmental factors in human development, learning, adaptation, stress and reaction. Recreation behavior and life-style functions. Studio problems will explore the design of environments for children and environmental supports for individuals with various types of physical disabilities for people of all ages. Two credits for lecture and four credits for lab. Prereq: Consent of instructor.

3940 Behavioral Approaches to the Design of Prosthetic Environments (4) How standard features of the built environment are unsuitable to the everyday functioning of individuals with various types of physical disability; study of architectural barriers in relation to the physically handicapped constitutes the course lecture content. Studio problems explore design of barrier-free environmental features and design of disability-specific environments and behavior supports. Two credits for lecture and four credits for lab. Prereq: 3930 for non-architecture students.

4110 Aesthetics in Architecture (4) Architecture among the arts; theory and philosophy of space, imagination, design and materials.

4115 Advanced Research Methods in Architectural History (4)

4120 Treatises (4) Vitruvius; Renaissance and Neo-classical treatises.

4125 Eastern European Architecture (4) Twentieth-century architecture in Russia, Czechoslovakia, Poland, Hungary, East Germany, Romania, Bulgaria, Yugoslavia.

4130 Seminar in Medieval Architecture (4)

4135 Architecture and the Romantic Movement (4)

4137 Forms of Utopia (4) Ideals, spaces, and places; proposals and programs which have formed Urban Design; successes and failures of its architectural forms.

4140 Criticism Seminar (4) Theories, function, and techniques of architectural criticism.

4150 Advanced Reading (4) Advanced studies in special topics of architectural history.

4160 Architects in Social Criticism (4) Writings which illustrate technological, political, and anthropological assumptions of some 19th- and 20th-century architects.

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

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

4180 Recording Historic Buildings (4) Techniques for drawing and documenting historic architecture.

4185 Contemporary Preservation Practice (4) History and theory of contemporary practice, preservation law.

4311 Historic Preservation Laboratory (8) Directed studio seminar, historic significance, Techniques of preservation; research of historic methods of construction; and studies of viable uses. Rehabilitation, restoration, preservation, and adaptive uses. May be repeated. Maximum credit, 16 hours.

4312 Foreign Studies Laboratory (16) Travel, research, and laboratory projects conducted in various locations abroad. The programs may include service to lesser developed countries; research and design project related to program locations; lectures, seminars and critiques by distinguished individuals in the host country. Programs will vary.

4313 Media Laboratory (8) Special projects related to journalism, film making, exhibitions, publications and other media and media applications under the direction of faculty members. May be repeated. Maximum credit, 16 hours.

4320 Introduction to Site Planning (8) Analysis of site form and ecology, environmental assessment, social and psychological aspects of site location and development, study of movement systems, program development, site design, including locations and layout of streets and utilities, earthwork, site management and development.

4321-22-23 Macro Studies Laboratory I, II, III (8, 8, 8) Development of a large scale and complex nature with emphasis on reinforcing application of architectural design process and introducing principles and techniques used in urban and regional design and planning process. Prereq: 4320.

4330 Architecture Research Lab (8) Research projects on specific architecture subjects under the direction of faculty members.

4331-32-33 Micro Studies Laboratory I, II, III (8, 8, 8) Series of design exercises to demonstrate range of human response to varied composition of micro environmental elements and systems.

4340 Independent Studies Lab (1-8) Individual and small group projects under direction of faculty members. Credit adjusted to nature of problems and level of effort. May be repeated. Maximum credit, 24 hours.

4350 Visiting Lecturers Laboratory (8) Architecture: Series of design exercises to demonstrate range of visiting lecturers. Nature of project to be determined by visiting lecturer in charge. May be repeated. Maximum credit, 8 hours.

4351 Build Laboratory (8) Design and construction under the direction of faculty member of small scale building project for a public service agency or organization. Work with client includes program, cost and analysis, material specification and ordering, sub-contracting, and on-site construction.

4352 Architectural Service Laboratory (8) Off-campus studios under direction of architect or related professional on the staff, member of public service organization or agencies of government. Subject of studio is but is directly related to problem-solving process.

4353 Development Laboratory (8) Directed studies in development of real property. Studies of use feasibility, economics, finance and marketability, environmental impact, social considerations and consequences.

4360 Remote Centers Laboratory (8) Program extension in remote locations of various tenures.

4370 Architecture-Engineering Laboratory (8) Directed research application in new structural concepts. Architectural projects of large scale and complex nature with emphasis on the engineering systems considering codes, economics, urban design, utility services, structure, environmental controls and construction.

4390 Interdisciplinary Laboratory (8) Action-oriented joint studies laboratory in environment-related projects. Laboratory conducted in cooperation with industry and undertaken by students and faculty both in and out of the School of Architecture.

4501 Management Design I (8) Using the lab situation and project simulation, study aspects of project management and construction management, the process of making decisions and the understanding of their ramifications; the concept of decisions, design and the process of delivery is main theme.

4502 Administrative Design I (8) Lab simulation of office experience in project planning and control, programming and preparation of contract documents.

4503 Management Design II (8) Advanced work in lab situation of the management aspects of architecture. Use of computer as a management tool and simulation of an office situation is conducted in the lab. Prereq: 4501.

4504 Administrative Design II (8) Lab simulation of project with emphasis on production, specifications, estimating, materials, and codes. Prereq: 4502.

4510 Project Management (4) Principles, methods, and application of project management to the total building process. Project manager, function, responsibilities, and activities investigated through case studies, job history reviews, and project simulation.

4515 Construction Management (4) Principles, methods, and application of construction management to the total building process. Project manager function, responsibilities, and activities investigated through case studies, job history reviews, and project simulation.

4520 Professional Services (4) Marketing of architectural practice by study of cases, theories, public relations procedures and understanding sales of architectural services, both basic and comprehensive.

4525 Personnel Relations (4) History of practice of architecture emphasizing personnel policies, the theories of personnel relations, benefits, and unionization.


4531 Architectural Practice I (4) Analysis, survey, and study of the interrelationships of architecture, organization of practices and financial arrangement of office structure.

4532 Architectural Practice II (4) Analysis and study of contracts, insurance, taxes, and the legal position and liabilities of architect.

4535 Advanced Contracts (4) Study of contractual problems relating to architect, owner, contractor and sub-contractor.

4540 Design Process, Decision Determination (4) Principles and theories of making decisions in relation to the mechanism of architectural activities during building process.

4545 Programming (4) Theories and procedures for writing programs emphasizing computer application and research and development.

4550 Codes and Zoning (4) Theory, review, and research of city, county, state, region, and national codes; zoning administration and land use regulations; development of fire safety and building codes; history and development of zoning emphasizing architect's responsibility as related to specific project application.

4560 Cost Analysis (4) Methods and theories of estimating, project cost, and building cost with reference to present techniques. Research in new techniques of cost analysis.

4560 Specifications (4) Theory, analysis, and methods of specifications. Emphasis placed on development and research of specifications.

4580 Supervision (4) Theories, methods and site work on job in relation during construction phase and construction administration.

4701-02 Contract Documents/Working Drawings (8, 8) Central role of contract documents in practice of architecture or engineering. Preparation, presentation and communication of specifications and other documents for typical project. Prereq: Consent of instructor.

4710 Architectural Models (4) Introduction to use of models in architectural studies. Display models and materials and scales. Presentation and special effects, Structural models; laws of similitude, special materials, fabrication, load and deflection measurements, Dynamic and wind tunnel testing. Lighting studies using models. Air circulation tests. Prereq: Consent of instructor.

4711-12 Structural Design I, II (4, 4) Provides understanding of behavior, analysis and design of basic building structures. Structural and constructional aspects of building, including the structural design of building in steel, concrete, masonry and timber to satisfy loading and building code requirements. Prereq: 2013 or equivalent.

4715 Construction Economics (4) Construction economics of small, medium and large projects. Interest, annuities, sinking funds; depreciation and replacement; mortgage amortization; inflation; real estate investment and speculation; syndicate loans, purchasing power and liquidity.

4721-22 Advanced Architectural Structures, I, II (4, 4) Philosophy of structural design in relation to material purpose and form. Advanced mathematical and experimental analysis of structures, including use of computer programs. Prereq: 3702 or equivalent.

4725-26-27 Structural Innovation and Design Research Lab (4-8, 4-8, 4-8) Theory and experimentation of building design utilizing innovative structural concepts and techniques. Basic structural concepts, space and form properties, and economic factors such as systems costs, and materials and processes of structural innovation are emphasized. Students' activities will involve prototyping of innovative systems and methods. Design credit in 4th- and 5th-year standing or last quarter of 3rd-year standing with permission of instructor.


4733 Structural Design for Protection Against Ex-
Irene Hazards (4) Probability, risk, human values, insurance. Surface water, possible hazards; floods, fires, hurricanes and tornadoes, earthquakes, nuclear effects, internal and external explosions. Building codes involving the design of steel, masonry, concrete and wood structures to resist extreme effects. Protective construction for human and system needs. Fire and smoke, fire prevention, fire phenomena, life safety analysis, high-rise building fires.

4734 Advanced Design of Steel Buildings (4) Construction and maintenance of steel buildings. Large span and special structures. Composite construction, fireproofing; building costs. Preereg. 3702 or equivalent.

4735 Advanced Design of Concrete Buildings (4) Precast and on-site concrete construction and maintenance, foundations, floor and wall systems. Domes and shell roofs. Preereg. 3702 or equivalent.


4739 Aesthetics of Engineering Structures (4) Architecture in engineering; theory and utilization of space in design, large structures. Bridges, exhibition halls, power plants.

4741 System Theory, History and Methodology (4) Investigation of general system theory and system research methodology. Overview and analysis of systems research techniques. Preereg. Consent of instructor.

4742 Types of Systems (4) Comprehensive examination of system types, concepts and approaches. Comparative analysis of unit assemblies, components, panels, boxes and self-help systems. Exploration of all building types, housing schools, garages, hotels, dormitories, hospitals, etc., and their cultural ramifications. Preereg. 4741.


4751 Structural and Architectural Innovations (4) Exploration of new concepts, advances and innovative approaches to design, architecture and structural design. Use of new design drawings, detailing, contract documents, and specifications. Study of components, assemblies and systems in wood, steel, concrete and plastic systems. Use of computers, structurally and architecturally. Preereg. 4743.

4752 Mechanical Innovations (4) New technological advances in computer-aided design, heating, ventilating, air conditioning, plumbing and electrical systems. Concepts of mechanical components at factory, and mechanical connections at the site, their application and use. Coreg. 4751.


4761-62 Systems Design Laboratory I, II (8, 8) A vertical multi-disciplinary and research laboratory and studio, integrating simultaneously, undergraduates, graduates, professors, intra- and extra-university, each with unique viewpoints. Total systems ("software" and "hardware") approach to individual and group problems. 4761: Design, research, probing and analyzing the problem and the system process. Application of new ideas, approaches and concepts to design and systems, and design and systems to new forms, architecturally and with design systems, three dimensionally and in mock-ups, using new materials and techniques. Coordination of the total systems process.

4765 Thesis/Systems Laboratory (16) Independent problem undertaken by individual or group, with significant contribution to which systems theory and/or science of systems design, building and architecture. Preereg. Approval of the systems building coordination and the completion of the systems building core.


4780 Fire Protection in Structures (4) Fire protection aspects of buildings and their occupants. Chapter 1: Fire and Fire Codes, building evacuation, sprinkler and other fire protection systems; emergency power and lighting; fire resistant materials and construction.

4785 Sound, Noise and Vibration Control in Buildings (4) Proven sound and vibration control techniques. Specific methods, procedures, and materials most suitable for various building problems. Preereg. Audio & Speech Path. 4750 or Mechanical Engr. 4220.

4850 Elementary Structural Matrix Methods (4) Introduction to the generalized matrix methods of analysis of statically indeterminate structures. Matrix algebra and vectors; development of member stiffness and flexibility matrices; assembly of structure stiffness and flexibility matrices. Preereg. Consent of instructor. (Same as Civil Engineering 4850 and Engineering Science and Mechanics 4850.)

4900 Aspects of Urban Environment (4) Interdisciplinary course in urban problems. Preereg. Consent of instructor. (Same as Environmental Engineering Services 4900, Political Science 4900, Psychology 4900 and Real Estate 4900.)

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

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

4940 Proxemics (4) Seminar for graduate students & upper division students. Introduction to proxemic research. Definition of proxemic variables. Proxemic research methodology. Analysis of social and spatial aspects of interaction between persons. Theories of the identification of ecologic categories. Observer bias and methods of bias reduction. Members of seminar required to design, conduct, and present original proxemic research. Preereg. 2000 or consent of instructor.


ACCELERATED CORE COURSE DESCRIPTIONS

4020 Accelerated Visual Studies (4) Identification and application of theories and methodologies of graphics analysis and communication principles, i.e., principles of visual coding and ordering applicable to behavioral descriptive. Analyzing and arranging data. Preereg. Consent of instructor. (Same as Visual Communication 2000.)

4202 Accelerated Basic Design and Analysis I (4) Nature and sensory behavior of complex physical systems. Theories and methodologies of optimization applicable to design decision-making processes. Optimal designs and decision-making processes are investigated through controlled and experimental design exercises. Preereg. 4203.

4202 Accelerated Analytical Studies I (4) General systems theory and sensitivity analysis, methods applicable to design decision-making processes and design methodologies. Contextually, study trends in emergence of new and creative systems in design, philosophy, and design. Preereg. 4203.

4203 Accelerated Basic Design and Analysis II (4) Investigation of human response to varied configurations of built environments. Knowledge of response to human behavior and activity patterns applied through design process to create new environmental forms subjected to performance evaluation measured to anticipated response. Experimental design exercises will include varied problem types and scales. Experiments in critical evaluation of scientific research methods and design methodologies. Preereg. 4202 and 4202. Coreg. 4204.

4204 Accelerated Analytical Studies II (4) Basic research methods and applications of scientific methods and techniques. Presentation of information and skills necessary for collecting, organizing, manipulating, analyzing and interpreting data. Preereg. Consent of instructor. Coreg. 4203.

4205 Accelerated Historical Studies I (4) Relationship of historical and cultural development of the man-made environment. Concepts of ethics, aesthetics and criticism along with methods of historical research and analysis are introduced as a means of studying the classical tradition of architecture. In addition to the regular lecture series of 1005, students are required independently to research aspects of study area for presentation to the accelerated seminar supplement. Preereg. Admission to the accelerated core program.

4206 Accelerated Historical Studies II (4) Concentrated examination of development of twentieth-century design and architectural theory and practice, and their derivative or counterpoint to events of historical development. Events occurring in specific time frames of preindustrial and industrial periods are contextualized to demonstrate potential developments in the emerging post-industrial era. In addition to the regular lecture series of 2005, students are required to independently research aspects of study area for presentation to the accelerated seminar supplement. Preereg. Admission to the accelerated core program.

4207 Accelerated Man-Environment Systems (4) Study of causal, descriptive, behavioral and predictive properties of human and environmental systems, their interaction or relationship, and the influence of cultural response variations to eco-sociophysiological changes. Emphasis on interdependence of human systems, society systems, and physical systems. In addition to the regular lecture series of 2004, students are required to independently research aspects of study area for presentation to the accelerated seminar supplement. Preereg. Admission to the accelerated core program.

4209 Accelerated Professional Practice (4) Examination of legal responsibilities of architects in servicing contractual agreements; contract documents, contract administration, code enforcement, labor and insurance; concept of economics and management; project production and management, cost analysis, budgeting, project management and contemporary architectural practice. Preereg. Admission to accelerated core program.
College of Business Administration

C. Warren Neel, Acting Dean
Francis A. Chamblin, Assistant Dean
for Graduate Programs
Liston M. Fox, Assistant Dean

The College of Business Administration seeks to prepare men and women for positions as executives and specialists in business. Seeing the business firm as operating in a dynamic social, political, and economic environment, the College has four functions with respect to its purpose: (a) to offer its students the firm base of liberal education consistent with that possessed by all educated people; (b) to present to its students business-oriented instruction in professional fields so that they may understand the business process as a whole and the function of specific areas of business; (c) to associate closely with other colleges of the University in order to enrich the understanding of its students by offering an opportunity to learn from psychology, sociology, and other areas related to the behavior of people; (d) to develop in its students the ability to see their four years in the College as the initial step to a lifetime commitment to personal growth and intellectual maturity through continuing education.

The College centers its teaching, subject matter, and research activity around two themes: the manager as a planner, decision maker, implementer and controller of operations in a business firm; and the manager as an analyst of, an adapter to, the larger social, economic, and political environment in which the firm exists.

The College has one goal: to have each student leave school with a reasonably articulate and coherent, though flexible and ever-developing, personal philosophy of business; an understanding of the scientific, ever-changing technological world; and a firm awareness of the social responsibility as a future executive and enlightened wielder of power.

The College of Business Administration has been a member of the American Assembly of Collegiate Schools of Business since 1941.

Transfer Admission

All students who have attempted 36 or more quarter hours of college-level work must have a grade point average of at least 2.00 to be eligible to transfer into the College of Business Administration. This requirement applies both to students transferring from other institutions (including those of The University of Tennessee System) and to those transferring from other colleges and schools of The University of Tennessee, Knoxville.

The College of Business Administration stands ready to assist any student seeking a business education, regardless of credit hours attempted or earned, and regardless of the grade point average. All such students should be referred to the Office of the Dean for counseling and discussion.

Student Advising Center

The College of Business Administration maintains a Student Advising Center. The Center is staffed with full-time academic advisers to assist the freshman and sophomore students on an individual basis with their programs. Junior and senior students are assigned to advisers from the faculty of the student's selected major. The objective of working with students individually is to assist them in their own particular needs for academic information and to prepare them to answer their own questions and concerns.

Center for Business and Economic Research

The staff of the Center for Business and Economic Research engages in studies of the business and economic environment in Tennessee, the Southeast, and the nation. The Center serves the business community, state government, individuals, and the University through dissemination of information and aids the faculty in preparing research proposals. Staff members conduct research in regional economics, public finance, demography and related socio-economic problems. The Center publishes results of its research and that of others, in monograph form, so that significant developments in the various business disciplines can achieve widespread exposure. In addition, the Center staff does contract research on business and economic problems for governmental organizations and private industry. As periodicals, the Center publishes the Tennessee Statistical Abstract, the Tennessee Survey of Business, and the Tennessee Pocket Data Book.

The Center is a member of the Southeastern Income Conference and the Association for University Business and Economic Research.

Tennessee Executive Development Program

The Tennessee Executive Development Program (TEDP) is designed to provide extensive continuing educational opportunities for executives from firms and organizations in Tennessee, the South, and nationally. The major objective of the program is to prepare and develop executives for increasingly higher levels of management responsibility and to sharpen existing executive skills needed for comprehensive decision making and leadership. Other major aims of the TEDP are to teach the fundamentals of analytical thinking and the use of the decision tools, and to examine the economic, political, technological, and other environmental factors affecting the firm's operations.

The TEDP limits enrollment to 32 participants who live on campus for a total of four weeks spread over a three-month period. The fall Executive Seminar brings participants and wives of all TEDP classes.
Requirements for All Curricula

A student must complete the curriculum outlined by the department in which he is majoring in order to receive a degree. Where no course number is specified or where a choice is allowed, the student will fulfill the requirement by selecting from specified courses. Where electives are provided, the courses taken must meet the approval of the adviser. Nondepartmental electives are considered as courses outside the student's major department. No more than 42 hours are permitted in any nonbusiness elective area.

A maximum of thirty credit hours of unconventional grading (S/NC, P/F, P, etc.) courses may be applied to the total credit hours required for a degree. Bachelor of Science in Business Administration. Such credit hours may be used to meet only the requirements identified in the curriculum as "nonbusiness electives," "nondepartmental electives," "business and/or nonbusiness electives," and "business electives."

A Management Science Option is available for students with facility and interests in mathematical applications to business. See course sections for details.

NOTE: Students who have transferred to the University degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

BUSINESS CORE REQUIREMENTS

The following core courses are required in all business curricula: Accounting 2110-20, 2210; Business Administration 4430; Business Law 410 and 4120; Economics 2110-20-30; Finance 3110-20-30; Industrial Management 3010, 3110 (3111 for Industrial Management and Personnel Management majors); Marketing 3110-20; Office Administration 2750 or Computer Science 1410 (3150 for Management Science Option) and Statistics 2100 and three hours upper-division statistics elective or as designated by the curriculum (3450-80 for Management Science Option).

ENGLISH REQUIREMENT

The English requirement can be fulfilled by English 1510-20 provided that at least 15 credit hours of English 2510-20-30, 2540, 2560-70-80, 2590, 2660-70-80. Speech 2311, unless specifically required by a curriculum, may be used to satisfy four of the elective English hours required. English courses beyond 1000-level may be taken in any order. Students making a B average in freshman English are permitted to substitute for the 2000-level courses listed above any upper-division courses which the Department of English will allow them to take.

NATURAL SCIENCE REQUIREMENT

The Natural Science requirement can be fulfilled by an eight-hour sequence (any two eight-hour sequences for the Industrial Management and the Personnel Management curriculum) and any eight-hour sequence plus any additional four hours of natural science for the Business Education curriculum) in any of the following fields: astronomy, biology, botany, chemistry, geology, or physics.

SOCIAL SCIENCE REQUIREMENT

The social science requirement can be fulfilled by taking courses in the following fields: anthropology, classics, geography, history, human services, philosophy, political science, psychology, religious studies, and sociology.

COMPUTER SCIENCE REQUIREMENT

A computer programming course satisfies the requirement: Computer Science 1410 or Office Administration 2750 is recommended.

Accounting

The curriculum provides preparation for professional accounting careers in public accounting, industry, and government. Graduates are eligible for the CPA examination in Tennessee. Transfer students with 9 quarter hours of introductory accounting will receive 6 hours of credit in Accounting 2110-20 and 3 hours of lower-division accounting credit. These students must take as one of their technical electives an upper-division course approved by the accounting department adviser, and it must not be an accounting course.

To graduate with a major in accounting, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 15 hours of accounting courses numbered 3000 or above and must include Accounting 4110, 4140, 4430, and 4630.

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<tr>
<td>Statistics 3250</td>
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</table>

TOTAL: 187 hours

*See page 73.

May be accounting electives or other electives specified by accounting department adviser.
Banking

Students planning careers in management of commercial banks and branches, or as trust officers, investment or loan officers, or in savings or industrial banks, the Federal Reserve System, international monetary institutions, or state and federal bank regulatory agencies may major in banking.

To graduate with a major in banking, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 12 hours of finance courses.

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Sophomore

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<td>Accounting 2110-20, 2210</td>
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<tr>
<td>Economics 2120-30</td>
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Junior

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<tr>
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<tr>
<td>Marketing 3110-20</td>
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<td>Industrial Management 3010, 3110</td>
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<td>Statistics 3220</td>
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Senior

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TOTAL: 187 hours

Business Education

This program is offered in cooperation with the Department of Vocational-Technical Education in the College of Education. The program meets requirements for certification in business subjects as approved by the State Department of Education. At least a C average must be made in each endorsement area in business for which a student is to be recommended.

Economics

The Department of Economics offers specialized courses for those who desire to serve as economic analysts and specialists in business, education, government, and various international agencies. Students majoring in economics, particularly those desiring to teach, should plan, whenever possible, to take graduate work.

To graduate with a major in economics, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 15 hours of economics courses.

Students may also elect to major or minor in economics in the College of Liberal Arts. See page 193 for further information on the B.A. curriculum.
Industrial Management

This major is designed for students interested in the field of business and manufacturing management.

In general, the curriculum has been developed to include a judicious combination of technical and business courses in order to prepare the graduate for employment in an industrial enterprise.

Job opportunities in this field include industrial purchasing, materials control, quality control, production control, methods analysis, and positions as foremen and production management trainees. Internships in industry are available under the Cooperative Program.

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Total: 187 Hours

General Business

This major is intended for those who desire a broad business background without extensive concentration in any single business field. To that end it includes advanced work beyond the introductory courses in accounting, economics, finance, personnel management, marketing, statistics, and transportation as specified below.

To graduate with a major in general business, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 12 hours of accounting, economics, and finance courses.

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</table>

Total: 187 Hours

Logistics

Business logistics is recommended for students who desire to prepare for employment in physical distribution, marketing, or purchasing in business or marketing organizations. The overall Transportation-Business Logistics program also prepares students for the examination waiver program of the American Society of Traffic and Transportation. A number of scholarships for this curriculum are available.

To graduate with a concentration in logistics, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 21 hours of transportation courses.

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</table>

Total: 187 Hours

Insurance

The insurance major is for students planning careers in business risk management, insurance company and bureau administration, actuarial work, personnel, human life, underwriting, estate planning, property-casualty agency management, insurance consulting, loss adjustment, and state regulation of insurance. Graduates are eligible to take the national examinations for the C.L.U. or C.P.C.U. designation.

To graduate with a major in Insurance, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 12 hours of insurance courses.

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Total: 187 Hours
### College of Business Administration

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<tr>
<td>Marketing 3110-20</td>
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<tr>
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<td>Economics 3340 or 3420</td>
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<td>Business Elective</td>
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</table>

**TOTAL: 187 hours**

### Marketing

This major is designed to prepare students for careers with companies engaged in the marketing of consumer and industrial goods and their distribution by manufacturers, wholesalers, and retailers. The curriculum trains students for positions in sales, advertising, promotion, research, and marketing management. The integrated sequence of courses enables students to obtain broad training in the analysis of marketing decision problems.

To graduate with a major in marketing, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include the following required marketing courses: 3210, 4210, 4510, 4650, 4710.

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<thead>
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<th>Freshman</th>
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<td>Mathematics 1540-50-60 or 1840-50-60</td>
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<tr>
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<table>
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<tr>
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<th>Hours</th>
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</thead>
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<tr>
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</tr>
<tr>
<td>Nonbusiness Elective</td>
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</tbody>
</table>

### Office Administration

Students entering the field of office administration may choose a specialized secretarial program or prepare for supervisory, administrative or managerial positions in the office. Students following the office administration major may meet teacher certification requirements by taking the appropriate education courses in consultation with the faculty adviser.

To graduate with a major in office administration, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. For office administration-secretarial, these must include Office Administration 4410, 4420 and 4430. For office administration-general, these must include a minimum of nine hours of office administration courses, including 4430.

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<td>-</td>
</tr>
<tr>
<td>Mathematics 1540-50-60 or 1840-50-60</td>
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<td>Social Science Electives</td>
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<th>Sophomore</th>
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<tr>
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<tr>
<td>Economics 2110-20-30</td>
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### OFFICE ADMINISTRATION-SECRETARIAL

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<td>Statistics 3110-20-30</td>
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<tr>
<td>Statistics Upper-division Elective</td>
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<td>-</td>
</tr>
<tr>
<td>Economics Elective</td>
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<td>Office Administration 3210, 4310, 4330</td>
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**TOTAL: 187 hours**

### OFFICE ADMINISTRATION-GENERAL

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</thead>
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<tr>
<td>Marketing 3110-20</td>
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</tr>
<tr>
<td>Statistics 3110-20-30</td>
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<td>3</td>
</tr>
<tr>
<td>Statistics Upper-division Elective</td>
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<td>-</td>
</tr>
<tr>
<td>Economics Elective</td>
<td>3</td>
<td>-</td>
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<tr>
<td>Office Administration 4430</td>
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<td>3</td>
</tr>
<tr>
<td>Office Administration 3210, 4310, 4330</td>
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**TOTAL: 187 hours**

### OFFICE ADMINISTRATION-SECRETARIAL

<table>
<thead>
<tr>
<th>Senior</th>
<th>Hours</th>
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<td>Business Law 4110-20</td>
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<td>Marketing 3110-20</td>
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<td>3</td>
</tr>
<tr>
<td>Statistics Upper-division Elective</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Economics Elective</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Office Administration 4430</td>
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<td>-</td>
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<td>Office Administration 4410-20</td>
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<td>3</td>
</tr>
<tr>
<td>Office Administration 3210, 4310, 4330</td>
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</tbody>
</table>

**TOTAL: 187 hours**

### TWO-YEAR SECRETARIAL PROGRAM

The two-year program in office administration is offered to high school graduates who want to prepare for secretarial work but who do not plan to complete four years of University
training and earn a degree. All courses taken in this program have full University credit and may be applied toward a degree. A certificate may be awarded to students who have completed the program with an overall average of at least 2.0, an average of 2.2 in office administration, and within the first 120 hours of credit. Information regarding the recommended sequence of courses may be obtained from the office of the department head. This “short course” is planned for six quarters of work and may be started at the beginning of any quarter.

### Subject Hours Credit
- Office Adm. 2120-30-40 ............... 6
- Office Adm. 2310-20-30, 4410-20 ........... 15
- English 1510-20 .................. 8
- English literature .................. 4
- Business Adm. 1110 (General Business) .... 3
- Office Adm. 3210 (Office Machines) .... 3
- Office Adm. 4710 or Computer Science 2410 .... 3
- Office Adm. 4310 (Business Letter Writing) .. 3
- Office Adm. 4430 .................. 3
- Accounting 2110-20 ................ 6
- Economics 2110-20 ................ 6
- Social Science .................. 6-8
- Psychology 2510 .................. 3
- Mathematics 1540 .................. 4
- Physical Education ................ 2-4
- Music, Art, Health, or Related Art ....... 3-4
- Electives .................. 5-10

**TOTAL: 90 hours**

*Previous training in shorthand or typewriting may exempt a student from the beginning courses in these subjects. If no typewriting has been taken, a prerequisite of Office Adm. 2110 is necessary.*

### Personnel Management

This major is designed for students who wish to prepare for employment in industrial personnel administration. Job opportunities range from general personnel work in small companies to specialized fields such as employment, wage and salary administration, job evaluation, training, and labor relations in larger enterprises.

<table>
<thead>
<tr>
<th>Subject</th>
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<tbody>
<tr>
<td>English 1510-20</td>
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<td>Mathematics 1540-50-60 or 1840-50-60</td>
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<tr>
<td>Natural Science Electives</td>
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<tr>
<td>Social Science Electives</td>
<td>4</td>
</tr>
<tr>
<td>Economics 2110</td>
<td>3</td>
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</tbody>
</table>

### Public Administration

This major is intended for students who wish to prepare for management positions in the public service. In general, it presents a combination of general education together with studies in governmental and business management. It is designed to give initial preparation for such governmental employment as organization and methods work, budgeting work, and personnel management.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>English 1510-20</td>
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<td>Mathematics 1540-50-60 or 1840-50-60</td>
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<tr>
<td>Economics 2110</td>
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</table>

### Real Estate and Urban Development

This major is designed for students who are interested in the many fields of business and government where real estate is of significance. Such fields include real estate brokerage, appraisal, taxation, law, property management, real estate development, mortgage lending and mortgage banking, construction, government loan guarantees, and insurance.

To graduate with a major in real estate and urban development, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 12 hours of real estate and urban development courses.

<table>
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<th>Subject</th>
<th>Hours Credit</th>
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<tbody>
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<td>English Elective</td>
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<td>Mathematics 1540-50-60 or 1840-50-60</td>
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<td>Social Science Electives</td>
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<tr>
<td>Economics 2110</td>
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</table>

### Total Hours

- **Freshman:** Hours Credit
  - English 1510-20: 4
  - English Elective: 4
  - Mathematics 1540-50-60 or 1840-50-60: 4
  - Social Science Electives: 4
  - Economics 2110: 3

- **Sophomore:** Hours Credit
  - English Elective: 4
  - Economics 2110-20-30: 3
  - Accounting 2110-20, 2210: 3
  - Computer Science Elective: 3
  - Statistics 2100: 3
  - Social Science Electives: 4
  - Business and/or Nonbusiness Electives: 3

- **Junior:** Hours Credit
  - Economics 3410, 3340: 3
  - Finance 3110-20-30: 3
  - Accounting 3510: 3
  - Industrial Management 3010, 3110: 3
  - Statistics Upper Elective: 3
  - Marketing 3110-20: 3
  - Political Science 3545-46: 3
  - Political Science 3565-66: 4

- **Senior:** Hours Credit
  - Finance 4350-60-70: 3
  - Business Law 4110-20: 3
  - Business Administration: 3
  - Political Science 4410-20: 3
  - Political Science 4610-20: 3
  - Finance 4350-60: 3
  - Business Electives: 3
  - Business and/or Nonbusiness Electives: 5
  - Social Science Elective: 4

**TOTAL: 187 hours**
### Statistics

A major in statistics is recommended for students interested in positions involving process control and quantitative research in business, industry, and government.

<table>
<thead>
<tr>
<th></th>
<th>Hours</th>
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<tr>
<td><strong>Freshman</strong></td>
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<td>&quot;Social Science Electives&quot;</td>
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<tr>
<td><strong>Sophomore</strong></td>
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<td>Finance 3110-20-30</td>
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<tr>
<td>Computer Science 4310</td>
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</tbody>
</table>

TOTAL: 187 hours

*See page 73.

**Management Science Option**

The increasing use of electronic computers and modern management methods by industry and the business community has created a rapidly growing demand for personnel capable of using mathematics, statistics, and computer methods for the use of quantitative techniques in solving management problems. In response to this growing demand, the College of Business Administration has established a Management Science Option which is available to qualified students who wish to prepare themselves for careers involving this type of work.

The Management Science Option is designed for students who have demonstrated a high level of ability in mathematics and who are interested in applying this ability toward solving management problems. The Management Science Option is available to students majoring in accounting, general business, industrial management, marketing, personnel management, statistics, and transportation.

**Accounting M.S.O.**

Transfer students with 9 quarter hours of introductory accounting will receive 6 hours of credit in Accounting 2110-20 and 3 hours of lower-division accounting credit. These students must take as one of their technical electives an upper-division course approved by the accounting department adviser, and it must not be an accounting course.

To graduate with a major in Accounting M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 15 hours of accounting courses numbered 3000 or above and must include Accounting 4110, 4630, and either 4140 or 4430.

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<tr>
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<tr>
<td><strong>Sophomore</strong></td>
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<td>Speech 2311</td>
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<td>&quot;Social Science Electives&quot;</td>
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<tr>
<td>Transportation 3110</td>
<td>-</td>
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<td>Transportation 3115-20</td>
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<tr>
<td>Business Law 4110-20</td>
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<td>Transportation 4620, 4920</td>
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<tr>
<td>&quot;Nondepartmental Electives&quot;</td>
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</table>

TOTAL: 187 hours

*See page 73.

**Transportation**

A major in transportation is recommended for students who desire to prepare for employment with carriers supplying transportation service, both passenger and freight, or regulatory bodies and planning agencies of federal, state, and local governments. The overall transportation program also prepares students for the examinations of the American Society of Traffic and Transportation. A number of scholarships for transportation majors are available.

To graduate with a major in transportation, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 21 hours of transportation courses.

**Finance M.S.O.**

To graduate with a major in finance, a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 12 hours of finance courses.
### General Business M.S.O.

To graduate with a major in General Business M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 12 hours of accounting, economics, and finance courses.

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<td>Mathematics 1480-50-60</td>
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<tr>
<td>1Natural Science Electives</td>
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**Sophomore**

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<tr>
<td>Economics 2110-20-30</td>
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<td>Mathematics 2840-50-60</td>
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<td>Business and/or Nonbusiness</td>
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**Junior**

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<tr>
<td>Economics 2110-20</td>
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**Sophomore**

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<tr>
<th>Course</th>
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<tr>
<td>Accounting 2110-20, 2210</td>
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**Senior**

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<td>Nonbusiness Electives</td>
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### Industrial Management M.S.O.

**Freshman**

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<th>Course</th>
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<tbody>
<tr>
<td>English 1510-20</td>
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<td>1Social Science Electives</td>
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<tr>
<td>Business and/or Nonbusiness</td>
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<tr>
<td>Nonbusiness Electives</td>
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**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>Accounting 2110-20, 2210</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Business Administration 4430</td>
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<td>1Social Science Electives</td>
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<tr>
<td>Business and/or Nonbusiness</td>
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**Junior**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Computer Science 2110</td>
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<tr>
<td>Business Administration 4410</td>
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<tr>
<td>1Social Science Electives</td>
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<td>Business and/or Nonbusiness</td>
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<tr>
<td>Nonbusiness Electives</td>
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### Logistics M.S.O.

To graduate with a concentration in Logistics M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 21 hours of transportation courses.

**Freshman**

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<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
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<td>Mathematics 1480-50-60</td>
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**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Account Management 2110-20</td>
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<td>Economics 2120-20</td>
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**Junior**

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<tr>
<th>Course</th>
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<tr>
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<td>Economics 2120-20</td>
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<td>Nonbusiness Electives</td>
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---

### Marketing M.S.O.

To graduate with a major in Marketing M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include the following required marketing courses: 1210, 2410, 4100, 4510, 4570.

<table>
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<th>Course</th>
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**Sophomore**

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**Junior**

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<thead>
<tr>
<th>Course</th>
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<tr>
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<td>Business and/or Nonbusiness</td>
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### Personnel Management M.S.O.

<table>
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<td></td>
<td>Mathematics 1840-50-60</td>
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<td>Speech 2311</td>
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<td>Math 2840-50-60</td>
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**TOTAL: 187 hours**

### Statistics M.S.O.

<table>
<thead>
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<th>Level</th>
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<th>Credit</th>
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<tbody>
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<td>Mathematics 1840-50-60</td>
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<tr>
<td></td>
<td>Economics 2110</td>
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</table>

**TOTAL: 187 hours**

### Transportation M.S.O.

To graduate with a major in Transportation M.S.O., a minimum of 30 quarter hours of required upper-division College of Business Administration courses must be completed in residence at the University of Tennessee, Knoxville. These must include a minimum of 21 hours of transportation courses.

### Graduation Studies

The College of Business Administration offers advanced programs in economics leading to the Master of Arts, the Master of Science, the Master of Arts in College Teaching, and the Doctor of Philosophy degrees. The Master of Business Administration degree program is offered in the fields of accounting, economics, finance, governmental financial administration, industrial management, management science, marketing, real estate and urban development, statistics, and transportation and logistics. The Doctor of Business Administration degree program is offered in the fields of accounting, finance, management, marketing, and transportation and logistics. Advanced programs in management science lead to the M.S. and the Ph.D. degrees. The M.S. degree in statistics is also available. The M.S. and the Ph.D. degrees are granted in industrial and organizational psychology jointly with the Department of Psychology. See the Graduate School Catalog for detailed information.

Students applying for the MBA and DBA programs are required to take the Graduate Management Admission Test (GMAT). Applicants for the M.A., M.A.C.T., M.S., and Ph.D. programs may take either the GMAT or the Graduate Record Examination (GRE). Applicants whose native language is
other than English must submit results of the Test of English as a Foreign Language (TOEFL). Scheduled dates and locations for taking these examinations may be obtained from Educational Testing Service, P.O. Box 966, Princeton, New Jersey 08540, and from most colleges and universities.

An applicant must file an application with the Graduate School of the University and request that transcripts of all college-level work and results of the appropriate admission test be sent to the Graduate School. A decision on admission cannot be made until these documents are available. Most doctoral programs require letters of recommendation from three individuals. Applications, transcripts, and admission test scores should be submitted three months prior to desired entry date.

Departments of Instruction

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

Accounting and Business Law


Associate Professors: B.D. Fisher, LL.M. George Washington; F.J. Hamlin, Ph.D. Iowa, G.E. Nichols, Ph.D. Louisiana State, CPA; L.A. Posey, M.S. Tennessee, CPA; W.L. Slagle, M.S. Tennessee, CPA; R.L. Townsend, Ph.D. Texas, CPA; F.E. Watkins, Jr., Ph.D. Louisiana State, CPA.

Assistant Professors: H.C. Herrig, III, Ph.D. Alabama, CPA; F.A. Jacobs, Ph.D. Georgia, CPA; M.C. Lettsinger, M.S. Tennessee, CPA; L.E. Rittenburg, Ph.D. Minnesota; N.E. Shurtz, J.D. Ohio State.

Visiting

Accounting (009)

2110-20 Fundamentals of Accounting (3) Introductory courses in financial accounting theory and practice with emphasis on preparation, reporting, and analysis of financial information. Prereq to all other courses in accounting except for engineering majors. Courses must be passed in sequence.


3110 Intermediate Accounting (3) Accounting principles and conventions, use of various forms of working papers, preparations of statements, analysis of balance sheet items including cash, receivables, and inventories. Prereq: 2120.

3120 Intermediate Accounting (3) Continuation of 3110. Valuation and depreciation problems relating to tangible and intangible fixed assets, accounting for investments, amortization of premiums and discounts, bonds payable, other liabilities, funds and reserves. Prereq: 3110 with grade of C or better.

3130 Intermediate Accounting (3) Continuation of 3120. Capital stock and retained earnings, transactions, single entry accounting, comparative financial statement analysis, financial ratios, the funds statement, income tax allocation. Prereq: 3120 with grade of C or better.

3220 Managerial Cost Accounting (3) Continuation of 2210. Cost analysis for decision making and control. Subjects include accounting information for capital budgeting, inventory management, and advanced problem areas: Prereq: 2210 and Computer Science 1410 or equivalent.


3510 Governmental Budgeting and Accounting (3) Theory and practice of budgeting, financial and managerial accounting and reporting, planning-programming, budgeting, and auditing for governmental and non-profit organizations. Prereq: 2210 or equivalent.

3630 Electronic Data Processing Concepts and Control (3) Elements and operation of computers in business environment; accounting systems are emphasized. Topics include input, storage, data manipulation, output, and error control. Prereq: 2210, Computer Science 3410 or equivalent.

4110 Principles of Auditing (3) Nature of audit evidence, basic audit techniques and procedures, and internal and external functions. Prereq: 3130 with grade of C or better; Computer Science 3010. Prereq or coreq: Statistics 3410.

4120 Advanced Auditing (3) Legal and professional responsibilities of the auditor, evaluation of internal control, utilization of EDP and statistical techniques in auditing, and audit reports. Prereq: 4110 with grade of C or better.

4140 Reporting for Interrelated Business Entities (3) Principles and techniques of consolidated financial statements; foreign branches or subsidiaries. Prereq: 3130 with grade of C or better.

4430 Advanced Federal Taxes (3) Problems of federal taxation with an emphasis on tax planning and research. Prereq: 3120, 3220, 3430.

4630 Analysis and Design of Information Systems (3) General systems concepts, flow charting, planning of systems studies, determination of systems objectives, development and evaluation of design alternatives, implementation, documentation and control. Prereq: Computer Science 3010.

4950 Individual Research in Accounting (3) Special projects undertaken by undergraduate majors in accounting under direction of faculty members of professorial rank. Prereq: 3130 with grade of C or better.

4990 Senior Seminar (3) Advanced problems in the financial accounting area are analyzed and discussed by students. Prereq: 3130 with grade of C or better.

GRADUATE

See page 80 for information on graduate programs.

5000 Thesis.

5002 Non-Thesis Graduation Completion (3)

5050-60 Introduction to Financial Accounting (3, 3)

5110 Seminar in Accounting Theory (3)

5120 Seminar in Advanced Auditing (3)

5130 Seminar in Current Accounting Topics (3)

5210 Seminar in Advanced Cost Accounting (3)

5310 Auditing Concepts (3)

5330 Advanced Income Tax (3)

5340 Consolidations and Business Combinations (3)

5420 Seminar in Advanced Taxation (3)

5510 Governmental Accounting (3)

5630 Accounting Systems and EDP Concepts and Control (3)

5840 Seminar in Management Information Systems (3)

5810 Accounting for Control (3)

5820 Corporate Reporting Problems (3)

6000 Doctoral Dissertation and Research

6110-20-30 Doctoral Seminar in Accounting (3, 3, 3)

Business Law (216)


4120 Law of Business Organizations and Regulation (3) General principles of law, as these pertain to business partnerships and corporations, effect taxation, and treat with agencies regulating business. Prereq: 4110.

4130 Administrative Regulation of Business (3) Analyzes nature and extent business operations are controlled by administrative agencies operating at federal, state, and local levels. Includes nature of administrative agencies, jurisdiction, administrative procedures, and significant laws administered by such agencies. Prereq: 4120.

4330 Business Law (3) Fundamentals of business law designed for professional examination required for licensing, or certificants in fields of public accounting, certified public accounting, chartered property and casualty underwriters, chartered life underwriters and certified professional secretary.

GRADUATE

5050 Legal Environment of Business (3)

Economics (283)


Assistant Professors: N.O. Alper, M.A. Pittsburgh; H-S. Chang, Ph.D. Vanderbilt, S.M. Crafton, Ph.D. Texas A & M; R.J. Gaston, Ph.D. California (Los Angeles); R.D. Gustley, Ph.D. Syracuse; H.W. Herzog, Jr., Ph.D. Maryland; R. Kyle, Ph.D. Tennessee; A.M. Schiottmann, Ph.D. Washington (Missouri).

Visiting

Requirements for a major in economics consist of: (1) Economics 2110, 2120, and 2130; and (2) a minimum of 33 additional hours in upper-division economics courses. Economics 3110 (3) and 3120 (3) and 3120 are required as a part of the upper-division work and should be taken as early as possible in the upper-division program as possible.
2001 Current Economic Problems (3) Discussion of selected economic policies and events. Several topics are studied and problems are assigned based on student interest. Emphasis will be on non-technical treatment. Designed for non-business majors. May not be used for degree requirements in business administration. Not open to substitution for Economics 2110 or 2120 or 2130.
2110-20-30 Introductory Economics (3, 3, 3) 2110—Macro and micro theory. 2120—Macro problems and policies and the international economy. 2130—Micro problems and policies, Principle topics for 2110 for both 2120 and 2130. Third quarter standing required for admission to 2110.
2118-28-38 Honors: Introductory Economics (3, 3, 3) Honors course designed for students of superior ability and interest. Entrance into 2118 requires a B average; selected third quarter freshmen will be accepted on basis of high school record. American College Testing Program scores, and grade record during first two quarters. Grade of B in 2118 is necessary for entrance into 2128. An A or B in 2128 automatically gives credit for 2138 also, with same grade. Students making C or D in 2128 must take 2130 in order to receive nine hours credit.
3110 Intermediate Micro Theory (3) Allocation of resources and price determination: market demands, production, cost, and supply; distribution. Prereq: 2110, 2120.
3120 Intermediate Macro Theory (3) Aggregate demand, output, and level of employment; price level, inflation and deflation; economic growth. Prereq: 2110, 2120.
3230 Regional Economics (3) Theory and policy of regional economic development. Preq: 3220.
3240 Economic History of the United States (3) Historical developments in agriculture, industry, communications, transportation, banking and trade and other industries in governmental economic policy. Preq: 2110-20.
3250 Economic History of Europe (3) Beginnings of capitalism in medieval Europe, expansion of Europe and dominance of mercantilists in early modern times, mechanization of industry, changes in agricultural organization, and growing importance of commerce in the nineteenth century; two world wars and their economic consequences. Preq: 2110-20.
3310 Comparative Economic Systems (3) Description and analysis of economic goals, institutions and policies in different countries with emphasis on alternative organizational principles of production and structure. Systems examined will include Soviet-type economies. Preq: 2110-20-30.
3340 Government and Business (3) Microeconomic objectives and alternative public policies for their achievement. Preq: College of Business Administration.
3410 Principles of Labor Economics I (3) Supply of and demand for labor; market wage determination; economic analysis of labor unions; applications analysis to various labor market policies such as: unemployment, inflation, minimum wage laws, income distribution and occupational licensing. Preq: 2110-20.
4000 Special Topics (3) Student-generated course offered at convenience of department upon student initiative. Subject matter and contents determined by students and instructor with approval of department. Preqs determined by department each time course is offered. Numerical grade is given to law students. May be repeated for credit.
4110 Managerial Economics (3) Application of economic theory to business decision making, emphasis on profit objectives, measurement and forecasting demand and costs, and capital budgeting. Preq: 2110-20-30. (Same as Water Resources Development 4110.)
4130 Business Cycles (3) Fluctuations in income, employment, prices, and output in the economic system; subjects discussed are historical facts concerning booms and depression, statistical methods for analyzing business fluctuations, theoretical explanations of cycles, and policies that have been proposed to combat them. Preq: 3120 or consent of instructor.
4150 History of Economics Through (3) Development of economic thought, tools of analysis, and economics as a social science, together with an analysis of socio-economic conditions which influenced economic development. Period covered: 1770 through 1936. Preq: 2110, 2120, 2130 and consent of instructor.
4170-80 Introduction to Mathematical Economics (3, 3) Application of mathematical methods to theoretical study of micro and macro economic phenomena. Designed for undergraduate students who have limited training in analytic geometry and calculus. Must be taken in sequence. Preqs: Economics 3110 and Mathematics 1810-20, or equivalent.
4230 Problems in International Trade and Economic Development (3) Problems or problem areas of current importance in fields both of international economics and economic development. Preq: 3210 or 3220.
4231 The Political Economy of Latin America (3) Description, analysis, and comparison of major economic problems and policies of various Latin American countries.
4232 The Political Economy of Asian Development (3) Description, analysis, and comparison of major economic problems and policies of India, China, and Southeast Asian countries.
4260 Economics of Resources (3) Descriptions, needs, and allocation of resources. Benefits and costs of development and use of resources in industrial society.
4990 Independent Study (1-4) Offers qualified student opportunity to pursue topic of special interest. Preq: Senior standing, 3.0 GPA in economics courses and permission of instructor. May be repeated. Maximum total 4 hours credit.
GRADUATE
See page 80 for information on graduate programs.

Economic Theory
5050 Introduction to Economic Analysis (3)
5060 Introduction to Economic Problems and Policies (3)
5070-80 The Firm and Its Environment (3, 3)
5111-12 Microeconomic Theory (3, 3)
5121-22 Macroeconomic Theory (3, 3)
5150 History of Economic Thought (3)
5180-90 Mathematical Methods in Economics (3, 3)
5510 Quantitative Methods in Economic Research (3)
5520 Introduction to Econometrics (3)
5810 Financial Markets and Intermediaries (3)
5820 Monetary Theory and Policy (3)
5830 Commercial Bank Management (3)
6111 Seminar in Advanced Microeconomic Theory (3)
6121 Seminar in Advanced Macroeconomic Theory (3)
6150-60 History of Economic Doctrines (3, 3)
6170-80-90 Econometric Methods (3, 3, 3)
International Trade and Development
5210 Seminar in International Trade Theory (3)
5220 Seminar in Economic Development (3)
5250 Economic History of Europe (3)
5260 Economic History of the U.S. (3)
5610 Location and Regional Development Theory (3)
5620 Methods of Regional Analysis (3)
6211-12, 6221-22 Seminar in International Economics (3, 3, 3, 3)
6331-32, 6421-42 Seminar in Economic Development (3, 3, 3, 3)
6250 Seminar in European Economic History (3)
6260 Seminar in American Economic History (3)
6270 Seminar in Economic History of the Third World (3)
6610 Seminar in Regional Analysis (3)
Industrial Organization
5340 Seminar in Private Enterprise and Public Policy (3)
6351-52 Seminar in Industrial Organization (3, 3)
6361-62 Seminar in Industrial Organization (3, 3)
Economics of Centrally Planned Economies
5310 Economic Systems (3)
6331 Theory and Practice of Economic Planning (3)
Economics of Labor and Manpower
5410 Seminar in Labor Manpower Economics (3)
5420 Seminar in Wage and Employment Theory (3)
6411-12, 6421-22 Seminar in Labor Economics (3, 3, 3)
Other Economics Courses
5000 Thesis
5002 Non-Thesis Graduation Completion (3)
5011-12 Problems in Lieu of Thesis (3, 3)
5910-20-30 Economics Seminar (1, 1, 1)
6000 Doctoral Dissertation and Research

Finance
Assistant Professors: A.L. Auxier, Ph.D. Iowa; H.S. Banton, Ill., M.S. Auburn; M. Lindahl-Stevens, M.S. Illinois; R.A. Weir, Ph.D. North Carolina.

Prerequisites: Accounting 2110-20-30, Economics 2110-20-30, and Statistics 2100 for all courses offered in the finance department except Insurance 3020.

Finance (539)
3110 Money and Banking (3) Nature and functions of money and credit; analysis of monetary and credit systems; money creating role of commercial banks and the Federal Reserve Systems.
3120-30 Business Finance (3, 3) Principles of financial management. Analysis of demand for funds, internal and external supplies of funds, and their costs to the firm. 3120 is prerequisite for 3130.
4110-20 Investment Analysis (3, 3) Theory of investment value, fundamental security analysis, and valuation of specific types of securities. Prereq: 3120-30; 4110 for 4120.
4130 Investment Portfolio Management (3) Analysis of investment objectives; portfolio management policies applicable to individual and institutional investors. Prereq: 4120; Statistics 3220, 4310 or consent of instructor.
4150-60 Evolution and Function of Financial Institutions (3, 3) Financial system of the United States; emphasis on historical role and functions of financial institutions.
4350-60 Public Finance (3, 3) Public expenditures, federal and state revenue systems, financial administration, budgeting and public debt management.
4370 State and Local Finance (3) Emphasis on revenue systems and division of tax sources.
4510 Monetary Theory and Policy (3) Role of money in the economy. Emphasis upon factors that affect demand for and supply of money. Evaluation of current policy.
4520 Commercial Banking (3) Operations of commercial banks, emphasis on asset and liability management. Prereq: 3110.
4660 Problems in Financial Management (3) Financial decision making, a case approach. Prereq: 3120-30; Statistics 3220.
4800 Business Executive in Residence (3) Develops practical areas of finance curriculum. Leading financial executives, bankers, insurance executives, and realtors will conduct classes. May be repeated to maximum of 6 hrs credit. Prereq: Consent of department.
4990 Senior Seminar (3) Intensive investigation of specific topic in student's area of concentration. Taken last quarter of senior year. Required of all students majoring in finance, insurance, or real estate.

GRADUATE
See page 80 for information on graduate programs.
5000 Thesis
5002 Non-Thesis Graduation Completion (3)
5050 Survey of Finance Functions in Business (3)
5110 Theory of Financial Management (3)
5120 Quantitative Techniques in Financial Management (3)
5130 Financial Administration (3)
5140 Seminar: Managerial Finance (3)
5210-20 Public Finance (3, 3)
5230 Government Financial Administration (3)
5420-30 Investments (3, 3)
5620 Taxation and Business Decisions (3)
5800 Executive-in-Residence Seminar for M.B.A. (3)
5810 Financial Markets and Intermediaries (3)
5820 Monetary Theory and Policy (3)
5830 Commercial Bank Management (3)
5990 Research in Finance (3)
6000 Doctoral Dissertation and Research
6110-20 Seminar in Monetary Theory (3, 3)
6210-20 Seminar in Fiscal Theory and Public Finance (3, 3)
6410 Analysis for Financial Decisions (3)
6420 Theory of Finance (3)
6510 Seminar in Financial Management (3)
6810 Financial Institutions and Markets (3)

Insurance (580)
3020 Introduction to Risk and Insurance (3) Consumer-oriented view of risks faced by individuals and business. Methods of risk management, with particular emphasis on life, property, and casualty insurance.
3220 Business Risk Management (3) Principles of risk-bearing and risk analysis, economics of risk and insurance.
4710 Life Insurance and Estate Planning (3) Coordination of life and health insurance with protection, conservation, and distribution of estate assets.
4720 Employee Benefit Plans (3) Plan design, cost factors, and funding media for employee benefits, including business life insurance, group insurance, pensions, profit sharing and other forms of deferred compensation.
4740-50 Property-Casualty Insurance Planning (3, 3) Property and casualty contracts and forms and their application to business and personal risks. Must be taken in sequence.

GRADUATE
5110 Theory of Risk Management (3)
5210 Seminar in Insurance (3)

Real Estate and Urban Development (649)
2610 Introduction to Real Estate (3) Basic concepts, tools and analysis of real estate. May not be used for degree requirements in business administration.
3610 Principles of Real Estate and Urban Development (3) Introduction to real estate and urban development. Prereq: Economics 3110.
3630 Real Estate Finance (3) Institutional and governmental procedures and techniques for financing real estate transactions. Prereq: 3610.
3640 Management and Development of Real Property (3) Real estate investment analysis and taxation. Prereq: 3630.
4110 Real Estate Appraisals (3) Theory and practices of determining real estate value. Prereq: 3610.
4120 Urban Growth and Land Use (3) Analysis of urban growth processes and land use patterns. Prereq: 3610.
4130 Problems of Urban Development (3) Current problems of land use and urban developments. Prereq: 3610.
4900 Aspects of Urban Environment (4) Same as Architecture 4900, Human Services 4900, and Psychology 4900.)

GRADUATE
5002 Non-Thesis Graduation Completion (3)
5110 Urban Economic Analysis (3)
5120 Real Estate Analysis (3)
5130 Housing and Urban Land Markets (3)
5140 Real Estate Investment and Taxation Analysis (3)

Industrial And Personnel Management

Industrial Management (566)

Nine quarter hours of general economics including Economics 2110-20 or the equivalent are prerequisite to all courses in personnel and industrial management.

301 Principles of Management (3) Analysis of basic management functions of planning, organizing and controlling.

3110 Production Management (3) Analysis of production function. Prereq: Statistics 2100 or 3450. Not available for industrial management majors.

3111 Operations Management (3) Analysis and synthesis of concepts and techniques for decision making in the operations function. Integration of the operations function with other business functions. Prereq: Management Science 2110-20. Cannot be taken for credit by students who have credit for IM 3110.


4320 Organization of Industrial Enterprises (3) Organization of production function. Prereq: 3110-20 or approval of instructor.

4330 Operative Supervision (3) Production supervision with emphasis on "human" problems. Prereq: 3110-20.

4410 Operations Control (3) Analysis of the operations control function. Techniques of short-term forecasting; material and capacity requirements planning; integration of scheduling and operations flows into the total operations function. Prereq: 3111.

4420 Advanced Industrial Problems (3) Cases in production management. Prereq: Fifteen quarter hours in major including 4410.

4460 Organizational-Industrial Psychology (3) An analytical and empirical approach to application of psychological tools and knowledge to organizations. Prereq: 3 hrs of statistics. (Same as Psychology 4460.)

4470 Job Analysis and Evaluation (3) Job evaluation as basis for control of wages and salaries. Prereq: 4460.

4520 Evaluation of Personnel Programs (3) Methodologies for criterion development analyzed in areas of selection, training, job evaluation, safety, and labor relations; performance evaluation emphasized. Prereq: 4460-70; Statistics 4310.

4530 Personnel Problems Seminar (3) Case problems in personnel analyzed, applying experimental method and conclusions from personnel research as reported in professional journals. Prereq: 4520.

4610-20 Management Science (3, 3) Applications of mathematical and statistical techniques to problems of personnel management. Must be taken in sequence. Prereq: Thirty quarter hours of mathematics and statistics, and permission of instructor.

4801-02-03 Readings and Research in Personnel Management (1, 2, 3) Prereq: 4460, Statistics 4310, and permission of instructor.

GRADUATE

See page 80 for information on graduate programs.

5000 Thesis

5002 Non-Thesis Graduation Completion (3)

5050 Production Management (3)

5110 Organization Theory I (3)

5120 Organization Theory II (3)

5130 Managerial Planning and Control (3)

5170-80-90 Proseminar in Organizational Psychology (3, 3, 3)

5210 Personnel Management (3)

5220 Wage and Salary Administration (3)

5230 Human Problems in Administration (3)

5240 Personnel Research Seminar (3)

5250-60-70 Organizational-Industrial Psychology (1-3, 1-3, 1-3)

5320 Management Problems in Research Industrial (3)

5410-20-30 Production Management (3, 3, 3)

5610-20 Organizational Behavior (3, 3)

5640 Seminar in Management Information Systems (3)

5710 Management of Foreign Operations (3)

6000 Doctoral Dissertation and Research

6110 History of Management Thought (3)

6120 Advanced Organizational Theory (3)

6130 Seminar in Contemporary Management Issues (3)

6250-60-70 Seminar in Organizational Psychology (3, 3, 3)

6380 Seminar in Industrial Psychology (3)

6900 Field Work in Industrial Psychology

Management Science Programs

Associate Professors: C.E. Bell (Chairman), Ph.D. Yale; R.S. Garfinkel, Ph.D. Hopkins.

Assistant Professor: R.E. Rosenthal, Ph.D. Georgia Tech.

Management Science (627)

2110-20 Decision Models (3, 3) Introduction to the use of quantitative techniques in the decision-making process. Prereq: Mathematics 1560, Statistics 2100, and Computer Science 1410 or Office Administration 2750.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3)

5100 Introduction to Management Science Techniques (3)

5310-20-30 Management Science Methods (3, 3, 3)

5340 Application of Management Science Methods (3)

5510 Topics in Optimization (3)

5610 Markovian Decision Models (3)

5620 Queuing Models (3)

5810 Special Topics in Management Science (3)

5910 Management Science Problems (1-6)

6000 Doctoral Research and Dissertation

6110-20-30 Models for Production Systems (3, 3, 3)

6810 Special Topics (3)

6910-20-30 Management Science Seminar (1-3, 1-3, 1-3)

Marketing and Transportation


Associate Professors: D.B. Indiana; D.W. Craven; P.W. Williams, B.S. Pennsylvania State.

Marketing (632)

Nine quarter hours in general economics, including Economics 2110-20 or the equivalent are prerequisite to all courses in marketing.


3120 Marketing Management (3) Analysis of marketing management. Identifying market opportunities, planning marketing program, and implementing competitive strategies. Prereq: 3110.

3210 Marketing Systems (3) Macromarketing systems approach from viewpoint of decision maker. Examination of inputs, outputs, organizations, and goals of marketing systems. Consideration of comparative marketing systems. Prereq: 3110.

4140 Marketing Communications-I (3) Examination of firm's personal communications function. Managing sales, public relations, including personal selling concepts. Special emphasis on role of sales organization in marketing program. Prereq: 3110-20.


4310 Retailing Management (3) Structure and environment of retailing and its relationship to other parts of the economy. Research and decision mak-
ing in selected areas of store management. Prereq: 3110-20.

4440 Environmental Issues in Marketing (3) Environmental forces which serve as constraints on business decision maker. Emphasis is placed upon current issues and social and ethical implications of marketing decisions. Prereq: 3110-20.

4510 Marketing Information Planning (3) Planning and obtaining information for marketing decision making. Information needs, data collection process, methods of analysis, and interpretation procedures are integrated to serve decision maker. Prereq: 3110-20. Statistics 4310, 4320, or 4250.

4520 Applied Marketing Research (3) Quantitative techniques, behavior concepts, and marketing research methodology in study of consumer purchasing, sales forecasting, and other marketing problems. Prereq: 4510.

4650 Market Opportunity Analysis (3) Developing understanding of various approaches available for evaluating opportunity that may exist within a market. Emphasis on relationship between analysis of markets and marketing decision making. Topics covered will include basic consumer behavior concepts, alternative sources of market information, information analysis techniques, interpretation of marketing information, and forecasting. Prereq: 3110-20. 4510.

4710 Marketing Decisions and Strategies (3) Pragmatic orientation to application of advanced, analytical concepts and skills within marketing environment. Emphasis on integration of knowledge from the component areas of marketing into cohesive, well-organized marketing program. Prereq: 24 hours of marketing including 4510 and 4650 or permission of instructor. Course should be taken as close to graduation as possible.

4818-28 Honors: Marketing (3, 3) Marketing trends and developments. Advanced marketing theory and application. Can be substituted by eligible students for other courses in marketing with consent of department. Prereq: Permission of department.

GRADUATE

See page 80 for information on graduate programs.

5002 Non-Thesis Graduation Completion (3)

5050 Survey of Marketing (3)

5200 Marketing Management (3)

5220 Promotion Management and Strategy (3)

5230 Analysis and Design of Marketing Systems (3)

5300 Marketing Research (3)

5310 Quantitative Techniques in Marketing Analysis (3)

5350 Buyer Behavior Analysis for Marketing (3)

5410 Marketing Strategy (3)

5450 International Marketing Management (3)

5990 Research in Marketing (3)

6000 Doctoral Dissertation and Research

6110 Seminar in Buyer Behavior Research (3)

6210 Seminar in Marketing Models and Model Building (3)

6310 Seminar in Contemporary Marketing Issues (3)

Transportation (981)

Nine quarter hours in general economics are prerequisite to all courses in transportation system. Transportation 3110- 20 or permission of the instructor are prerequisite to all courses numbered above 4000.

3110 Introduction to Transportation (3) Economic, social, and political aspects of national transportation system; economic characteristics of modes of transport; regulatory problems.

3115 Business Logistics (3) Introduction to management of physical distribution and supply systems, consideration of design concepts, cost determinants, firm and environment, and constraints. Prereq: 3110. Statistics 2120 or equivalent.

3120 Traffic Management (3) Concepts and problems of freight traffic management; rate-making theories; rate and classification systems. Prereq: or Coreq: 3110.

3310 Transportation Rates (3) Analysis of current railroad and motor carrier tariffs, classification systems, rate systems. Prereq: 3120.

4110 Railroad Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of the railroad industry.

4210 Highway Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of motor carrier industry.

4310 Water Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of water transportation system.

4420 Air Transportation (3) Analysis of economic characteristics, regulatory provisions, and organizational patterns of commercial aviation.

4510 Urban Transportation (3) Analysis of economic characteristics, regulatory provisions, and management of transportation firms operating in urban areas.

4610 Carrier Pricing Strategy (3) Historical development of carrier pricing systems and analysis of current strategy.

4620 Carrier Management (3) Application of management decision making in transportation. Prereq: Senior standing with minimum of 18 hours in transportation.

4720 Business Logistics: System Management and Control (3) Consideration of control techniques and management decision problems in logistics operations.


4810 International Transportation and Logistics (3) Introduction to import-export traffic management, international carrier management problems, and distribution of transportation systems in other countries.

4820 Current Topics in Transportation and Business Logistics (3) Seminar designed to study specific current problem areas in transportation and distribution. Topic announced prior to offering. May be repeated once for credit. Prereq: Consent of instructor.

4830 Supervised Readings in Transportation and Business Logistics (3) Directed readings and research on subject of mutual interest to student and staff member. Prereq: Senior standing with minimum of 18 hrs of transportation.

4910 Carrier Liability and Claims (3) Rights and liabilities of carriers, consignors, and consignees; claim procedures and claim prevention.

4920 Transportation Law and Procedures (3) Analysis of Interstate Commerce Act and related statutes, practices and procedures before regulatory agencies.

4930 Transportation Policy (3) Analysis of regulatory, promotional, and planning policies of federal, state, and local governmental units.

Office Administration (777)

Professors: G.A. Waggoner (Head), M.S. Indiana; E.W. Davis (Emeritus), M.A. New York University.


Junior standing or the approval of the department head is required for registration in courses numbered 3300 or above.

2110-20-30-40 Typewriting (3, 2, 2, 2) Development of typewriting skills; special emphasis on letter writing, tabulation, and reports. First quarter for students with no previous training in typewriting. Students with one year of high school typewriting receive no credit for 2110 and should begin with 2120; students with two years, no credit for 2110 or 2120, and should begin with 2130. Prereq: 2120-30- 40, grade of C in previous typewriting course. Maximum of six hours credit on any degree program.

2310-20-30 Beginning Shorthand and Transcription (3, 3, 3, 3) Theory of Gregg shorthand; development of dictation and transcription abilities. First quarter for students with no previous training in shorthand. Students with one year of high school shorthand receive no credit for 2310 and should begin with 2320; students with two years receive no credit for 2310 or 2320. Prereq: 2110 or equivalent; for 2320- 30, grade of C in previous shorthand course. 5 hrs per week.

2750 Electronic Data Processing (3) Computer programming with special emphasis on business applications. Prereq: Mathematics 1560 or 1660 or equivalent.

3210 Office Equipment Problems (3) Operation of and comparative data on duplicating processes, dictating, and transcribing equipment, and adding and calculating machines; determining costs of machine operation. Prereq: 2140. 2 hrs and 2 two-hr labs.

4310 Business Letter Writing (3) Principles, practices, and mechanics of modern business letters; principles applied by solving letter-writing problems.
4320 Business Report Writing (3) Principles and mechanics of report writing, tabular and graphic presentation, basic instruction in formal research reports and thesis writing, and sources of business information.

4410-20 Advanced Shorthand and Transcription (3, 3) Improvement of ability to take dictation and transcribe mailable copy; emphasis on skill necessary to meet occupational standards. Prereq: 2330, 2 two-hour periods.

4430 Supervised Office Experience (3) Orientation to office positions by actual office work; telephone training, study of sources of information required by secretary, record keeping, and office etiquette. Prereq: 3210, 4310. 2 three-hour periods.

4510 Office Management (3) Function of office; office building; physiological factors; office environment; furniture and equipment; machines and supplies; selection of employees; compensation and incentive plans; job analysis, and supervision.

4520 Office Systems (3) Routines and procedures for correspondence and mailing; filing systems; oral communications; office planning and layout; systems of control.

4540 Problems in Office Management (3) Work simplification; cost control and reduction; development of standards; use and preparation of office manuals. Prereq: 3210, 4320 or approval of instructor.

4551-61 Problems in Office Management: Systems Analysis (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4552-62 Problems in Office Management: Form Design (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4553-63 Problems in Office Management: Records (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4554-64 Problems in Office Management: Mechanization (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4555-65 Problems in Office Management: Correspondence (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4556-66 Problems in Office Management: Supervision (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4557-67 Problems in Office Management: Work Simplification (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4558-68 Problems in Office Management: Training (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4559-69 Problems in Office Management: Work Measurement (3, 3) Prereq: 3210, 4320, 4520 or equivalent.

4710 Punched Card Methods (3) Card designing, key punching, sorting, tabulating, and preparation of reports; application to problems in fields of accounting, statistics, personnel, economics, psychology, education, and other areas of research. 3 hrs and 2 two-hour labs.

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

GRADUATE

5011 Problems in Lieu of Thesis (3)

5050 Data Processing in Business (3)

Statistics (962)

Professors: C.G. Thipgen (Head), Ph.D. Virginia Polytechnic; D.S. Chambers, M.B.A. Texas; R.A. McLean, Ph.D. Purdue.

Associate Professors: H.A. Lasater, Ph.D. Rutgers; J.W. Philpot, Ph.D. Virginia Polytechnic; R.D. Sanders, Ph.D.

Texas; D.J. Wheeler, Ph.D. Southern Methodist.

Assistant Professors: W.H. Olson, Ph.D. Virginia Polytechnic; G.B. Ranney, M.E.S. North Carolina State (Raleigh); W.S. Younger, Ph.D. Virginia Polytechnic.

*Visiting.

2100 Probability and Statistics (3) Elementary theory of probability; frequency and density functions; expected values and variances; fundamental concepts of statistical inference. Cannot be taken for credit by students who have credit for 3450. Prereq: Mathematics 1560 or 1850.

3220 Analysis of Time Series (3) Some statistical methods applicable to analysis of trends and time series; graphic presentation and analysis, index numbers, curve fitting, correlation, trend, analysis, seasonal and cyclical variation. Prereq: 2100 or 3450.

3310 Industrial Statistics (3) Shewhart Control Charts, acceptance sampling by attributes, Military Standard sampling plans. Special applications of control charts, acceptance sampling theory and procedures. Prereq: 2100 or 3450.

3410 Sampling Methods (3) Expository treatment of the basic ideas of scientific sampling illustrated developpal Emphasis on sampling methods for accounting and marketing research. Prereq: Statistics 2100 or 3450.

3450 Statistics for Engineering (3) Survey of statistical methods with special application for engineering students; frequency distributions, selected sampling distributions, some tests of significance. Cannot be taken for credit concurrently with 2100. Prereq: Mathematics 2840.

3460 Statistics for Engineering (3) Continuation of 3450 with emphasis on chi-square statistic, analysis of variance, and multiple regression analysis. Prereq: 2840.

3550 Random Processes and Probability Models (3) Functions of random variables, multivariate distributions, conditional expectations, waiting time distributions; Poisson processes, life-testing, queuing, Markov processes. Introductory theory with applications. Prereq: 3450; Mathematics 2850.

3420 Non-Parametric Methods (3) Measures of association, two-sample tests, analysis of variance with ranked data, paired and multiple comparisons in preference testing; questionnaire evaluation. Prereq: 2100 or 3450.

410 Regression and Correlation (3) Linear regression and correlation, polynomial and multiple regression, multiple and partial correlation. Prereq: 2100 or 3450.

4110 Design of Experiments (3) Principles and procedures for experimental design. Randomization, choice of size and number of experimental units, utilization of blocking arrangements. Interpretation of experimental data. Prereq: 2100 or 3450.

4750 Statistical Problems in Business (3) Case study, course of statistical problems in variety of business areas. Prereq: Fifteen hours in statistics and permission of instructor.

GRADUATE

Prerequisites for a major: Mathematics 2840-50-60, Statistics 3450 or equivalent.

5002 Non-Thesis Graduation Completion (3)

5050-60-70 Statistical Analysis for the Behavior Sciences (3, 3, 3)

5110 Introduction to Probability Theory (3)

5120-30 Theory of Statistical Inference (3)

5140 Theory of Least Squares (3)

5210 Stochastic Processes I (3)

5211 Elementary Statistics (3)

S311 Fundamental Concepts of Probability Theory (3)

5312 Statistical Methods (3)

5420 Intermediate Analysis of Variance (3)

5610 Special Topics in Statistics (3)

6060 Applied Multivariate Analysis (3)

6070 Factor Analysis (3)

6210 Stochastic Processes II (3)

Interdepartmental Unit

Business Administration (205)

1110 Business Administration (3) Introduction to business. Not open to students with more than 3 credit hours of economics.

4430 Business Policy (3) Analysis of business problems and managerial decision making through case study method and written reports. Prereq: Core requirements except business law (see page 73) and senior standing.

4610 Seminar in Small Business Assistance (3) Application of classroom learning to problems of small business in the community. Student is given opportunity to apply business concepts and develop analytical skills. Upon completion of selected readings relevant to small or minority enterprise, students are assigned a project on basis of interest, ability, and experience. Students work in teams under supervision of a participating professor within the College of Business Administration. Approval for enrollment must be secured from instructor in advance. May be repeated to maximum of 9 hrs. credit.

4990 Institutional and Organizational Research (3) Design, implementation, and evaluation of cross-disciplinary research on organizational and institutional change. Enrollment requires membership on the Standing Committee on Improvement of Learning and Teaching in the College of Business Administration. Prereq: Recommendation of student's department head and approval of selection board of Standing Committee.

GRADUATE

See page 80 for information on graduate programs.

5310 Business Policy (3)

5410 Business and Its Societal Environment (3)

5610 Seminar in Applied Business Analysis (3)

5900 Academic Practicum (3)

6900 Research Methodology (3)

Center for Business and Economic Research

STAFF

D.A. Hake (Director), Assistant Professor of Management Science, Ph.D. Tennessee W.F. Skidmore, Assistant Director, M.S. George Washington K.E. Quindry, Research Professor, Ph.D. Kentucky C.B. Garrison, Associate Professor of Economics, Ph.D. Kentucky G.W. Kronbach, Research Associate, M.A. North Dakota N.O. Alper, Research Assistant Professor, M.A. Pittsburgh R.D. Gustely, Research Assistant Professor, Ph.D. Syracuse
Communication has become increasingly significant in today's complex society. The growth of specialization, the widening gaps among segments of society, and the inescapable nature of world conflict point up the need for a greater understanding of communication processes and for the education of young men and women capable of perceptive understanding of the communications media.

The College of Communications offers programs designed to acquaint students with the nature of communication and to prepare them for professional work in a variety of communications fields. The College is composed of the School of Journalism and the Departments of Advertising and Broadcasting. The curricula of these three academic divisions have a common base of courses beyond which choices will permit the student to develop special interests.

The American Council on Education for Journalism has accredited the Newspaper-Editorial and the Advertising programs. The College is a member of the American Association of Schools and Departments of Journalism and the Association for Professional Broadcasting Education.

Admission Requirements

Admission requirements are stated on page 18. Communications majors must demonstrate ability to use a typewriter proficiently before beginning their professional level.

Students transferring into the College, either from another institution or another college in the University of Tennessee, must have at least a 2.0 average.

Majors must complete English 1510-20 with a minimum grade of C in each course before enrolling in any 2000-level (or higher) course in the College.

Majors will not be admitted to upper division (3000 and 4000) courses in the College unless they have an average of at least 2.3 in lower division courses in the College. By major these courses include: Advertising—Communications 1110, Journalism 2215, Advertising 3000; Broadcasting—Communications 1110, Journalism 2215, Broadcasting 2750, Advertising 3000; Journalism—Communications 1110, Journalism, 2215-20.

Curriculum

The College curriculum offers academic majors in advertising, broadcasting, and journalism. Through core introductory courses, students receive a basic view of the nature of communications.

The freedom of electives provided within the programs permits students to develop specialized interests in a variety of fields. In consultation with an adviser, they may plan individual programs leading to newspaper, magazine, radio, television, public relations, or advertising work. They may prepare for careers in agricultural or industrial journalism. They may select related courses to develop a specialty in writing news of science, government, and business. Others may elect courses to prepare themselves as writers on foods, fashions, and home interests, or they may combine training in communications with work in secretarial science.

Students in other divisions of the University may take certain courses for training in effective communication or for an understanding of the social role of the mass media.

Students who have completed the basic courses in the College may earn three quarter hours of practicum credit. Approval of the adviser and the departmental chairman must be obtained before such work is begun.

Upper Division

Permission of instructor is prerequisite for all 3000 and 4000 level courses, with the exception of Advertising 3000, in the College of Communications.

Course Load

The maximum number of hours which can be taken by an undergraduate without special permission is 19 hours. Permission to take 20 or more hours must be obtained from either the Dean or Assistant Dean of the College.

Cooperative Program

The College, in cooperation with the University-wide Undergraduate Cooperative Education Program, has developed a cooperative program with the media, advertising and public relations agencies, and the communications departments of business organizations where interested students might combine their education with a productive work experience. At present, only a limited number of such opportunities are available. Although other arrangements can be made, a student will enter the program only after completing one or two quarters at the University. A student will alternate with another student, with one working full-time for the employer for one quarter while the other person is in school, etc. The typical program is arranged for a five-year period, with the student spending the final three quarters of the senior year on campus.

The Cooperative Program gives the student an opportunity to gain practical experience, develops a sense of responsibility and cooperation, creates greater interest and incentive in academic studies, provides part of the expenses, and may lead to permanent employment after graduation.

Information concerning this program may
be obtained by writing to the Undergraduate Cooperative Education Program, Division of Continuing Education, 415 Communications and Extension Building, University of Tennessee, Knoxville, Tennessee 37916.

The Edward J. Meeman Distinguished Professorship
As a result of a $200,000 grant to the School of Journalism by the Edward J. Meeman Foundation, outstanding journalists and renowned educators are brought to the campus as distinguished professors.

Turner Catledge, former Executive Editor of The New York Times, was the first recipient. The current holder of the professorship is John Hohenerg, longtime administrator of the Pulitzer Prizes and outstanding teacher at the Columbia University Graduate School of Journalism.

Equipment and Facilities
The Communications and Extension Building provides extensive facilities for communications instruction. The College has laboratories with special equipment for instruction in writing, editing, photography, advertising, and broadcasting. In addition, advanced students gain experience through summer internships or through the University's general program of publishing and broadcasting. The Office of Public Relations, campus publications such as the Daily Beacon, and the University radio station provide practice for communications majors.

The Tennessee Association of Broadcasters, Tennessee Press Association, and Tennessee High School Press Association, all centered at the University, present opportunities for special work and study.

Requirements for Graduation
The Bachelor of Science in communications is awarded to majors who complete a program of 194 hours prescribed under departmental requirements listed below. At least 140 of these hours must be taken in courses other than the major and related communications fields. At least 27 of the hours in the major must be taken at The University of Tennessee, Knoxville. Normally, no more than 22 transfer credits in the major will be applied to the 194 hours. Journalism 2210 is the only course in the College that may be taken by correspondence.

NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

Undergraduate Curriculum

Advertising

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TOTAL: 194 hours

**NEWS AND PUBLIC AFFAIRS SEQUENCE**

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TOTAL: 194 hours

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TOTAL: 194 hours

**PRODUCT/PERFORMANCE SEQUENCE**

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TOTAL: 194 hours

**Students lacking a high school unit of American history must also take History 2510-20 and 2511 or 2521.**

**Not required of students with 2 years of high school foreign language credit. They may substitute 8 hours of liberal arts electives from the following: Anthropology 2510-20; History 2510-20; Mathematics 1540-50; Psychology 2500-2520; History 2510-20; Psychology 2505-2520.**

**Students lacking a high school unit of American history must also take History 2510-20 and 2511 or 2521.**

**Not required of students with 2 years of high school foreign language credit.**

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**Students lacking a high school unit of American history must also take History 2510-20 and 2511 or 2521.**

**Not required of students with 2 years of high school foreign language credit.**
*Specialization Area Options:

a) Urban or Governmental Public Relations

   Required: Sociology 3420, Political Science 4740-50. Electives: Sociology 4530, 4530, 4930; Political Science 4510, 4610-20; Psychology 4900, Office Administration 4310-20.

   **Note:** Students lacking a high school unit of American history must also take History 2510-20.

b) Educational Public Relations

   Required: Sociology 4410; Educ. C & I 3020, 4750; Electives: Sociology 4530; Educ. C & I 4530; Psychology 5540; Office Administration 4310-20.

c) Industrial or Corporate Public Relations


   **Note:** Students lacking a high school unit of American history must also take History 2510-20.

   **Note:** Students requiring 2 years of high school foreign language credit. They may substitute 8 hours of liberal arts electives, from the following: Anthropology 2510-20; Geography 1810-20 or 2110-20; Mathematics 1540-50 or 1840-50 (or equivalent honors courses). Philosophy 2510-20 or 2510-30; Sociology 1211-21, 31-41; Psychology 2500-20-30 (or equivalent honors courses); Religious Studies 2610-20; or they may elect to fulfill the requirement with a foreign language.

   **Note:** Students lacking a high school unit of American history must also take History 2510-20.

Declarations of Instruction

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

Communications (259)

Professors:

J.B. Haskins, (Chairman of Research), Ph.D. Minnesota; D.G. Hileman, Ph.D. Illinois; D.W. Holt, Ph.D. Northwestern; B.K. Leiter, Ph.D. Southern Illinois; J.R. Lynn, Ph.D. Southern Illinois.

Associate Professor:

H.H. Howard, Ph.D. Ohio.

1110 Introduction to Communications (3) Nature, functions, responsibilities of mass communications media and agencies. Survey of newspapers, magazines, radio, television, film advertising, public relations, press associations, and specialized publications. Open to majors who have had no mass communications courses and to non-majors below junior level.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3)
Broadcasting (202)

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

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

Assistant Professor: F.A. Lester, M.A. Tennessee, Certificate, NBC Television Institute, Northwestern; M.K. Sidell, Ph.D. Northwestern.

2750 Introduction to Broadcasting (3) Theory, history, operations, and principles of broadcasting industry and its functions in society.

3360 Television and Radio Advertising (3) Principles of successful radio-television advertising; methods of the advertising manager; techniques of advertising media.

3510 Radio-Television News (3) Theory and technique of radio televion news operation, recording, editing, writing, and broadcasting.

4010 Speech for Broadcasting (3) The speech of the announcer; the art of speaking; the use of the voice in broadcasting.

3670 Television Film News (3) Theory of and techniques of making films for television. Film processing and editing techniques. Emphasis on news and documentary. 2 hrs and 1 lab.

4030 Television Production (3) Theories of motion pictures with emphasis on their practical application. Photoelectric cameras and motion picture equipment, TV and film production.

4035 Advanced Television Production (3) Application of the theories, techniques, and tools of television production to create program material suitable for television. 2 hrs and 1 lab.

4100 Television Production (3) Techniques of television production for broadcast and television. Emphasis on news, commentary, and entertainment. 2 hrs and 1 lab.

4110 Television Production (3) Television production course for beginners. Emphasis on news, commentary, and entertainment. 2 hrs and 1 lab.

4130 Radio Production (3) Study of radio production techniques. Preparation of scripts, writing, directing, recording, and editing.

4210 Advanced Radio Production (3) Application of radio production techniques to the production of radio programs. 2 hrs and 1 lab.

3560 Radio-Television Writing (3) Theory of writing for radio and television, with emphasis on the development of creative writing skills and techniques.

3570 Television Film News (3) Theory of and techniques of making films for television. Film processing and editing techniques. Emphasis on news and documentary. 2 hrs and 1 lab.

4210 Advanced Radio Production (3) Application of the theories, techniques, and tools of radio production to create program material suitable for broadcast. 2 hrs and 1 lab.

3580 Broadcast Law and Regulations (3) Broadcast law and regulations. 2 hrs and 1 lab.

5360 Broadcast Documentary Writing (3) Broadcast documentary writing. 2 hrs and 1 lab.

5650 Radio-Television Program Development (3) Techniques of program development. 2 hrs and 1 lab.

5970 Independent Study (3) Independent study in broadcasting.

School of Journalism (594)

Professor: D.C. Cade (Director), Ph.D. Iowa; J.B. Haskins, Ph.D. Minnesota; J. Hohenberg, B. Litt. Columbia; J.E. Kelshoven, M.A. Louisiana State; J.M. Lain, M.A. Iowa; B.K. Leiter, Ph.D. Southern Illinois; W.C. Tucker (Emeritus), M.A. Westminster.

Associate Professors: J.A. Cooper, Ph.D. Indiana State; G.A. Everett, Ph.D. Iowa; S.L. Pruitt, M.S. Tennessee; E.F. Shaw, Ph.D. Stanford; F.B. Thornburg, Jr., M.A. Florida.

Assistant Professor: J.N. Adamson, M.S. Tennessee.


2210 Writing for Mass Media (3) Principles and practices of writing for major types of mass communications media. Not available to majors in the College of Communications.

2215 Basic News Writing (4) Information gathering and writing techniques with deadline pressure. Observation, interviewing, speech reporting for print and broadcast mass media. 3 hrs and 1 lab.

2220 Reporting (4) Methods of gathering and writing. 3 hrs and 1 lab.

2230 Editing for Mass Media (3) Copyreading and editing techniques for print and broadcast media. 2 hrs and 1 lab.

2990 Applied Mass Communications (3) Principles and practices of newswriting, reporting, and editing for mass media. 3 hrs and 1 lab.

3100 Communications History (3) Development of newspapers, magazines, and broadcasting in America. Biographies of major journalists.

3120 Writing Feature Articles (3) Instruction and practice in writing feature articles for newspapers and magazines. 2 hrs and 1 lab.

3121 Advanced Reporting (3) Gathering and writing techniques with deadline pressure. Use of VDT terminals. 2 hrs and 1 lab.

3220 News Editing and Display (3) Instruction and practice in making up newspapers and magazines. Advanced work in copyreading, rewriting, and headlining. 2 hrs and 1 lab.

3310 Graphic Arts in Journalism (3) Printing equipment and production methods. 3 hrs and 1 lab.

3410 Communications Law (3) Statutory law and judicial precedents relating to the mass communications media. Contempts of court, invasion of privacy, copyright, broadcasting, advertising, and postal regulations.

3510-20-30 Practicum in Journalism, I, II, III (1, 1, 1) Supervised experience in newsgathering and writing.

3560 Investigative and Specialized Reporting (3) Investigative and specialized reporting for newspapers and magazines. 3 hrs and 1 lab.

3710 Public Relations (3) Theories and principles of public relations. 3 hrs and 1 lab.

3720 Public Relations Advanced (3) Publicity organization, techniques, and tools. 3 hrs and 1 lab.

3810 Specialized Publications (3) Business and industrial publications. 3 hrs and 1 lab.

3910 Basic Photography (3) Principles, policies, and procedures of using pictures as a communication medium. Press and reflex cameras and flash photography. 3 hrs and 1 lab.

4130 Editorial Writing (3) Analysis of editorial policies, practices, pages. Writing of editorials, columns, and interpretative articles. 3 hrs and 1 lab.

4131 Reporting Public Affairs (3) Reporting news of courts, politics, government, finance, labor, and social agencies. 3 hrs and 1 lab.

4140 Mass Media and Society (3) Role of communications media in society. Codes and ethical restraints on publications and broadcasting. Censorship, propaganda, and freedom of the press. 3 hrs and 1 lab.

4420 Newspaper Management (3) Daily and weekly business operations. Development in newspaper management.

4510-20-30 Practicum in Journalism, I, II, III (1, 1, 1) Supervised experience in news writing and editing.

4910 News and Feature Photography (3) Advanced principles and methods in black-and-white photography. 3 hrs and 1 lab.

4930 International Communications (3) Communication with other nations and international agencies. 3 hrs and 1 lab.

4990 Problems in Research (3) Independent work course for seniors. 3 hrs and 1 lab.

GRADUATE

5210 Government and the Press (3)

5250 Public Opinion and Mass Media (3)
5510-20-30 Writing and Editing Projects (3, 3, 3)
5560 Magazine Article Writing (3)
5710 Studies in Public Relations Communications (3)
5810 Magazine Editing and Production (3)
5950 Communications and International Development (3)
5970 Independent Study (3)
Division of Continuing Education, Knoxville

Joseph P. Goddard, Dean
William D. Barton, Assistant Dean

The Division of Continuing Education at Knoxville extends the academic programs and services for all colleges and schools on campus to the people in the area served by The University of Tennessee, Knoxville. In addition, the Division cooperates with all other campuses of The University of Tennessee in extending academic programs and services to all citizens of the state.

Conferences and Institutes

Director: F.A. Thurman, B.A. Tennessee.
Associate Director: R.H. Rader, M.S. Tennessee.

Conferences, institutes short courses and workshops from one day to two weeks or more in length are planned and administered by this department and the related academic departments in cooperation with business, industrial, and professional organizations. Each program is specifically designed for the needs of the group being served and may be held on the University campuses or at any other place in the state where adequate facilities and sufficient interest exist.

Off-Campus Programs


The Department of Off-Campus Programs is a service-oriented administrative unit. The students toward whom that service is directed are the part-time adult students who live some distance from the UTK campus and who take part or all their courses at off-campus locations.

University Evening School (Knoxville and Oak Ridge)

Assistant Director: J.C. Sekula, Ph.D. Tennessee.
Assistant Professor (full-time only): G.M. Fisher, M.S. Tennessee.
Instructors (full-time only): A.J. MacCabe, M.S. SUNY at Albany; C.B. Maramonov, B.S. Louisiana State.

The University Evening School with the cooperation of academic colleges and departments administers credit classes and supports activities for those students attending in the late afternoon and evening. Programs are offered enabling working adults to pursue their educational interests and goals.

Workshops and Non-Credit Programs

Assistant Director: R.S. Gordon, M.S. Tennessee.

The Department of Workshops and Non-Credit Programs coordinates credit workshops offered through various academic units of the University. Additionally this department administers the non-credit courses offered both on and off campus. Non-credit courses provide opportunities for remedial, in-service, and leisure-type educational programming for the Knoxville community.

Certain non-credit courses are approved for veteran's training. For specific information, contact the Department of Workshops and Non-Credit Programs.
College of Education

William H. Coffield, Dean
E. Dale Doak, Associate Dean for
Undergraduate Studies
Helen B. Watson, Acting Associate Dean

Teacher education is historically a major function of The University of
Tennessee. Beginning in 1903, when the first courses for teachers were offered,
the University has increasingly fulfilled its responsibility to provide schools with
competent teachers and service personnel and to improve the teaching
profession by continually upgrading its membership. The College of Education
was established in 1926, and all teacher preparation programs at The University
of Tennessee are now coordinated within its seven departments and its
School of Health, Physical Education, and Recreation.

The College of Education holds membership in the American
Association of Colleges for Teacher Education. 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 faculty of the College of Education is committed to performing
three major functions: (1) to provide professional preparation for teachers,
administrators, and school service personnel at undergraduate and
graduate levels; (2) to collaborate with school personnel, educational agencies,
professional groups, and others interested in the evaluation and
improvement of educational opportunities programs, and services;
and (3) to promote and conduct experimental and research studies in
education.

The teacher preparation programs represent utilization of University-wide
resources and cooperation of all appropriate units. Certain requirements
are of basic importance: a broad cultural background in the arts and sciences
(general education), mastery of professional knowledge and skills, and
thorough preparation in specific teaching fields. Through a carefully
planned program of combined academic and direct experiences, the prospective
teacher acquires a depth and breadth of knowledge and understanding superior
to that of the typical college graduate—superior in cultural and
citizenship appreciation as well as in professional and scholarly
accomplishment.

The Claxton Education Building contains many modern and functional
facilities for the professional training of teachers. Classrooms, laboratories,
seminar rooms, faculty and administrative offices, the instructional
materials center, the Bureau of Educational Research and Service, the
School Planning Laboratory, and facilities for special activities such as
observation and experimentation are located in this air-conditioned building.

Special Services

Bureau of Educational Research and
Service. Four major types of
activities—research, development,
educational services, and publications—are
channeled through the Bureau of Educational
Research and Service (BERS), located in
Claxton Education Building. The research
activities 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
instructional methodology. Educational
services include a wide list of activities such as
inservice educational programs,
consultant services, educational services and
administrative training programs. Official
publications of the College of Education are
developed through the Bureau. A limited
number of graduate student assistantships
are available. The Educational Opportunities
Planning Center, the Research Coordinating
Unit, and the School Planning Laboratory
are integral parts of the Bureau of Educational
Research and Service.

EDUCATIONAL OPPORTUNITIES
PLANNING CENTER

The Educational Opportunities Planning
Center (EOPC) works with school districts in
the Tennessee-Kentucky area to help meet
their desegregation-related needs by
assisting with needs assessment and by
helping develop plans to meet the needs. A
new component was added during the 1975-
76 year to deal with sex discrimination in the
school systems of Tennessee and Kentucky.
Staff follow through with inservice training of
local district personnel, with such training
directed toward solutions of curricular,
human relations, and other types of problems
created or compounded by school
desegregation and sex discrimination.
On-site evaluation of locally installed practices
and continuing cooperative evaluation of the
progress of local programs are additional
major efforts. This program is funded by the
U.S. Office of Education.

RESEARCH COORDINATING UNIT

The Research Coordinating Unit (RCU),
located on campus at Alumni Hall, is available
for use by students, faculty, administrators,
and all vocational educators in the state of
Tennessee.

The primary objectives of the RCU are to
collect and disseminate information,
coordinate research, stimulate research, and
conduct research in selected areas. The RCU
has a library with the complete series of ERIC
Documents stored on microfiche. Microfiche
reader-printers are available in the library and
portable readers may be checked out.
overnight. Computer searches of the ERIC files are also available for a nominal fee.

SCHOOL PLANNING LABORATORY
The School Planning Laboratory (SPL), located in Claxton Education Building, assists school systems and colleges in the state and in the southeastern region with problems arising from renovation of existing facilities and planning of new facilities. Course work peculiar to the field of school planning is offered through the Department of Educational Administration and Supervision. Graduate student assistantships are available each year through the Laboratory.

The Reading Center. A commitment to the concept of teaching, research, and service as the role of the University involves the Reading Center in a variety of activities. An extensive program of diagnostic and remedial reading services to children is closely tied to graduate course work and practicums in reading methodology. Effective reading and study classes are offered for the benefit of the University student body. Service functions of the Center include extensive inservice and consultant services for public school reading program improvement. The Center also maintains a materials center and assists in the coordination of an ERIC/CRIER Regional Information Center in reading. For further information write the Director, Reading Center, 1912 Terrace Avenue, Knoxville, Tennessee 37916.

Teacher Placement Service. The College of Education, cooperating with the University Placement Service, assists qualified students and alumni in securing positions. School and college administrators are cordially invited to make full use of these services in their efforts to employ competent personnel.

General Information

Admission to the College
For transfer into the College of Education after completion of the freshman year, a minimum grade average of 2.0 (C) is required.

Course Load—Permission for more than 20 hours in a quarter must be obtained from the Associate Dean for Undergraduate Programs. A normal course load in the College is 16-18 hours.

Admission to Teacher Education
All students who desire teacher certification, whether enrolled in the College of Education or other colleges, are required to apply for admission to the Teacher Education Program. Formal application for admission to the Teacher Education Program should be made during the second or third quarter of the sophomore year. Application forms may be obtained in the Office of the Associate Dean for Undergraduate Programs on the day of the test. Special note: Students must be admitted to the Teacher Education Program at least one quarter before taking 3010, 3030 and certain other courses in the College.

Student procedures for applying for admission to the Teacher Education Program are: (1) Obtain application form in the Dean's office during registration time at the beginning of the quarter. Speech and hearing tests are usually administered on registration day. (2) Proceed to the Speech and Hearing Center (at the corner of Yale and Stadium Drive) on one of the specified dates between the hours of 9 a.m. and 4 p.m. and complete the speech and hearing tests. Leave the application form (scan sheet) with the test administrator.

The College of Education will be informed of the speech and hearing test results. Those applicants having satisfactory speech and hearing test results, a grade point average of 2.20 or above at the termination of the previous quarter (if admitted to the University prior to fall, 1966, a 2.00 GPA is sufficient), and their academic advisor's consent will be informed of their acceptance by a letter from the Associate Dean for Undergraduate Programs sometime during the quarter. Students not qualifying for acceptance will also be informed of their status by letter. The academic advisor's consent and confirmation of the grade point average is obtained by the Dean's office and does not entail action by the student. If a student takes the speech and hearing test and does not have the required grade point average at the time, but subsequently raises it, it will be necessary to return to the Associate Dean's office and reapply for admission to the Teacher Education Program. You will not be admitted automatically upon raising your grade point average to the required level.

The following criteria must be met by all students applying for admission to teacher education:

- **Scholastic Achievement**—a cumulative grade point average of 2.2 (a 2.0 GPA if admitted to the University prior to fall quarter, 1966).
- **Physical Fitness**—satisfactory ratings in general health, speech, hearing, and sight.
- **Personal-Social-Ethical Fitness for Teaching**—satisfactory ratings from faculty advisor.

Admission to Student Teaching
Application for student teaching must be filed no later than January 1 of the academic year preceding the actual experience. For example, if a student plans to student teach during the 1978-79 academic year he must make application by January 1, 1978.

Application forms may be obtained in the Office of the Director of Student Teaching, 214 Claxton Education Building.

Students majoring in special education—speech and hearing and in special education—hearing impaired are required to make application for clinical practice or student teaching in the Department of Special Education and Rehabilitation in the Office of the Director of Student Teaching.

Before admission to the student teaching quarter, the student must have fulfilled the following requirements:
1. Full admission to the Teacher Education Program no later than the quarter preceding student teaching, in all conditions relative to admission satisfied.
2. Completion of the professional core courses (Education 3010, 3020, 3030 and Educational Psychology 2430 or 3810).
3. Completion of at least 50 percent of course work in the endorsement area(s).
4. Completion of the special methods courses at The University of Tennessee.
5. Completion of the Student Teaching Seminar and the September experience (non-credit).
6. Senior standing and a minimum grade point average of 2.0 on work completed at The University of Tennessee.

The fifteen-hour student teaching experience is evaluated on a satisfactory-unsatisfactory basis and the hours are included in the University policy requiring a 2.0 in the last 45 hours worked.

The most important criterion in placing student teachers in the public schools is the value of the experience for preparing for teaching. The University cannot guarantee the geographic locale desired by the student though effort will be made to follow the student's wishes. The University maintains student teaching centers in East Tennessee communities some of which are considerable distance from Knoxville. Married students will be placed as near their homes as possible in order to preserve family life.

Substitutions
It is sometimes necessary and advisable for students to substitute other courses for those required in a particular curriculum. This is particularly true of students who transfer to the University of Tennessee, College of Education from another college or university. The general test of whether a substitution would be appropriate is "does the course you wish to substitute meet the spirit of the course requirement?" That is, "is the content similar or perhaps more appropriate to your needs?"

To initiate a substitution request the student should visit with his adviser first. If they agree that the substitution is an appropriate one, the substitution request form should be forwarded to the office of the Associate Dean for Undergraduate Programs, Claxton Education Building 212. Approved petitions are forwarded to the Dean of Admissions for further approval, and for filing with the Undergraduate Council.

Recommendation for Certification
The application for a professional teacher's certificate should be completed early in the final quarter before graduation. Application forms may be obtained in the Registrar's Office, 215 Student Services Building and 212 Claxton Education Building. Tennessee State regulations stipulate that the applicant for a professional certificate must be recommended by the teacher-training institution. The Dean of the College of Education is the official designated to recommend University of Tennessee graduates for teacher certification. To receive this recommendation, the applicant must have fulfilled the following requirements:
1. A minimum cumulative grade point average of 2.0.
2. Satisfactory performance of the student teacher experience.
3. A minimum grade point average of 2.0 in the teaching field(s).
4. Completion of a methods course in each area of endorsement.
5. Fulfillment of all special recommendations of the Committee on Standards and Admissions.
Graduate Programs

The College of Education, through the Graduate School, offers programs leading to the Master of Science degree, the Master of Education degree, the Master of Arts in College Teaching degree, the Master of Public Health degree, the Specialist in Education (advanced graduate) degree, the Doctor of Education, and the Doctor of Philosophy degrees. For further information, see the Graduate School Catalog.

Undergraduate Curricula

The College offers courses of study leading to the Bachelor of Science in Education and to eligibility for teacher certification in Tennessee and in those states which grant reciprocity privileges to graduates of institutions accredited by the National Council for Accreditation of Teacher Education (NCATE).

A core of studies provides the foundation for specialization in all teacher education curricula. In addition, approved concentrations must be completed in subject fields specifically related to the public school curriculum. A choice is to be made among programs leading to certification at one of these levels: elementary (kindergarten-9), secondary (grades 7-12), or special subjects in grades 1-12.

Courses in library science are available to students who are interested in beginning positions in any library or in preparation for further graduate study in professional librarianship. The minimum requirements for full-time librarianship in any size school in Tennessee can be met through completion of the basic library service courses (3510, 3520, 3530, 4140, 4150, 4270, 4530, 4750).

Endorsement as a librarian requires 27 quarter hours in library science. At the undergraduate level, only a minor in library science is available. Students in the College will select an appropriate curriculum from those outlined under the undergraduate curriculum section. Students interested in this program should consult with a member of the faculty of the Graduate School of Library and Information Science.

Students should work closely with faculty advisers in planning programs of study. The chosen curriculum must be followed as outlined to assure graduation and certification, and any proposed substitution for a required course should be filed for approval before the end of the junior year.

NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for the college or department.

I. Curricula for Elementary Teachers

A. Kindergarten through Grade 9

GENERAL EDUCATION......................................................89 hours

Communications (12 hours)

English 1510-20 (4, 4); Speech 2011 (4) or 2311 (4) or any Speech electives

Health and Physical Education (18 hours)

P.E. 3450 (3), School Health 3610 (3), Psychology 2500 (4), P.E. and Health electives (6 hours)

must include minimum of 3 hours in each area.

Humanities (12 hours)

Literature 6 hours; the remaining four hours must be chosen from foreign language (above introductory level), philosophy, religious studies, Art 1815 or 1825, or Music 1210 or 1220.

Mathematics (9 hours)

Mathematics 2110, 2120, 2130.

Natural Science (20 hours)

8 or 12 hours in biological science. Recommended series are Biology 1210, 1220 (1220 or Botany 1110, 1120), 8 or 12 hours in physical science. Recommended series are Physics 1410, 1420 (1430) or Geology 1510-20 or Astronomy 2110, 2120, 2130 or Chemistry 1110, 1120, (1130).

Social Studies (18-20 hours)

History (4 hours)—it is recommended that the history course be taken at the sophomore level. Electives (14-16 hours) from anthropology, economics, geography, political science, and sociology. Minimum of 3 areas required.

CORE PROFESSIONAL COURSES..................................9 hours


SPECIALIZED COURSES..................................................18 hours

Educational Psychology 2430 (3 hours); Art Education 2100, 2110 (6 hours); Music Education 2100, 3110 (6 hours); Educ. C & I 3510 (3 hours).

AREAS OF CONCENTRATION: 15-16 hours

One or more areas of specialization are to be chosen from the following:

Art Requirements plus 15-16 hours from Art, RACID, Art Education.

Black Studies Courses from at least 3 different fields must be included. See Black Studies for specific course possibilities.

Child Study Requirements plus 15-16 hours from Child Development, Psychology, Educational Psychology.

Early Childhood Education (Kindergarten-Grade 3) To include Educ. C & I 4303, 4450, 4451; Health Elective (3); CFS 3120, 3210; Student teaching in kindergarten in Grades 1-3.

Foreign Language 16 hours.


Humanities Requirements plus 16 hours

Language Requirements plus 16 hours in English, Speech, Journalism.

Library and Information Science Requirements plus 15-16 hours. If certification is desired in Library Service, the student must complete 24 hours in Library and Information Science 3520-30, 4140, 4270, 4330, 4750.

Mathematics Requirements plus 15 hours.

Middle Schools 15-16 hours. To include Educ. C & I 4340; Ed. Psychology 3810; Educ. C & I 3520 or 4280; Educ. C & I 3562 or 3653, or 3654 or 3657 or 3658 (a second methods course); Educ. C & I 4350 or 4351 or 4352; lab experience in middle school.

Music Requirements plus 16 hours.

Social Studies Requirements plus 16 hours.

Special Education 15 hours. (If certificate is desired in Special Education areas of Cripping and Special Health and/or Partially Seeing additional hours are required, including one additional quarter of student teaching.)

a) Cripping and Special Health Conditions (18 hours) Special Education and Rehabilitation 4150, 3333, 4850, 4921; Children's amendment 4610 or Human Services 2690, and 3 hours from Special Education 3520, 4130, 4160 or 4250.

b) Partially Seeing (18 hours) Special Education and rehabilitation 4110, 3333, 4850, 4923; 6 hours from Special Education 3560, 4110, 4120, 4150, 4250, 4850; Office Administrative 2310 (for those lacking high school credits in typing).

ELECTIVES..........................................................21-25 hours

TOTAL MINIMUM REQUIRED......................................191 hours

*Requires admission to Teaching Education Program.

B. Nursery School through Grade 3.

GENERAL EDUCATION.................................................83 hours

Communications (12 hours)

English 1510-20; Speech 2011 or 2311.

Humanities (12 hours)

Literature (4); Music 1210 or 1220 or Art 1815 or 1825; philosophy or religious studies (4).

Natural Sciences (16 hours)

Biological science (in series or combination) (8); Physical science (in series or combination) (8).

Mathematics (9 hours)

Mathematics 2110-20-30.

Social Sciences (18 hours)

History (4); Child and Family Studies 4610; Economics 2110; Anthropology 2530 or 3410 or Human Services or Sociology 4320 or 4510; Elective (from anthropology, economics geography, human services, political science, sociology).

Interdisciplinary Studies in Home Economics (16 hours)

H.E. 1510, 1520, 2510, 3510.

SPECIALIZED COURSES..............................................31 hours

P.E. 3450, 3660; Pub. Health 3210; Health Elective 3210, 3215, Music Ed. 2100, 3110; Educ. C & I 4333, CFS 3120.

FOUNDBATIONS COURSES............................................15 hours

CFS 1500, 3210; Select One; CFS 3220, 4230 or 4350; Select two: Educ. C & I 3010, 3020, 3030.
II. Joint Elementary-Secondary Education Certification

(Mathematics + B.S. Degree)

GENERAL EDUCATION: 90 hours

English 1510-20 and Speech 2021 or 2311.

Humanities 12 hours.

Eight hours literature and four hours electives.

Health and Physical Education 19 hours.

Psychology 2500, Educ. Psychology 2430, Physical Education 3450; Physical education electives 3 hours; School Health 3610. Select one of the following as a prerequisite to School Health 3616: Public Health 1110, School Health 3000, 3210, 3410, 3510.

Natural Sciences 20 hours.

Recommended series or combinations:
A. Biological Science (8-12 hours): Biology 1210-20-30 or Botany 1110-20
B. Physical Science (8-12 hours): Physics 1410-20-30 or Geology 1510-20 or Astronomy 2110-20 or Chemistry 1120-20-30

Mathematics 9 hours.

Math 2110-20-30, taken in sequence.

Social Sciences 18 hours.

Four hours in history, 14 hours electives from a minimum of three areas of social science other than history.

CORE PROFESSIONAL EDUCATION: 50 hours.

A. Educational Curriculum & Instruction (9 hours)
   Educ. C & I 3101*, 3200, 3301*
B. Educ. C & I Methods (26 hours)*
C. Educ. C & I Student Teaching (15 hours)*
   Educ. C & I 4810, 4720.

SPECIALIZED COURSES: 12 hours.


AREA OF CONCENTRATION: 36 hours.

1. Any 4 hours from 3450-50-60, 3540-50-60.
2. At least 12 hours in courses numbered 3050 or above with at least one course selected from each of the following groups:
   (a) Algebra: Math 3090, 3720, 4060, 4120, 4150.
   (b) Analysis: Math 3100, 3110, 4510, 4510.
   (c) Probability: Math 3050, 3060, 4650, 4750.

ELECTIVES: 10 hours.

TOTAL MINIMUM REQUIRED: 198 hours.

III. Curricula for Secondary Education (7-12)

GENERAL EDUCATION: 69 hours

Communications 12 hours.

English: English 1100, Speech 2311.

Health and Physical Education (9 hours).

Including at least 3 hours of school health or public health or nutrition (P.E. must be represented).

Humanities (16 hours).

Any 4 hours from English 2510-20-30-40-60-70-80-90, plus 12 hours of electives from anthropology, art, English literature, Library and Information Science 3510-20-30, foreign language (beyond introductory level), history (upper-division), music, philosophy, or religious studies. (Note: At least three fields must be represented.)

Mathematics 4 hours*.

Natural Science 12 hours.

A biological science, a physical science, or a combination of the two.

Psychology 4 hours*.

Psychology 2500.

Social Studies 12 hours.

Two fields must be represented from anthropology, economics, geography, history, human services, political science, and sociology.

CORE PROFESSIONAL EDUCATION: 9 hours.

Educ. C & I 3101*, 3200, 3300*

SPECIALIZED PROFESSIONAL EDUCATION: 33 hours.

Educational Psychology 3810; 6 hours of appropriate methods courses. Educ. C & I 3521-22-23*, 4710-20, and 6 hours of electives selected from the College of Education. NOTE: An appropriate special methods course must be taken in each subject and/or area in which endorsement is sought.

English
   Educ. C & I 3657 and 3658
Foreign Language
   Educ. C & I 3652 and 3563
Mathematics
   Educ. C & I 3751 and 3752
Science
   Educ. C & I 3654 and 4654
Social Studies*
   Additional methods course

TEACHING SUBJECT AREAS AND ELECTIVES: 72 hours.

See outline of the programs below.

TOTAL MINIMUM REQUIRED: 183 hours.

PROGRAMS AVAILABLE:

Program majors leading to graduation and certification for high school teaching range from the broad fields, comprehensive major to the subject major and minor combination programs.

*Requires admission to Teacher Education Program.

Mathematics 2012 recommended for students who will take only 4 hours.

Includes history, economics, geography, sociology, political science, psychology.

At least one must be taken concurrently with a special methods course.

A. English Education

1. English with a Minor
   (a) 45 quarter hours in English, including three in English language (3330, 3440, 4440, 4450).
   (b) 36 hours in one language with no less than 18 quarter hours of upper division courses.
   (c) 27 quarter hours in another language with no less than 18 quarter hours of upper division courses.
   (d) 9 hours of general and applied linguistics.

2. Foreign Language Major and Minor
   (a) 45 quarter hours (9 less quarter hours if based upon 2 entrance credits from high school) and one language with no less than 27 quarter hours of upper division courses.
   (b) 27 quarter hours in another subject.

C. Mathematics Education

1. Area 1 Major and Elective
   (a) Mathematics and Physical Sciences (75 hours)

   (1) Mathematics* (27 quarter hours) must include at least one-year sequence in calculus or analytic geometry and calculus, and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
   (a) Algebra: Mathematics 3090, 3720, 4060, 4120, 4150
   (b) Analysis: Mathematics 3100, 3110, 4510, 4510
   (c) Geometry: Mathematics 3330, 3330
   (d) Probability: Mathematics 3050, 3060, 4650, 4750
   (2) Physical Sciences—12 quarter hours in each of the following, geology, physics.
   (3) Electives—12 additional quarter hours in physical sciences and/or mathematics.

   A student may not receive credit for both Mathematics 1540 and 1550. A maximum of sixteen hours credit may be obtained in mathematics from courses numbered below 2000.

   Endorsements: Mathematics and Physical Science, General Science*

b. Mathematics and Related Sciences (72 hours)

   (1) Mathematics* (36 quarter hours)—Must include at least one year's sequence in calculus or analytic geometry and calculus, and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
   (a) Algebra: Mathematics 3090, 3120, 3720, 4150, 4160, 4170
   (b) Analysis: Mathematics 3100, 3110, 4510, 4520, 4530
   (c) Geometry: Mathematics 3310, 3320, 3420, 3310
   (d) Probability: Mathematics 3050, 3060, 4650, 4660, 4670
   (2) Related Sciences—12 quarter hours in physics* and 12 quarter hours in each of the following: astronomy, biology, botany, chemistry*, geology, microbiology, zoology.

   A student may not receive credit for both Mathematics 1540 and 1550. A maximum of sixteen hours credit may be obtained in mathematics from courses numbered below 2000.

   Endorsements: Mathematics, General Science*

   c. Mathematics and Computer Sciences (72 hours)

   (1) Mathematics* (36 quarter hours)—Must include at least one year's sequence in calculus or analytic geometry and calculus, and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:
   (a) Algebra: Mathematics 3090, 3120, 3720, 4150, 4160, 4170
   (b) Analysis: Mathematics 3100, 3110, 4510, 4520, 4530
   (c) Geometry: Mathematics 3310, 3320, 3420, 3310
   (d) Probability: Mathematics 3050, 3060, 4650, 4660, 4670

   A student may not receive credit for both 1540 and 1550. A maximum of sixteen hours credit may be obtained in mathematics from courses numbered below 2000.

   (2) Computer Science and Physics—24 quarter hours in computer science including Computer Science 3150 or 3155 and 4410-4420 and 12 quarter hours in physics.*

   Endorsements: Mathematics

   2. Mathematics Major with a Minor (72 hours)

   (a) Mathematics* (45 quarter hours)—Must include at least one year's sequence in calculus or analytic geometry and calculus, and at least 12 quarter hours in courses numbered 3050 or above with at least one course selected from each of the following categories:

   (1) Algebra: Mathematics 3090, 3120, 3720, 4150, 4160, 4170
   (2) Analysis: Mathematics 3100, 3110, 4510, 4520, 4530
   (3) Geometry: Mathematics 3310, 3320, 3420, 3310
   (4) Probability: Mathematics 3050, 3060, 4650, 4660, 4670
   (b) 27 quarter hours in another subject used as a minor.

   A student may not receive credit for both Mathematics 1540 and 1550. A maximum of sixteen hours credit may be obtained in mathematics from courses numbered below 2000.

   Endorsements: Mathematics.
D. Psychology Education
1. A concentration and endorsement in Psychology shall require a minimum of 30 quarter hours. A concentration in Psychology shall require a minimum of 30 quarter hours – 12 hours upper division distributed as follows:
   a. Cultural 16 hours
   b. Psychology 2520. 4
   c. Psychology 3120. 4
   d. Psychology 3310. 4
   e. Psychology 3210. 4
   f. Electives - 12 hours

2. Two minors (18-27 hours for a total of 45 quarter hours) with a minimum of 6 hours upper division. At least one of the two minors must meet the two minors minimum endorsement requirements for the subject area.

E. Science Education
1. Area Majors in Science (72 hours minimum)
   a. Biological Science (72 hours minimum)
      * Biology 1210-20 or Botany 1110-20-40 (12 hours)
      Microbiology 1020 (4 hours)
      Chemistry (excluding 1410 series) (12 hours)
      Physiology 2280, 2280-20-30 (12 hours)
      Total 72 hours
   b. Earth and Environmental Sciences (72 hours minimum)
      Includes 12 hours biological science required, and 14 hours science electives selected from astronomy, chemistry (excluding 1410 series), geology, geophysics, and geology. Geology (15 hours)
      Astronomy (4 hours)
      Geophysics (4 hours)
      Geology (Meteorology or Climatology) (4 hours)
      Geology, Conservation, Oceanography, or Soil Science (6 hours)
      Total 72 hours
   c. General Science (72 hours minimum)
      Basic requirement of 12 hours in each of four of the following subjects:
      * Biology 1210-20 or Botany 1110-20-40 (12 hours)
      Chemistry series (excluding 1410 series) (12 hours)
      Geology series (excluding Geology 1000) (12 hours)
      Physics (excluding 1410 series) (12 hours)
      Mathematics (excluding 1020, 2020 and 2120-20-30) (12 hours)
      Total 72 hours

Endorsements: Biology (20 hours), Geology (20 hours), or Physical Science (20 hours)

F. Social Studies Education
Program for Broadfields Social Science (Major 72 hours)
Certification includes economics, geography, history, political science and sociology.

1. 28 quarter hours in history, including 1510-20 and 2520-20, and 12 hours in world and/or American history.
   2. 8 quarter hours in each of the following: geography, political science, and sociology.
   3. 4 quarter hours in anthropology.
   4. 9 quarter hours in economics, including 2110-20 and an elective.
   5. 7-8 additional quarter hours in the above-listed related fields Program II
      Specific subject major (45 hours plus 27 hours for a minor).
   6. Minors. A minor is defined as 27 quarter hours in a single subject area, i.e., biology, history, French, psychology, speech, etc. A minor does not meet certification requirements in all cases.

IV. Art and Music Education
A. Art Education
GENERAL EDUCATION: 67-69 hours
Communications (12-12 hours)
English 1510-20 (4, 4) and 3-4 hours in speech.
Health and Physical Education (9 hours)
Activities courses in physical education plus School Health 3120.
Humanities (15-16 hours)
Art History 1815 and 1825, one literature course, and one elective from anthropology, philology, foreign language above 1000 level, upper division history, library service, religion or music.
Mathematics (4 hours)
Natural Science (12 hours)
Any twelve hours from the biological and/or physical sciences.
Psychology (4 hours)
Social Studies (12 hours)
Any twelve hours from at least two areas.
CORE PROFESSIONAL EDUCATION: 9 hours
Ed. C & I 3101*, 3200, 3030*
SPECIALIZED PROFESSIONAL EDUCATION: 21 hours
Student teaching: Ed. C & I 4710*, 4720*, Ed. Psych. 2430 or 3810, and an elective in the College of Education.
TEACHING AREAS AND ELECTIVES: 84 hours
A. Major (60 hours)
Art Education (24 hours)
Music Education (24 hours)
Art History 1115, 1125, 1135. Plus twelve quarter hours in a single area and twelve additional hours distributed over three other studio areas.
B. Minor (24 hours)
May be taken in any area offering a minor.

TOTAL MINIMUM REQUIRED: 181 hours

*Requires admission to Teacher Education Program.

B. Music Education
GENERAL EDUCATION: 65-67 hours
Communications (12-12 hours)
English 1510-20 and 3-4 hours in speech.
Health and Physical Education (9 hours)
Activities courses in physical education plus School Health 3510.
Humanities (14 hours)
Music 2230-30, literature course, and one elective from art, anthropology, literature, foreign language beyond introductory level, upper division history, psychology, or religious studies.
Mathematics (4 hours)
Natural Science (11-12 hours)
Three courses from the biological and/or physical sciences, to include Physics 1810.
Psychology (4 hours)
Social Studies (12 hours)
Any 12 hours, to include at least two areas.
CORE PROFESSIONAL EDUCATION: 9 hours
Ed. C & I 3101*, 3200, 3030*

SPECIALIZED PROFESSIONAL EDUCATION: 21 hours
Student teaching: 4710*, 4720*, Educ. Psych. 2430 or 3810, and a senior elective in the College of Education.

TEACHING AREAS AND ELECTIVES: 86-108 hours
Concentration in Vocal Music (Voice Principal): 86-108 hours
A. 25 quarter hours in Music Education. 10-20-20, 2110; 2411; 2421; 2431; 2433, 3130; 3150; 4420.
B. 49 quarter hours in Music. 1111-21-33; 2111-21-33; 2113-23-33; 2340; voice 22 hours; plus piano proficiency and required ensemble.
Concentration in Vocal Music (Piano or Organ Principal): 86-108 hours
A. 25 quarter hours in Music Education. 10-20-20, 2110; 2411; 2421; 2431; 3130; 3150; 4420.
B. 55 quarter hours in Music. 1111-21-33; 1113-23-33; 2111-21-33; 2113-23-33; 2340; piano or organ 22 hours; voice 6 hours; plus required ensemble.
Concentration in Elementary Music Education (Piano or Organ Principal): 86-108 hours
A. 31 quarter hours in Music Education. 10-20-20, 2110; 2411; 2421; 2431; 3130-42, 3150; 4420; 4441-22; 4450.
B. 55 quarter hours in Music. 1111-21-33; 1113-23-33; 2111-21-33; 2113-23-33; 2340; piano or organ 22 hours; voice 6 hours; required ensemble participation.
Concentration in Instrumental Music: 86-108 hours
A. 35 quarter hours in Music Education. 10-20-20, 2411-12-13; 2421-22-23; 2431-32-33; 3130; 4210.
B. 61 quarter hours in Music. 1111-21-33; 1113-23-33; 2111-21-33; 2113-23-33; 2340; 3122 or 4124; principal instrument 22 quarter hours; secondary instrument 6 quarter hours; piano proficiency; participation in required ensemble.
C. Music Education 4460 is required for all students whose principal instrument is wind or percussion.

TOTAL MINIMUM REQUIRED: 181-208 hours

V. Health, Physical Education, Recreation, and Safety

GENERAL REGULATIONS FOR ALL MUSIC EDUCATION STUDENTS

A. Admitted students, with credit or as a registered auditor, in a major instrumental or vocal organization each quarter in residence (on-campus) as a music education major, as approved by the student's advisor and the directors of the organizations concerned. Students preparing to be band directors are expected to enroll in Marching Band unless officially excused.

Instrumental Major: Concert Band; University Marching Band; or University Orchestra.
Vocal Major: Concert Choir; University Glee Clubs.
Elementary Music Education Major: Same as vocal.

B. Transfer students must take proficiency examinations in applied music, music theory, sight singing and dictation prior to registration in Music Education curriculum.

*Requires admission to Teacher Education Program.

V. Health, Physical Education, Recreation, and Safety

A. Concentration in Elementary Physical Education (1-9)
GENERAL EDUCATION: 88 hours
Communications (12 hours)
English 1510-20 and Speech 2021 or 2311.
B. Minor in Elementary Physical Education

(Open only to students with a concentration in Secondary Physical Education.)

P.E. 3540, 3550, 3560, 3570, 3650, 3660, 3670; 4150; 3260.

C. Concentration in Secondary Physical Education (7-12)

GENERAL EDUCATION 89 hours

English 1510-20, Speech elective (4); Chemistry 1510-20 suggested; Physics 1450; Zoology 2500; P.E. 1020-1021, 2022, 2023, 2032; School Health 3210; Humanities electives (16 hours) selected from: history; anthropology; economics; geography; political science; sociology; geology; psychology; Psychology 2500; Physical Education Education 1010, 3010, 3100, 3200, 4130, 4150, 4200, 4380, 4500.

PROFESSIONAL EDUCATION 32 hours

Education C & I 3010-20-30, 3100-20, Educ. Psych. 3810; Education C & I 4170-20; Educ. elective (3 hours); Physical Education 3260 (practicum, field experience—2 hours).

SPECIALIZED PROFESSIONAL EDUCATION 48 hours

P.E. 1020, 1021, 2022, 2023, 2032, 3220, 3210, 3310, 4310, 4440, 4450, 4330; 4410 or 3010; 3180; 3240; and 13 hours electives from any upper division P.E. course.

ELECTIVES 27 hours

Hours to be used for minor, endorsement, or electives (None of the 27 hours may be taken in lower division physical education.)

TOTAL MINIMUM REQUIRED 196 hours

*Requires admission to Teacher Education Program.
GENERAL ELECTIVES—to make up graduation total.

TOTAL MINIMUM REQUIRED .......... 191 hours

*Requires admission to Teacher Education Program.

D. Concentration in Emotionally Disturbed (Secondary)
a. Special Education and Rehabilitation 3333, 4130, 4610, 4620, 4630, 4640, Special Education and Rehabilitation electives 9 quarter hours
b. Education Reading elective, Diagnostic Measurement, Educational Psychology 3810 and Educational Psychology 4240 or Psychology 3550.
c. 12 hours from the following: Psychology 2530, 3210, 3210, 4220, 4520 or Educational Psychology 4130 or Psychology 3650 or Educational Psychology 4760, 4680, 4730.
d. Requirements for a minor in a subject area must be met (minimum of 24 hours).
e. Education (C & I) 4720 and Special Education and Rehabilitation 4924 and one methods course in minor field.

TOTAL MINIMUM REQUIRED: Total hours required for endorsement in the various special education programs appear on the curriculum sheets available from the faculty adviser.

*Recommended electives.

E. Concentration in Emotionally Disturbed (Elementary)

GENERAL EDUCATION .................................. 91 hours
Communications (12 hours) English 1510 and 1520, Speech 1211 or 1221 or 2311.
Health and Physical Education (14 hours) School Health 3610; Physical Ed. 3450; P.E. and health electives (must include a minimum of 3 hours in each of the following:
Humanities (12 hours) Literature (8 hours); Elective chosen from philosophy, religious studies, foreign language above freshman level, or course from Art 1815 series, or from Music 1210 series.
Mathematics (9 hours) Mathematics 2110-20-30.
Natural Science (20 hours) 8-12 hours biological science: Botany 1110-20-40) or Biology 1210-20-30.
Social Studies (20 hours) History (4 hours) chosen from 1510-20, 1610, 1950, 2510-20 (or appropriate alternative); Electives (15-16 hours) from three of the following: anthropology, economics, geography, political science, human services, or sociology.
Psychology (4 hours) Psychology 2500.

CORE PROFESSIONAL COURSES .......... 9 hours
Educ. C & I 3010*, 3020, 3030*.

SPECIALIZED PROFESSIONAL EDUCATION .......... 9 hours
Ed. & C 1 & 3010*, 3020, 3030*.

SPECIALIZED PROFESSIONAL ELECTED COURSES .......... 24 hours
Appropriate methods course(s) and student teaching: Ed. C & I 4710*, 4720*, Ed. Psych. 2430 or 3810; and a senior elective in the College of Education.

TEACHING AREAS AND ELECTIVES .......(Hours will vary according to program and endorsements.)

*Requires admission to Teacher Education Program.

A. Concentration in Educable Mentally Retarded (Elementary)
a. Special Education and Rehabilitation 3333, 3520, 4110-20-30, 4350, 4810, 4811, 4922, and 9 quarter hours Special Education and Rehabilitation electives.
b. Education 3260, 3280, Education Reading elective, Education Arithmetic elective, Education elective.
c. Music Education elective, Art Education elective, Physical Education or Health elective.
d. Educational Psychology 2430 or Psychology 3550, Educational Psychology Diagnostic Measurement elective.
e. 12 quarter hours from the following: Psychology 2530, 3210, 3220, Education 4860, Educational Psychology 4800, 3730, and 3810 or Educational Media.
f. 9 quarter hours of general electives.

TOTAL REQUIRED ........... 191 hours

B. Concentration in Educable Mentally Retarded (Secondary)
a. Special Education and Rehabilitation 3333, 4110-20-30, 4350, 4440, 4811, 9 quarter hours of Special Education and Rehabilitation electives, Special Education and Rehabilitation (Rehabilitation) elective, Educational Psychology 3810, 6 quarter hours of Education Reading electives, Educational Diagnostic Measurement elective.
b. Education 4120, Education Teaching Methods;
c. 9 quarter hours from following: Educational Psychology 2430, 4800, Psychology 2530, 3210, Education 4860.

TOTAL MINIMUM REQUIRED ....... 191 hours

C. Concentration in Multiple Disabilities

VI. Special Education

GENERAL EDUCATION .......... 82-85 hours
Communications (11-12 hours) English 1510-20 and 3-4 hours in speech.
Health and Physical Education (9 hours) Activities courses in physical education plus School Health 3420.
Humanities (15-16 hours) Any from literature, plus 11-12 hours of electives from anthropology, art, literature, Library and Information Science 3520-20, foreign language beyond introductory level, upper division history, music, philosophy, or religious studies. (NOTE: At least three fields must be represented.) Mathematics (4 hours).
Natural Science (20 hours)
Any combination from the biological and physical sciences with 12 hours from one area (biological or physical) and 8 hours from the other.
Psychology (4 hours) Psychology 2340.
Social Studies (19-20 hours) History 1510-20 or 2510-20 plus a minimum of 11-12 hours from three of the following: anthropology, economics, geography, political science, sociology.

SPECIALIZED PROFESSIONAL EDUCATION .......... 9 hours
Appropriate methods course(s) and student teaching: Ed. C & I 4710*, 4720*, Ed. Psych. 2430 or 3810; and a senior elective in the College of Education.

TEACHING AREAS AND ELECTIVES .......(Hours will vary according to program and endorsements.)

*Requires admission to Teacher Education Program.
F. Concentration in the Hearing Impaired

a. Specialization in Early Childhood Development

GENERAL EDUCATION.................................................. 81-85 hours

Communications (12 hours)

English 1510-20; Speech 1211 or 2311 or Communication 1110.

Health and Physical Education (10 hours)

Science 1510-30; Physical Education 3450; Physical education electives.

Psychology (4 hours)

Psychology 2500.

Humanities (15-16 hours)

English literature 12 hours electives (choose 2 areas); anthropology, art, history, philosophy, foreign language (above introductory level); religious studies, music, library and information science.

Mathematics (3 hours)

Mathematics 2110.

Natural Sciences (9 hours)

8-12 hours in biological science; (choose one series) Biology 1210-20-30; Botany 1110-20; 8-12 hours in physical science; Physics 1410-20-30; Geology 1510-20; Astronomy 2100-20-30; Social Studies (17-20 hours)

History 1510-20 or 2510-20

Anthropology electives; economics; geography; political science, sociology.

CORE PROFESSIONAL EDUCATION.................................................. 9 hours

Education C&I 3010*, 3020, 3030*.

SPECIALIZED PROFESSIONAL EDUCATION AND MAJOR.................................................. 67 hours

English (4 hours) 12 hours electives (choose 2 areas): anthropology, art, history, philosophy, foreign language (above introductory level); religious studies, music, library and information science.

Mathematics (3 hours)

Mathematics 2110.

Natural Sciences (9 hours)

8-12 hours in biological science; (choose one series) Biology 1210-20-30; Botany 1110-20; 8-12 hours in physical science; Physics 1410-20-30; Geology 1510-20; Astronomy 2100-20-30; Social Studies (17-20 hours)

History 1510-20 or 2510-20

Anthropology electives; economics; geography; political science, sociology.

CORE PROFESSIONAL EDUCATION.................................................. 9 hours

Education C&I 3010*, 3020, 3030*.

SPECIALIZED PROFESSIONAL EDUCATION AND MAJOR.................................................. 67 hours

English (4 hours) 12 hours electives (choose 2 areas): anthropology, art, history, philosophy, foreign language (above introductory level); religious studies, music, library and information science.

Mathematics (3 hours)

Mathematics 2110.

Natural Sciences (9 hours)

8-12 hours in biological science; (choose one series) Biology 1210-20-30; Botany 1110-20; 8-12 hours in physical science; Physics 1410-20-30; Geology 1510-20; Astronomy 2100-20-30; Social Studies (17-20 hours)

History 1510-20 or 2510-20

Anthropology electives; economics; geography; political science, sociology.

CORE PROFESSIONAL EDUCATION.................................................. 9 hours

Education C&I 3010*, 3020, 3030*.

SPECIALIZED PROFESSIONAL EDUCATION AND MAJOR.................................................. 67 hours

English (4 hours) 12 hours electives (choose 2 areas): anthropology, art, history, philosophy, foreign language (above introductory level); religious studies, music, library and information science.

Mathematics (3 hours)

Mathematics 2110.

Natural Sciences (9 hours)

8-12 hours in biological science; (choose one series) Biology 1210-20-30; Botany 1110-20; 8-12 hours in physical science; Physics 1410-20-30; Geology 1510-20; Astronomy 2100-20-30; Social Studies (17-20 hours)

History 1510-20 or 2510-20

Anthropology electives; economics; geography; political science, sociology.

CORE PROFESSIONAL EDUCATION.................................................. 9 hours

Education C&I 3010*, 3020, 3030*.

SPECIALIZED PROFESSIONAL EDUCATION AND MAJOR.................................................. 67 hours

Audiology and Speech Pathology elective (3050 recommended); Audiology and Speech Pathology 3330, 4190, 4200, 4210, 4220, 4230, 4250, 4260, 4280, 4290, 4351, 4361, 4371, 4870, 4871; and Pre-Student Teaching Seminar.

TOTAL MINIMUM REQUIRED.................................................. 190 hours

G. Concentration in Speech and Hearing

GENERAL EDUCATION.................................................. 84 hours

Communications (12 hours)

English 1510-20, Speech 2311.

Health and Physical Education (6 hours)

Activities courses recommended. Health and physical education electives (both areas must be selected) 12 hours.

Humanities (16 hours)

English (4 hours) 112 hours electives (choose from two areas); anthropology, art, history, philosophy, foreign language (above introductory level); religious studies, music, library and information science.

Mathematics elective (4 hours)

Natural Sciences (10 hours)

8 hours biological science; 8 hours physical science.

Psychology (4 hours)

Psychology 2500.

Social Studies (20 hours)

History electives (8 hours plus 12 hours representing three areas from anthropology, economics, geography, political science, sociology, General Electives (6 hours).

CORE PROFESSIONAL EDUCATION.................................................. 9 hours

Education C&I 3010*, 3020, Special Ed. 4030.

SPECIALIZED PROFESSIONAL EDUCATION.................................................. 19 hours

Psychology 2520 or 2530, Psychology 3650 or 3760 or Ed. Psych. 2430 or 3410. 11-12 hours upper division Psychology or Educational Psychology including Psychology 3150. (Ed. Psych. 3110, 4290, 4460 recommended.)

TEACHING AREAS AND ELECTIVES.................................................. 69 hours

Special Education 3333, three-hour elective (4110 or 4130 recommended).

Audiology and Speech Pathology elective (Pathology 3330) 3110, 3710, 4040, 4310, 4400, 4720, 4930, Audiology and Speech Pathology 3300, 3530, 3780, 3820, 4310, 4610, 4630, 4631.

Clinical Practicum Courses (12-15 hours)*

Audiology and Speech Pathology (or Special Education) 4320-30-40, Special Education 4341, 4342.

TOTAL MINIMUM REQUIRED.................................................. 181 hours

*Requires admission to Teacher Education Program.

See Speech and Hearing Center staff for assignment each quarter. Total 200 clock hours necessary for State Certification.

The following two areas of endorsement require completion of requirements of the elementary (K-9) or secondary education curriculum.

H. Concentration in Crimping and Special Health Conditions

a. Completion of Elementary (K-9) or Secondary Education Curriculum.

b. Special Education and Rehabilitation 3333, 4110, 4130, 4310.

c. Special Education 3110, 3530, 3540, 4210, 4220, Special Education 3333, 3410, 4250, 4260, 4290, 4351, 4361, 4371, 4870, 4871; and Pre-Student Teaching Seminar.