course of study. Before the end of the sophomore year, students in the engineering science programs are required to develop, in concert with a faculty adviser, a statement of objectives and a course plan for the upper-division years. This course plan must be filed with the Office of Admissions and Records before the students with more than 90 quarter hours can register for courses, and before the student's senior standing sheet can be prepared.

MASTER OF SCIENCE AND DOCTORAL PROGRAMS

Graduate programs leading to the degrees of Master of Science and Doctor of Philosophy with a major in engineering science are available to graduates of recognized curricula in engineering, mathematics, or one of the physical or biological sciences. Program options include solid mechanics, fluid mechanics, bioengineering, and other engineering sciences. In the biomedical and engineering science option, interdisciplinary programs are arranged to meet individual needs or interests. Each applicant will arrange with the adviser or any prerequisite courses before entering a program; the student's program of study must be approved by his or her advisory committee, and must comply with the requirements of the Graduate School. The student's major professor may be selected from a department other than the Department of Engineering Science and Mechanics. The flexibility and interdisciplinary aspects of the program options are intended to be of particular interest to prospective students currently employed in industry, government, or design activities and whose interests in continuing education (either full-time or part-time) lie at one of the interfaces between science and engineering, or can best be met by interdisciplinary study in engineering. The department's course offerings and research activities are also intended to meet the needs of students who seek professional employment in engineering areas requiring specialization in mechanics, or in related interdisciplinary studies such as biomechanics.

General policies of the Graduate School relating to admission, residence, examinations, and research are described in the Graduate Catalog.

Engineering Science and Mechanics (335)

2705 Elementary Statics and Dynamics (3) Resolution and composition of forces; moments; resultants of force systems; free body diagrams and coplanar equilibrium; centrally loaded particle dynamics. (Primarily for transfer students.) Prereq: College Physics (Mechanics); coreq: Math 1850 or equival.

2710 Statics (3) Resultants of space force systems; static equilibrium of structural elements and space frames; belt friction; first and second moments. Prereq: 2705 or Basic Engineering 1310, Math 1860.

2720 Dynamics (3) Absolute and relative kinematics of rigid bodies; kinetics of rigid bodies using Newton's laws; work, energy, and impulsive-momentum. Prereq: 2705 or Basic Engineering 1320, Math 2840.

3110-20-30 Fluid Mechanics (3, 3, 3) Basic laws of fluids, effects of viscosity and compressibility; empirical and analytical relations; Navier-Stokes equations; boundary-layer concepts; potential flow. Must be taken in sequence. Prereq: 2720, 3700, Math 2840; coreq for 3120: Mech. Engr. 3311 or equivalent.

3120-20 Mechanics of Materials (3) Concepts of stress and strain, stress-strain relations, and Mohr's circle; statics of members in trusses and frames; analysis of axially loaded members; torsion; bending. Not for department graduate credit. Prereq: Basic Engineering 1310; coreq: Math 2840.

3131 Mechanics of Materials (4) Concepts of stress and strain; stress-strain relations and Mohr's circle; static analysis of members; area moment of inertia; stress and displacement analysis of axially-loaded members; torsion; bending. Not for department graduate credit. Prereq: Basic Engineering 1310; coreq: Math 2840.

3410 Introduction to Biomedical Engineering (4) Designed to introduce the facets and opportunities of biomedical engineering, and to provide basic terminology and background knowledge for further courses in the field. Subjects include anatomy, physiology, biomaterials, mathematical models of body systems, etc. Coreq: Math 2840 or consent of instructor.

3420 Introduction to Clinical Engineering (3) Designed to train students in life sciences, health professions, and engineering to interface with any related applications of medical equipment. Body systems are introduced, and instruments used in care of those systems are examined and demonstrated. Prereq: 3410, or consent of instructor.

3430 Perspectives on Medical Ceramics (3) Development of implant material from both an engineering and a medical viewpoint. Demonstrates results of combined efforts of physician and biomedical engineer. Audiodiscs and models are used to reinforce lecture topics. Prereq: 3410 and Metallurgical Engineering 2110.

3439 Medical Ceramics Laboratory (1) Surgical observations and laboratory experiments to illustrate design and application parameters. Design project or paper required. Coreq: 3430.

3510 Materials of Engineering (3) Mechanical properties of engineering materials; behavior of materials under load, 3 hrs or 2 hrs and 1 lab. Prereq: 3311 and Metallurgical Engineering 2110 or 3110.

3520 Materials Behavior and Chemical Process Equipment Design (3) Same as Metallurgical Engineering 3520.

3700 Dynamics (4) Kinematics of rigid bodies; mass moments of inertia; coulomb friction; kinet- ics of rigid bodies using force, mass, acceleration; work-energy; impulse-momentum. Not for department graduate credit. Prereq: 2705 or Basic Engineering 1320, Math 2840.

3710 Intermediate Dynamics (3) Three-dimensional dynamics of particles and rigid bodies; dynamics of bodies with varying mass; central force motion; Lagrange's equations. Prereq: 2720, Math 2850.

4010 Project in Design and Development (4) Investigation, design, and report of an engineering science project. Prereq: for standing and a grade of C or better in 3311, 3700, and 3410.

4011 Project in Design and Development (3) Investigation, design, and report of an engineering science project. Prereq: Senior standing.

4420 Engineering Aspects of Infection Control (3) Biomedical engineer's role in infection control will be explored to hospital and clinical activities. Fluid flow phenomenon, pressure measurement methods, and basic bacteriological and mycolo- gical tests will be performed. Course identifies new and critical role for biomedical engineering in health care systems, and includes analysis of hospital facility and infection control. Prereq: 3410, or consent of instructor.

4430 Orthopaedic Biomechanics (3) Introduction to engineering principles and applications in orthopaedic medicine. Topics include statics, Newton's laws of motion, stresses in simple sections, engineering materials, and biological materials. Prereq: Consent of instructor.

4500 Applied Mechanics for Life Scientists (4) Concise and broad coverage of basic principles and concepts of mechanics. Fundamental concepts, forces, vibrations, continuum mechanics and properties of materials. Applications to engineering and medicine. Prereq: Math 1860 or consent of instructor.

4520 Biomedical Fluid Mechanics (3) Discusses objectives, reviews foundations, and presents developments in biomedical fluid mechanics. Properties of human blood and blood vessels, determinants of cardiac performance, analysis and measurement of flow and pressure in arteries, nontraumatic study of circulatory system, mechanisms of microcirculation. Applications to areas of hemostasis, thrombosis, and fluid dynamics of heart assist devices. Prereq: 4500 or course in fluid mechanics or consent of instructor.

4529 Biomedical Fluid Mechanics Laboratory (2) Measurement and recording of flow characteristics in biological system. Project and/or term paper required. Coreq: 4520.

4530 Biomechanics (3) Discusses objectives, reviews foundations and presents developments in areas of mechanical properties of living tissues, biomechanics of joint movement, material compatibility and biocompatibility of prosthetic devices, and field of biomaterial problems related to impact. Prereq: 4500 or consent of instructor.

4540 Fracture-Safe Design (3) A critical review of mechanical properties of materials that are indicative of fracture resistance, including transition temperature, R-curves, stress intensity factors, and J-integrals; the usefulness of these design. 3 hrs or 2 hrs and 1 lab. Prereq: 3131 and Met. Engr. 2110. (Same as Met. Engr. 4540.)

4580 Principles of Nondestructive Testing (3) (Same as Physics 4580.)

4610 Experimental Stress Analysis (3) Basic concepts; theory, techniques, and fundamentals of fracture resistance strain gauges; theory and techniques of brittle-ductile fracture methods; introduction to other stress analysis methods. Prereq: 3311, EE 3200 or 3110, 2 hrs and 3-hr lab.

4620 Dynamic Data Acquisition (4) Instrumentation of measuring systems for dynamic events and responses; signal conditioning; oscilloscopes, oscillography, and magnetic tape recording; telem- etry and data transmission; data processing. Prereq: 3700, 3311, Elec. Engr. 3120. 3 hrs and a 3-hr lab.

4630 Introductory Photomechanics (3) Introduction to photelasticity, photoelastic coating methods, Moiré method, interferometry, and holography. Prereq: 3311, Physics 3230, 2 hrs and a 3-hr lab.

4710 Fundamentals of Vibrations (3) Free and forced vibrations of damped and undamped lumped parameter systems; energy methods. Prereq: 2720 or 3700, Math 2860.


4810-20 Engineering Analysis (4, 3) Integration of fundamental physical laws and mathematical methods of analysis with practical application to realist engineering problems. Prereq: 3110, 3311, and Computer Science 3150.

4850 Elementary Structural Matrix Methods (4) (Same as Architecture 4850 and Civil Engineering 4850.)

4910-20 Special Engineering Science Topics (3, 3) Problems related to recent developments and practice. Open to juniors or seniors with consent of instructor. May be repeated for credit once.
curriculum are shown in tabular form on page 131. Descriptions of the physics courses are found on page 224.

**Industrial Engineering (556)**

J.N. Snider (Head); Ph.D. Ohio State, P.E.;
D.C. Douplet, M.E.;
H.P. Emerson (Emeritus), S.B. Massachusetts Institute of Technology, P.E.; R.M. LaForge (Emeritus), M.S. Georgia Institute of Technology, P.E.;
H.L. Loveless, M.S. North Carolina State, P.E.

**Associate Professors:**
E.K. Boyce, M.S. Tennessee; J.R. Buchan, Georgia Institute of Technology;
W.R. Claycombe, Ph.D. Virginia Polytechnic;
D.H. Hutchinson, Ph.D. Georgia Institute of Technology; W.A. Lyday, M.S. Tennessee;
W.G. Simon, Ph.D. Georgia Institute of Technology, P.E.

**Assistent Professors:**
E.L. DePorter, Ph.D. Virginia Polytechnic;
M.L. Eaton, M.S. Clarkson, P.E.;
M.K. Goodman, M.S. Tennessee, P.E.

**Kingsport**

**UNDERGRADUATE**

The undergraduate curriculum in industrial engineering provides a strong background in both fundamental engineering principles and the analytic methods necessary for solving the multifaceted problems associated with the production, maintenance, and delivery of goods and services. In particular, this curriculum emphasizes the knowledge and skills necessary to design integrated systems of people, materials, equipment, and energy wherever they are found, such that the overall system functions at an optimal level and such that the needs of the human components of the system are adequately met.

This curriculum, which is built upon a strong background in mathematics and statistics, includes fundamental course work in all of the engineering sciences, Introductory economics and accounting, training in fundamental human factors which influence engineering design, the economic analysis of alternative design choices, quality control techniques, manufacturing processes and materials, production and inventory system design and control, material handling systems and facilities design, the mathematical modeling and simulation of complex systems, and the design and installation of information acquisition and control systems. The technical and non-technical electives further allow the students to specialize in an area(s) which meet particular needs.

The solid, broad base in engineering combined with training in applying engineering methodology to traditionally non-engineering problem areas as provided through the industrial engineering curriculum leads to participation by industrial engineers in an unlimited range of fields including, among others, retail distribution, banking, health care delivery, corporate management, municipal government, aerospace systems, research groups and government as well as in the traditional area of manufacturing.

**MASTER OF SCIENCE PROGRAM**

The graduate program in industrial engineering contains a basic requirement of 18 hours of course work covering topics in industrial engineering at the graduate level. The remaining 18 hours in the program are based on the educational objective of the student and determined with the approval of the student's advisor. A minor is usually taken in an area related to industrial engineering, and a thesis is required. The program is open to graduates of recognized curricula in all fields of engineering.

A non-thesis program of 45 hours of course work plus a three-hour project is also available and open to graduates in engineering or science. Basic courses (5110, 5520 and 5700, 5710, 5720) are 18 hours of the total and are identical to the basic courses in the program for thesis students. An option is selected from manufacturing, health systems, operations research, human factors or decision processes. Each option requires 9 hours of non-engineering electives to support the selected option. The project requires the design of a procedure or operating system based especially upon the course work in the selected option and clearly applicable as a solution to a problem in actual professional practice. The student is examined on the project and related course work.

**2310 Seminar (1)** Introduction to the industrial engineering profession, its history and current trends. Plant trips and lectures by the faculty. Prereq: Sophomore standing.


**3330 Computer Applications and Analysis Methods in Industrial Engineering (3)** Use of digital computer in problem solving involving matrix operations, deterministic and stochastic simulations, large scale data base manipulation, and general optimization techniques. Prereq: 2320 and Mathematics 1860.

**3410 Textile Industry Systems (3)** History, basic operations, products and economics of the industry, the application of industrial engineering techniques. Prereq: Junior standing and consent of instructor.


**3440 Quality Control (3)** Application of statistical methods to control quality of manufactured parts and techniques of inspection. Prereq: 3430.

**3510 Introduction to Operations Research I (3)** Introduction to methodology of operations research and the application of operations research to industrial problems. Topics covered include statistical inference, decision theory, and queuing theory. Prereq: 3430 and Computer Science 3150.

**3520 Introduction to Operations Research II (3)** Introduction to mathematical programming includes classical optimization theory, linear programming, duality (emphasis on the simplex method), the transportation problem, and the assignment problem, and dynamic programming. Prereq: Computer Science 3150 or consent of instructor.

BACHELOR OF SCIENCE PROGRAM

Separate, complete curricula are offered in aerospace engineering and mechanical engineering; however, the first two years of these curricula are identical. During the first two years, the curricula provide for training and study in the basic sciences of physics, mathematics, chemistry and engineering pertinent to these fields. The third year of both programs continues with the development of the particular engineering sciences of the aerospace and mechanical engineering fields. In the senior year an opportunity is provided for the student to apply this fundamental knowledge to mechanical or aerospace engineering problems. Both curricula are arranged with flexibility in the upper-division years to permit emphasis on preparation for graduate study or technical employment.

Aerospace engineering has scientific foundations close to those of mechanical engineering. The aerospace engineer, however, devotes attention particularly to the research, development, design, testing, and production of aerospace vehicles—aircraft, spacecraft, missiles; auxiliary systems—heating, cooling, guidance, control; and propulsion systems—piston engines, turbo-jets, ramjets, and rockets.

Mechanical engineering has its foundation in the basic sciences and requires an understanding of such areas of applied science as solid and fluid mechanics, the thermodynamics, heat transfer, structures, vibrations, mechanical design, manufacturing processes and instrumentation in order to resolve the complex engineering problems of the real world.

In the mechanical engineering curriculum, the student, with the aid and approval of an adviser, must select a senior year program of mechanical engineering and technical electives. The following areas of concentration are available:

Energy. A study of energy conversion systems and the laws governing energy transformations. This option includes the design and analysis of conventional and future power generating systems utilizing various energy sources. The central courses are Mech. Engr. 4140-50-60.

Environment. A study of the systems which control the environment within enclosed spaces. The program includes the design and analysis of air conditioning, refrigeration, and heat pump devices encompassing heating, cooling, ventilation, humidifying, and noise control. The central courses are Mech. Engr. 4710-20-30.

Manufacturing. A study of manufacturing methods and production processes common to mass production industries. The program includes the selection of processes, design of tools and fixtures, numerical control, and analysis and design of the total manufacturing system. The central courses are Mech. Engr. 4621-22-23-24 with related courses in metallurgy.

Machine Design. The study and application of the principles of mechanics, materials, and manufacturing processes to the design and analysis of machine elements, machines, and structures. The central courses are Mech. Engr. 4660 and 4660.


Aerospace. The study of aircraft and spacecraft including the mechanics of flight and related systems and propulsion devices. The program includes the analysis and design of a variety of aerospace vehicles and systems. The central courses are Aero. Engr. 4240-50-60.

GRADUATE STUDY PROGRAMS

Graduate programs leading to the degrees of Master of Science, Master of Engineering, and Doctor of Philosophy, with specialization in mechanical engineering or aerospace engineering are available to graduates of recognized undergraduate curricula in mechanical or aerospace engineering and to graduates of other curricula who satisfy the necessary prerequisite courses. The general requirements for advanced degrees are summarized in the Graduate Catalog.

Mechanical Engineering (650)

2040 Introduction to Mechanical Engineering (1) Presentation and discussion of topics related to mechanical engineering. S/NC.

3000 Energy—An Overview (4) Introduction to available energy resources, recovery and utilization, power generation techniques including conservation schemes; emphasis on the resources—environment—man interaction associated with energy; primarily for non-engineering students.

3040 Seminar (1) Presentation and discussion of topics related to mechanical engineering. Prereq: Junior standing. S/NC.


3311 Engineering Thermodynamics (3) Energy and laws governing energy transformations; thermodynamics properties. Prereq: Basic Engr. 1330, Chem. 1130, and Math 1660.

3321-30 Engineering Thermodynamics (2, 3) Properties of gases and gas mixtures; chemical reactions; equilibrium; applications to mechanical engineering problems. Preq: 3311 and 3321 respectively.

3410 Fluid Flow (3) Development of continuity, momentum and energy principles for fluid systems; applications to mechanical and aerospace engineering problems. Preq: Math 2950; coreq: 3311.


3520-30-40 Thermal Sciences (3, 3, 3) Fundamental principles of thermodynamics and transport phenomena as applied to engineering design. For non-departmental majors. To be taken in sequence. Preq: Math 2950 and Basic Engr. 1330.


3660 Manufacturing Processes (3) Selection of processes as related to the design of machine parts. Casting, hot and cold forming, metal removal and weldments. Manufacturing tolerances and surface finishes. 2 hrs and one 2-hr lab. Preq: Met. Engr. 2110.


4150 Energy Conversion Systems (3) Operating and design characteristics of new technology energy conversion systems including direct conversion techniques. Preq: 3330; 4420.

4160 Energy Conversion Systems (3) Economic and technical design parameters as applied to power plants for public utilities or industrial applications; selected design and layout problems. Preq: 4150.


4180 Energy Production and Utilization (3) Thermodynamic constraints on energy production; comparison of new energy sources and concepts; energy conservation schemes. Preq: Senior standing in engineering.

4220 Environmental Noise (3) Basic principles of acoustics—measurement and control of noise in industrial and community environments. Prereq: Senior standing in engineering or consent of instructor.

4310 Seminar (1) Discussion of topics related to engineering; includes inspection trips to industrial plants. Preq: Senior standing. S/NC.

4320 Seminar (1) Presentation and discussion of topics related to engineering. Preq: Senior standing.


4450 Lubrication (3) Hydrodynamic theory of lubrication of sliding bearings; application of Navier-Stokes equations to thin films and finite bearings; analytical and numerical solutions; applications to design. Prereq: 3440; Aerospace Engr. 3511.

4471-91 Experimental Mechanical Engineering (3, 3) Experimental methods and measurements of force, length, time, temperature, pressure, transport rates, and physical properties. Planning, conducting, analyzing, and reporting experimental tests; research standards and other specifications. Prereq: 3321, 3410, 3440, Engr. Sci. & Mech. 3320 for 4471; 4471 and 4420 for 4491.

4510 System Dynamics (4) Analytical models of physical systems, system behavior and transformation, dynamic characteristics and stability of systems, numerical simulations, and analog computer solutions. Not for departmental graduate
Nuclear Engineering (716)

Professors:
P. F. Pasqua (Head), Ph.D. Northwestern, P.E.;
T. W. Kerlin, Jr., Ph. D. Tennessee;
H. G. MacPherson (Emeritus), Ph.D. California (Berkeley); J. T. Mihailecu, Ph.D. Tennessee;
J. E. Moff, Ph.D. Minnesota; J.C. Robinson, Ph.D. Tennessee;
P. N. Stevens, Ph.D. Northwestern, P.E.

Associate Professors:
H. L. Dodds, Ph.D. Tennessee, P.E.; J. B. Fussell, Ph.D. Georgia Institute of Technology;
H. C. Roland, Ph.D. Tennessee; O. L. Smith, Ph.D. Missouri.

Assistant Professors:
E. M. Katz, Ph.D. Tennessee; L. F. Miller, Ph.D. Texas A & M.

BACHELOR OF SCIENCE PROGRAM

The curriculum in nuclear engineering is designed to provide basic training in many of the fields encountered in the applications of nuclear and radioactive materials. The first two years are concerned with the fundamental courses in engineering, physics, mathematics, chemistry, and English. The last two years encompass scientific and engineering courses equipping the student for entry into a variety of work in industry, research, or graduate studies.

MASTERS OF SCIENCE AND MASTER OF ENGINEERING PROGRAMS

A graduate program leading to a degree of Master of Science and Master of Engineering is available to graduates of recognized undergraduate curricula in engineering and physics. Each applicant will be advised as to the necessary prerequisite courses before entering the program.

The general requirements of the masters' degrees are summarized in the Graduate Catalog.

DOCTORAL PROGRAM

A doctoral program leading to the Ph.D. degree is available in nuclear engineering. For details, see the Graduate Catalog.

2310-20-30 Seminar (1, 1, 1) Presentation and discussion of topics related to nuclear engineering. S/NC.


3030 Introduction to Reactor Analysis (3) Nuclear reactions and radiations, cross section, fission process, diffusion, and slowing down, steady state reactor theory, criticality condition, reflected reactors. Prereq: Physics 3720; Math 4710.

3040 Environmental Effects of Nuclear Technology (3) Study of effects on environment since advent of military and peaceful uses of nuclear energy. Prereq: One year of biological or physical science.

3150 Dynamics and Controls (3) Systems differential equations; solution by classical methods; Laplace transform method; frequency response, stability, and control. Coreq: 4110.

3210-20 Thermodynamics (4, 4) Properties and laws of thermodynamic systems. First and second laws used to analyze power plant systems—both fossil and fission. Prereq: Math 2860 and Basic Engr. 1330.

3730 Momentum Transport (4) Development of differential and integral momentum equations; elementary theory of fluid mechanics; applications to piping systems, pumps and nuclear reactors. 3 lecs. and one lab. Prereq: Math 4710.


4110-20-30 Introduction to Nuclear Reactor Theory (3, 3, 3) Nuclear structure; radioactive decay laws; neutron interaction; fission process, chain-reaction systems; diffusion equation including multigroup diffusion theory, neutron moderation, reactivity coefficients; perturbation theory. Prereq: Physics 3730 or consent of instructor.

4140 Thermoelectric Devices (3) Fusion reactions; properties of plasma, plasma containment, plasma diagnostics; thermoelectric devices. Prereq: Physics 3730; Math 4500.

4210-20-30 Nuclear Engineering Laboratory (3, 3, 3) Radiation detection and counting instrumentation; counting statistics, half-life and decay schemes, gamma spectrometry, cross-section measurements, analog computer, diffusion properties of neutrons, critical loading experiments, control rod calibration, statistical weight, shielding, xenon poisoning, prompt critical reactor, behavior, fission density and adjoint flux. Prereq: 4110 (or registration therein), or equivalent.


4610-20-30 Nuclear Reactor Safety (3, 3, 3) Nuclear structure, decay laws, neutron diffusion, time behavior of reactors, heat removal, analysis of reactor power plants; economic, safety, and environmental aspects of nuclear power. Prereq: Math 4610; non-nuclear engineering students only.

4710 Energy Transport (4) Development of differential and integral energy conservation equations; conduction, convection, and radiation heat transfer; application of nuclear reactor fuel elements and heat exchangers. Prereq: 3730.

4720 Reactor Thermal Design (4) Hydrodynamics and heat transfer in boiling systems; boiling crises; fuel element thermal design, steam generator design. Prereq: 4710.

4730 Nuclear Reactor Design (3) First order reactor design, integration with non-nuclear heat transfer and power conversion system, economic evaluation; optimization procedures, description of typical systems. Coreq: 4130.


4820 Reactor Kinetics and Controls (3) Derivation of kinetic equations; basic kinetics parameters; transient response with feedback; control and protective systems. Prereq: 4710.

4840 Nuclear Reactor Safety (3) Presentation of reactor safety concepts and criteria; credible accidents; fission product release and transport; containment systems; accident analysis; engineered safeguards. Prereq: 4710.

4930 Nuclear Fuel Management (3) Discussion of problems associated with processing of nuclear materials; fuel cycle analysis; burn-up calculation. Prereq: 4120.

GRADUATE PROGRAM

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20-30 Transport Processes in Nuclear Engineering (3, 3, 3)

5210 System Dynamics (3)

5220 Reactor System Dynamics (3)

5230 Experimental Methods in Reactor Dynamics (3)

5240 Reactor Instrumentation (3)

5310-20-30 Nuclear Systems Reliability (3, 3, 3)

5510-20-30 Nuclear Systems (3, 3, 3)

5710-20-30 Nuclear Reactor Theory (3, 3, 3)

5740 Reactor Shielding (3)

5790 Monte Carlo Shield Design (3)

5840-50 Fast Breeder Reactors (3, 3)

5970 Special Topics in Nuclear Engineering (3)

5980 Nuclear Engineering Practice (3-12)

6000 Doctoral Research and Dissertation

6110-20-30 Selected Topics in Reactor Theory (3, 3, 3)

6140 Radiation Shielding (3)

6150 Reactor Dynamics (3)

6710 Two-Phase Flow and Heat Transfer (3)
College of Home Economics

Lura M. Odland, Dean
Grayce E. Goertz, Associate Dean
Virginia S. Anagnost, Assistant Dean

The College of Home Economics is an integral part of The University of Tennessee's academic program in its three major functions of teaching, research, and extended services. The college ranks among the top three colleges of home economics in the nation in enrollment and first in the number of master's and doctoral degrees granted. All undergraduate programs of the college are accredited by the American Home Economics Association. Much of the qualitative and quantitative growth of the college is due to its highly qualified faculty and staff who, being aware of the current community problems and needs, have made its programs relevant to the goals and aspirations of today's students.

Today's students are seeking professional positions in which they can better serve people—individuals, families, consumers—by helping them predict and solve problems arising from the increasingly rapid changes occurring in the society in which we live. The basis of the college's professional programs is to prepare young men and women to serve the needs of people in their many varied environments and different stages of life.

The philosophy of the college might best be stated as follows: home economics, while it does seek knowledge which describes and analyzes, is not content with only studying "what is," but also is concerned with promoting "what can and should be" in order to enhance the quality of life and well-being of people and societies.

The college's mission is twofold: its graduate programs are geared toward research producing alternative solutions to technical and social problems which are and will be encountered by the people who are to be served; its undergraduate programs prepare students to work with people in a professional capacity so that they may make use of what has been learned in serving as professional agents of change.

The University of Tennessee pioneered as one of the first institutions of higher education in the South to offer home economics and has continued to hold a position of leadership. The first class was taught in 1897.

The faculty of the college numbers 60 full-time teaching and research staff. There are five departments with curricula leading to the Bachelor of Science degree: Child and Family Studies; Interior Design and Housing; Food Science, Nutrition, and Food Systems Administration; Home Economics Education; and Textiles and Clothing. The undergraduate program in Home Economics Education is offered in cooperation with the College of Education and the Home Economics Extension Education program is offered in cooperation with the Institute of Agriculture. Approximately 350 courses are offered in these departments. The graduate programs leading to the Master of Science degree were begun in the summer of 1925. Programs for the Doctor of Philosophy degree were initiated in 1960. The Doctor of Philosophy degree program in home economics now includes three options: Interdisciplinary, Food Science, Nutrition. Food Systems Administration may be taken as a concentration in the Food Science doctoral option.

Special Resources

Several special programs enhance the offerings of the college: Selected students have the opportunity to study for one quarter at the Merrill-Palmer Institute for Human Development and Family Life in Detroit, Michigan or at the Child Development Center of the Center for Health Sciences in Memphis. Credits earned may be applied toward a Bachelor of Science degree in most curricula of the college.

Model research programs for infants care and preschool day care and nursery school provide home economics students the opportunity to train for careers as directors of, and teachers in, child care facilities. The need for appropriate child day care facilities staffed with well-trained, competent staff is recognized as one of the most urgent problems of today's urban society. Opportunities for home economics graduates with special interest in preschool programs are numerous and continue to increase. The Nursery School through Grade Three program offered jointly with the College of Education provides certification for teachers in early childhood education.

The U.S. Department of Agriculture Textiles and Clothing Research Laboratory is a part of the Southern Regional Mid-Atlantic Area and was located at The University of Tennessee in 1967. Textiles and clothing researchers collaborate with the U.S.D.A. staff to conduct investigations that will (1) determine consumer needs for textiles and clothing and the adequacy of products available to meet these needs, (2) develop basic principles to guide consumers in selection and caring for textiles and clothing, and (3) solve other economic and technical problems pertaining to the field. Graduate students in this area may be trained at the laboratory.

International study tours in several areas of home economics are offered when a demand is indicated. The course "Home Economics 4910 International Study Tour" is offered for 6 credit hours at the undergraduate level. At the graduate level, "Home Economics 5100 International Studies" is available, depending on demand and resources, for up to 15 graduate credit hours. The length of the tours may vary from 6 to 8 weeks and the program is under the direction of a member of the faculty.

The Department of Food Science, Nutrition, and Food Systems Administration has a cooperative arrangement in which food service systems, such as those of the University, hospitals, schools, hotels, and restaurants
are available for laboratory experience for food systems administration students and in food industries for those in the food science curriculum. During the senior year students in the Coordinated Undergraduate Program in Dietetics receive clinical experience integrated with coursework in food systems administration.

Graduates of the Coordinated Program will be eligible for membership in the American Dietsetics Association (ADA) and application for ADA registration. The Nutrition program is affiliated with the Child Development Center, UT Center for Health Sciences, Memphis, for special study in mental retardation and developmental disorders. A liaison is maintained with the Knox County Health Department to provide concurrent field experience for students in the Community Nutrition option. The Nutrition Science and Community Nutrition programs also meet the requirements for membership in the American Dietetics Association.

All departments of the college conduct basic and applied research which may be supported in part by the college, by special grants and contracts, and by the Agricultural Experiment Station. The University of Tennessee Atomic Energy Commission program at Oak Ridge also offers opportunities for training and research.

Workshops on special topics of current importance are offered by the different departments and the home economics. These will be of special interest to those desiring to work for advanced degrees. Announcements are sent upon request.

The Continuing Education Program provides advanced courses in all areas of home economics at centers across the state for updating and retraining as faculty resources permit. The program includes short courses, workshops, evening courses, and extension courses. Individuals interested in graduate courses should be arranged with the appropriate department heads.

Food science, nutrition, and food systems administration facilities include well-equipped laboratories for basic food science, experimental food science, experimental nutrition (animal), and chemistry for graduate and undergraduate students. Laboratories include instruments for the determination of the chemical, physical, histological, and sensory properties of food, in addition to facilities for metabolic and survey studies of human nutrition.

Home economics education offices and laboratories are located in the Home Economics Building. The Department of Interior Design and Housing facilities include provisions for study, regular classroom, laboratory and studio experiences. Laboratories for interior design and housing studies are especially equipped for this purpose.

Textile research facilities are available to undergraduate and graduate students and to research personnel interested in textile studies that benefit fiber producers, fabric and clothing manufacturers, and consumers. Laboratories are well-equipped for the physical and chemical analyses of fabrics, yarns, and fibers.

Certification in Vocational Home Economics Education

Certification to teach vocational home economics requires either a bachelor's or master's degree in home economics from an institution offering a curriculum for teacher training approved by the State Board for Vocational Education and by the United States Office of Education. The University of Tennessee, Knoxville is approved for the training of teachers in home economics.

A description of the vocational home economics education curriculum leading to recommendation for certification will be furnished upon request. Graduate students interested in meeting certification requirements should consult the head of the Department of Home Economics Education. Transfer and graduate students who desire to qualify for vocational certification in home economics should state this when applying for admission so that their credits may be evaluated in terms of this goal.

Certification in Early Childhood Education

A joint program in Early Childhood Education—Nursery School through Grade Three was recently approved for the Department of Child and Family Studies (College of Home Economics) and the Department of Curriculum and Instruction (College of Education). In addition to preschool education, graduates are certified to teach kindergarten through third grade.

Educational Programs for Home Economics Extension Education

Students interested in careers as home economics extension agents have many opportunities for employment in service to urban and rural families. Special programs of study can be arranged for such students in cooperation with the Institute of Agriculture. The student selects a major in one of the curricula offered by the College of Home Economics. Elective courses may be selected by the student from those recommended by a joint advisory committee of the College of Home Economics, the College of Agriculture, and the home economics unit of the Agricultural Extension Service.

Summer field work experience, coordinated by the Department of Agricultural Extension Education, is available to selected students with a minimum 2.5 grade point average. The student must enroll in Agricultural Extension Education 3110 during the fall or spring quarter of the junior year prior to enrolling in Agricultural Extension Education “4110-20 Field Studies” in the summer quarter (see page 65 for course descriptions). Six hours credit is awarded for summer field studies during which the student works ten weeks as a Junior Assistant County Agent of the Tennessee Agricultural Extension Service.

Students interested in this program should contact their adviser and the administrative assistant in the Office of the Dean of the College of Home Economics for detailed information.

Undergraduate Study in Home Economics

Curricula in the following areas lead to the degree of Bachelor of Science in home economics:

Child and Family Studies (CFS)
Option 1—Early Childhood Development
Option 2—Home Economics Development and Family Studies
Option 3—Nursery School-Grade 3

Crafts, Interior Design, and Housing (CIDH)*
Option 1—General Professional
Option 2—Professional Interior Design
Option 3—General Crafts

*Programs under revision.

Food Science, Nutrition, and Food Systems Administration (FSNFA)
Option 1—Food Science
Option 2—Nutrition Science
Option 3—Community Nutrition
Option 4—Coordinated Undergraduate Program in Dietetics (ADA)
Option 5—Tourism, Food and Lodging Administration

Textiles and Clothing (T & C)
Option 1—Merchandising
Option 2—Textile Technology

Vocational Home Economics Education (HEDC)
Consumer and Homemaking Education.
Occupational Endorsement in one or more of the following areas:
1) Food Services
2) Child Care and Guidance
3) Clothing Management, Production and Services

NOTE: Students are advised to consult the University's degree requirements as stated in the front section of this catalog as well as the requirements for their particular college or school.
For the degree of Bachelor of Science in Home Economics, students generally plan to complete the last 45 quarter hours of work (three quarters) at The University of Tennessee, Knoxville. Seventy-two hours must be earned in courses numbered above 3000 at The University of Tennessee, Knoxville. The prospective transfer student is advised to preplan the total college program before starting any college-level work in preparation prior to transferring to the college is essential to maintaining a program of study with maximum utilization of credit and sequence of course work. All new freshman and transfer students whose majors require chemistry must enroll in the freshman chemistry course sequence until requirements are completed. It is recommended that transfer students complete the freshman chemistry requirements before transferring to the college.

Students wishing to transfer 36 or more creative hours into the college must have an average of 2.0 for admission. Students with an average of less than 2.0 are not eligible for enrollment in junior or senior courses.

During the first quarter of residence, each student takes courses basic to all curricula and is assigned a faculty adviser for program planning. A normal student load per quarter is 15-16 hours. The maximum load is 19 credit hours per quarter (18 hours maximum for the Coordinated Undergraduate Program in Dietetics) unless otherwise approved by the dean.

When a student has completed one quarter in residence at The University of Tennessee, Knoxville (with at least a 2.0 average in course work), the student will be eligible to participate in self-registration. Students participating in the voluntary academic registration program bear full responsibility for meeting degree requirements in the proper sequence.

Students may choose to take, for elective credit only, a course (outside the specific requirements of the college and outside the major department) in which the student will receive a satisfactory or no credit grade. The purpose of the satisfactory/no credit (S/NC) grading system is to encourage the student to explore subject matter areas outside of the requirements and other courses of the major by minimizing costs for the student's concern that performance may be somewhat less outstanding than that in preferred subject areas. These courses will count as hours for graduation but not for calculating the student's grade point average. A final grade of C or better will be recorded as satisfactory. The maximum satisfactory or no credit hours which could be counted toward a degree is 30 hours. When the student wishes to take a satisfactory or no credit course, the student must so indicate at the time of registration.

Proficiency examinations are offered for numerous courses of the college. Information as to which proficiency examinations are offered may be obtained from the departments of the college.

Field training provides the opportunity for practical preprofessional experience and constitutes an integral part of many of the college's programs. Students enrolled in certain College of Home Economics courses who are involved in field experiences are required to participate in the group liability insurance plan offered through the college. The annual cost for the student for this insurance coverage is $4.00 (subject to change).

The first digit in course numbers indicates the student group for whom the course is primarily offered: 1000 indicates courses for freshmen, 2000 for sophomores, 3000 for juniors, 4000 for seniors, 5000 and 6000 for graduate students.

Education 3810 should be elected in the sophomore year by those students majoring in the vocational home economics education curriculum. This course is a prerequisite for other required courses in education. Psychology 2500 is a prerequisite for Education 3810.

For majors in the food science, nutrition for textiles curricula, Nutrition 3310 should be taken preferably in the sophomore year and not later than the first quarter of the junior year.

The following four courses are fundamental to home economics and are required in all curricula:

**Home Economics 1510 Family Systems: Human Development**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
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**Home Economics 1520 Family Systems: Aesthetic Environment**

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<thead>
<tr>
<th>Hours</th>
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**Home Economics 2510 Family Systems: Physiological Well-being**

<table>
<thead>
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<th>Hours</th>
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</table>

**Home Economics 3510 Family Systems: Consumer Resources**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>Junior 4</td>
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</tbody>
</table>

### Professional Curriculum in Child and Family Studies

The Department of Child and Family Studies is concerned with early education, human development and family interaction throughout the life span, and with resource management and consumer studies. Departmental goals and objectives are designed to contribute to the interpersonal and professional competence of men and women students, and to provide preparation for careers in the helping professions related to children, adolescents, adults, and families, depending on the option the student selects.

The curriculum is appropriate for persons interested in professional and/or administrative positions in child care centers and nursery schools, in public schools, with family services, child welfare agencies, extension, banks and consumer agencies. Other opportunities exist that require study beyond the bachelor's level (for example: administration, research and clinical services). All options provide necessary background for graduate study in child development, family relationships, early childhood education, and social work.

### OPTION 1. EARLY CHILDHOOD DEVELOPMENT

This option is appropriate for persons interested in the following types of positions: day care teacher, nursery school teacher, worker in center for socially disadvantaged and/or handicapped children, entry level positions in social work, or preparation for graduate school.

**Freshman**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CFS 2110</td>
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<tr>
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<td>Home Economics 1520</td>
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**Sophomore**

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>Literature elective</td>
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<tr>
<td>Nutrition 1230</td>
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</tr>
<tr>
<td>Physical education elective</td>
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</tr>
<tr>
<td>Speech 1221 or 2231 or 2351</td>
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<tr>
<td>Physical or biological science elective</td>
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<tr>
<td>Social sciences</td>
<td>16</td>
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<td>History or political science elective</td>
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**Junior**

<table>
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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CFS 3110-25</td>
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<tr>
<td>CFS 3120 or Library Science 3510</td>
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</tr>
<tr>
<td>CFS 3210-20</td>
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<tr>
<td>CFS 3420 or 4830</td>
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<tr>
<td>CFS 3510 or 3515</td>
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<tr>
<td>Home Economics 2510</td>
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<tr>
<td>Economics 3333</td>
<td>3</td>
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<tr>
<td>Philosophy or religious studies elective</td>
<td>4</td>
</tr>
<tr>
<td>Speech 3333</td>
<td>3</td>
</tr>
<tr>
<td>Physical Education 3560 or 3570</td>
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<tr>
<td>Public Health 3210</td>
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<td>Electives</td>
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**Senior**

<table>
<thead>
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<th>Course</th>
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<td>CFS 4110</td>
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<tr>
<td>CFS 4230</td>
<td>3</td>
</tr>
<tr>
<td>CFS 4260 or 4430 or 4610</td>
<td>3</td>
</tr>
<tr>
<td>CFS 4350</td>
<td>3</td>
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<tr>
<td>CFS 4510</td>
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</tr>
<tr>
<td>CFS 4420</td>
<td>3</td>
</tr>
<tr>
<td>CFS 4620</td>
<td>3</td>
</tr>
<tr>
<td>CFS 4210 or CEDH 4320</td>
<td>3</td>
</tr>
<tr>
<td>Home Economics 3510</td>
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</tr>
<tr>
<td>Electives</td>
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</table>

**TOTAL: 192 hours**

*Twelve hours selected from the following: Biology 1210-20-30, Chemistry 1510-20-30, Physics 1410-20-30, Zoology 2461-71-81, Zoology 2560-30.*

*Requirement may be satisfied by Mathematics 3000 or Psychology 3510 to be taken the junior year.*

*Requirement may be satisfied by Nutrition 3000 to be taken in junior year.*

*Select at least two of the following areas: Psychology 2500, 2530, 2540, Sociology 1510-20, Anthropology 2510, 2520, 2530.*

### OPTION 2. HUMAN DEVELOPMENT AND FAMILY STUDIES

This option is for undergraduate CFS majors who want a generalist background in individual and family studies. This option does not prepare for a career in preprofessional education. Students interested in Cooperative Extension Service, community agencies, general family counseling, social work, and graduate work would choose this undergraduate option.
Sophomore

HE 2510 .......................... 4
*Health elective .......................... 3
Art Ed. 2100-10 .......................... 4
Music Ed. 2100 .......................... 4
P.E. 3450 .......................... 3
*Physical science .......................... 4
*Literature elective .......................... 4
*Culture and society elective .......................... 4
*History elective .......................... 4
*Social science elective .......................... 4
Economics 2110 .......................... 4

Junior

HE 3510 .......................... 3
*Edu. C & I 4450 .......................... 3
Edu. C & I 3260-3760 .......................... 12
Edu. C & I 3350 .......................... 3
Edu. C & I 3720 .......................... 3
Edu. C & I 4320 .......................... 3
Edu. C & I 3010-20-30 .......................... 3
(choose any two) .......................... 6
Music Ed. 3110 .......................... 4
Public Health 3210 .......................... 3
P.E. 3660 .......................... 4
Library & Information Sci. 3810 .......................... 3

Senior

CFS 3220 or 4230 or 4350 .......................... 3
CFS 4610 .......................... 3
*CFS 4110-11 .......................... 3
Ed. & Early Childhood 3050 .......................... 6
Ed. C & I 4451 .......................... 3
Ed. C & I 4452 .......................... 3
Spec. Ed. 3333 .......................... 3
Electives .......................... 5

TOTAL: 192 hours

*Courses should be chosen from: Biology 1210 or 1220 or 1230 or Botany 1110 or 1120 or Zoology 2260 or 2260.
*Courses should be chosen from: Philosophy 1510 or 1520 or 2310 or 2510 or 2520 or Religious Studies 2610 or 2611 or 2620.
*Nutrition 1230 recommended.
*Courses should be chosen from: Anthropology 2530 or 3410 or Human Services 2690, 3100, 3200 or 3300 or Psychology 2590, 2530 or 3616 and 3628, or Sociology 1510, 1530, 3410, or 3420.
*Course should be chosen from 1000-2000 level history courses.
*Course should be any course in areas of anthropology, economics, geography, human services, political science, psychology, sociology.
*All students who desire teacher certification are required to apply for admission to the Teacher Education Program in the College of Education.
*Application for student teaching (CFS 4110-11, C & I 4860-4901) must be filed no later than January 1 of the academic year preceding the actual experience.

Crafts, Interior Design, and Housing*

Acquisition and Exhibition

The department reserves the right of acquisition and exhibition of work completed in its studios under the guidance of the faculty.

OPTION 1. GENERAL PROFESSIONAL

This general curriculum is designed for students preparing for positions in business, educational and public service programs and provides background for advanced study in interior design and housing.

Freshman

HE 1510 .......................... 4
HE 1520 .......................... 4
CFS 1500 .......................... 3
English 1010-20 .......................... 6
English 1031 or 1032 or 1033 .......................... 3
Speech 2021 or 2311 .......................... 4
Music 1210 or 1220 or 1285 .......................... 4
*Biological science .......................... 3
*Math 2110-20-30 .......................... 9
*Philosophy or religious studies .......................... 4

Sophomore

HE 2510 .......................... 4
CFS 3210 .......................... 3
*Health elective .......................... 3
Art Ed. 2100-10 .......................... 4
Music Ed. 2100 .......................... 4
P.E. 3450 .......................... 3
*Physical science .......................... 4
*Literature elective .......................... 4
*Culture and society elective .......................... 4
*History elective .......................... 4
*Social science elective .......................... 4
Economics 2110 .......................... 4

Junior

HE 3510 .......................... 3
*Edu. C & I 4450 .......................... 3
Edu. C & I 3260-3760 .......................... 12
Edu. C & I 3350 .......................... 3
Edu. C & I 3720 .......................... 3
Edu. C & I 4320 .......................... 3
Edu. C & I 3010-20-30 .......................... 3
(choose any two) .......................... 6
Music Ed. 3110 .......................... 4
Public Health 3210 .......................... 3
P.E. 3660 .......................... 4
Library & Information Sci. 3810 .......................... 3

Senior

CFS 3220 or 4230 or 4350 .......................... 3
CFS 4610 .......................... 3
*CFS 4110-11 .......................... 3
Ed. & Early Childhood 3050 .......................... 6
Ed. C & I 4451 .......................... 3
Ed. C & I 4452 .......................... 3
Spec. Ed. 3333 .......................... 3
Electives .......................... 5

TOTAL: 192 hours

*Courses should be chosen from: Biology 1210 or 1220 or 1230 or Botany 1110 or 1120 or Zoology 2260 or 2260.
*Courses should be chosen from: Philosophy 1510 or 1520 or 2310 or 2510 or 2520 or Religious Studies 2610 or 2611 or 2620.
*Nutrition 1230 recommended.
*Courses should be chosen from: Anthropology 2530 or 3410 or Human Services 2690, 3100, 3200 or 3300 or Psychology 2590, 2530 or 3616 and 3628, or Sociology 1510, 1530, 3410, or 3420.
*Course should be chosen from 1000-2000 level history courses.
*Course should be any course in areas of anthropology, economics, geography, human services, political science, psychology, sociology.
*All students who desire teacher certification are required to apply for admission to the Teacher Education Program in the College of Education.
*Application for student teaching (CFS 4110-11, C & I 4860-4901) must be filed no later than January 1 of the academic year preceding the actual experience.

Crafts, Interior Design, and Housing*

Acquisition and Exhibition

The department reserves the right of acquisition and exhibition of work completed in its studios under the guidance of the faculty.

OPTION 1. GENERAL PROFESSIONAL

This general curriculum is designed for students preparing for positions in business, educational and public service programs and provides background for advanced study in interior design and housing.
**OFTEN IN CRAFTS**

The curriculum in crafts offers opportunity for specialization in the media of fiber, metal, wood, or clay.

Graduate and undergraduate students in the area of crafts have a unique opportunity to participate in the summer program at the Pi Beta Phi Arrowsmith School of Crafts, Gattinburg, Tennessee; credit is granted through the University of Tennessee, Knoxville. Instructors at the school are nationally and internationally recognized designer-craftspersons who offer, in many instances, different approaches to those of the resident faculty; this further enriches the student's program of study. Craft courses are not offered on the Knoxville campus in the summer quarter. Therefore, students attending UT during the summer for crafts study are required to attend the Pi Beta Phi Arrowsmith School of Crafts and to pay the additional registration, tuition, and laboratory materials fees required by that school.

**OPTION 3. GENERAL CRAFTS**

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<thead>
<tr>
<th>Subject</th>
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<td>English 1010-20</td>
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<td></td>
</tr>
<tr>
<td>English 1033</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CIDD 2210</td>
<td>4</td>
<td></td>
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<tr>
<td>CIDD 4510</td>
<td>4</td>
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<td>CIDD 4540</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CIDD 4550</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Textiles and Clothing 5220</td>
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<tr>
<td>Art 3745</td>
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<tr>
<td><strong>TOTAL: 199 hours</strong></td>
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*Natural science electives (12-hour sequence) from one of the following sequences: Biology 1210-20-30; Botany 1110-20-40; Chemistry 1510-20-30, Physics 1410-20-30, Botany 1110-20, 1140.
*An area which directly reinforces the major chosen from ornamental horticulture and landscape design, history, textiles, art, architecture, business administration, child and family studies.

**Professional Curricula in the Department of Food Science, Nutrition, and Food Systems Administration**

Entering freshmen interested in Options 1, 2, 3, or 4 will be enrolled as departmental majors and a departmental adviser will be assigned to assist with planning freshman courses. Students will not register in a particular option until their third quarter in residence. They will apply for admission to a specific option by April 1. Designation of an option for each applicant will be made by a faculty committee by May 15, and each student will be assigned to an adviser associated with the chosen option. A second choice of option will be required if Option 4 is the first choice. If a student is listed as an alternate for first choice of option, admission may be reconsidered at a later date. Applications may be considered periodically as openings occur.

Transfer students must apply to the Director of Admissions and be admitted to The University of Tennessee, Knoxville, before initiating the application procedure for admission to Options 1, 2, 3, or 4.

**OPTION 1. FOOD SCIENCE**

The food science curriculum is concerned with relating the cultural and scientific aspects of food science to people and their environment. Emphasis is placed on the application of the social sciences to food production, marketing and consumer reaction to food acceptability and marketing problems; application of the physical sciences is made in the study of the composition and properties and changes associated with processing, preparation, and storage. This curriculum prepares students for positions in food product development and evaluation in industry and government, work in communications media or for direct entrance into a master's degree program needed for college teaching and research. Information concerning modifications necessary to meet the academic requirements of the American Dietetic Association is available from the department.

<table>
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<tr>
<th>Subject</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Chemistry 1110-20-30 or 1510-20</td>
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<td>English 1010-20</td>
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<td>English 1033</td>
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<td>Food Science 1010</td>
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<tr>
<td>Home Economics 1510</td>
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<td>Home Economics 1520</td>
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<tr>
<td>Mathematics 1540-50 or 1840-50</td>
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<tr>
<td>Psychology 2500</td>
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<td>Electives</td>
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**Application and selection by a faculty committee required to enter sophomore year.**

**Sophomore**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
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<tbody>
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<td>Economics 2110, 2130</td>
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<td>English 2510 or 2620</td>
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<td>CIDD 2530 or 2540</td>
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<td>Food Science 2510</td>
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<td>Home Economics 2510</td>
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<tr>
<td>Journalism 2210</td>
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<tr>
<td>Microbiology 2910</td>
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<td>Microbiology 2919</td>
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<tr>
<td>Speech 2311</td>
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<td>Zoology 2920-30</td>
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<tr>
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<th>Hours</th>
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<td>Food Science 3500, 3510, 4010</td>
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**Senior**

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<td>Nutrition 3410</td>
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<tr>
<td>Food science, food systems administration</td>
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<td>Electives</td>
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<td></td>
</tr>
<tr>
<td><strong>TOTAL: 229 hours</strong></td>
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</tbody>
</table>

**Junior**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFS 3420 or 4210 or 4830</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Food Science 3500, 3510, 4010</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Home Economics 3510</td>
<td>4</td>
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</tr>
<tr>
<td>Nutrition 3510-20-30-39</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td>22</td>
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</tr>
</tbody>
</table>

**OPTION 2. NUTRITION SCIENCE**

This curriculum provides in-depth training in the basic biological sciences as well as nutrition. This option is designed for students who are interested in graduate study to become college teachers and researchers or who are interested in graduate study and/or a dietetic internship, to become a clinical nutrition specialist.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Chemistry 1110-20-30 or 1510-20-30</td>
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<tr>
<td>English 1010-20</td>
<td>6</td>
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<tr>
<td>English 1033</td>
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<tr>
<td>Food Science 1010</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Home Economics 1510</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Home Economics 1520</td>
<td>4</td>
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<tr>
<td>Mathematics 1540</td>
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<td>Nutrition 1230</td>
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<tr>
<td>Psychology 2500</td>
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<tr>
<td>Sociology 1510</td>
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</tr>
<tr>
<td>Electives</td>
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Application and selection by a faculty committee required to enter sophomore year.

**Sophomore**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Economics 2110-20 or 30</td>
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<tr>
<td>English 2510 or 2520</td>
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<tr>
<td>CIDD 2530 or 2540</td>
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<td></td>
</tr>
<tr>
<td>Home Economics 2510</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Journalism 2210</td>
<td>3</td>
<td></td>
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<tr>
<td>Nutrition 3510-20-30-39</td>
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</tr>
<tr>
<td>Physical education activity elective</td>
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<tr>
<td>Speech 2311</td>
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<td>Zoology 2920-30</td>
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<tr>
<td>Electives</td>
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**Junior**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>Anthropology 2530</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Educational Psychology 3110</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Food Science 2510</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Food Systems Administration 3320</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Home Economics 3510</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Microbiology 2910</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Microbiology 2919</td>
<td>3</td>
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</tr>
<tr>
<td>Nutrition 3410</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Plant and Soil Science 3610</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Zoology 3500-60, 3920</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Electives</td>
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</tbody>
</table>
as a Registered Dietitian (R.D.)

A student unable to enter or to complete the Coordinated Undergraduate Program in Dietetics (Option 4) may select Food Science (Option 1), Nutrition Science (Option 2), or Community Nutrition (Option 3) to fulfill the academic requirements for a dietetic internship or traineeship. Upon completion of the academic requirements and the dietetic internship or traineeship, students would be eligible for membership in the American Dietetic Association and to apply for the registration examination to qualify as a Registered Dietitian (R.D.).

**Freshman Hours Credit**

Chemistry 1110-20 or 1150-20... 12

English 1010-20... 6

English 1030... 3

Food Science 1010... 3

Health Education 1520... 3

Mathematics 1540... 3

Nutrition 1230... 3

Psychology 2500... 3

Sociology 1510... 4

Speech 2311 or Journalism 2210... 2

**Sophomore Hours Credit**

Biology 2530 or 2540... 4

Home Economics 2510... 4

Journalism 2210... 3

Mathematics 1540... 3

Physical education activity elective... 2

Speech 2311 or Journalism 2210... 2

Zoology 2510-30 or 2520-30... 3

Electives... 8

**Junior Hours Credit**

Anthropology 2530... 4

Educational Psychology 3110... 4

Food Science 2510... 3

Food Systems Administration 3110... 5

Home Economics 3510... 5

Microbiology 2910... 3

Microbiology 2919... 3

Nutrition 3416... 3

Plant and Soil Science 3610... 3

Political science elective... 3

Public Health 3330... 3

Electives... 9

**Senior Hours Credit**

CPS 3420 or 4210... 3

CPS 2020-410... 3

Food Science 3020... 3

Food Systems Administration 4130... 3

Library and Information Science 4720... 3

Mathematics 4510... 3

Mathematics 4520... 3

Nutrition 4230... 3

Nutrition 4330... 3

Electives... 15

**TOTAL: 188 hours**

**OPTION 5. TOURISM, FOOD AND LODGING ADMINISTRATION**

This professional curriculum is concerned with meeting the middle and upper-level management needs of the tourist, food and lodging industry of today. It provides a program for both men and women who will assist students in gaining breadth of knowledge, perspective, flexibility, and creativity to meet the changing environment of complex management problems in the industry.

This option offers two curricular plans, a regular four-year program (A) and a cooperative plan (B) with pre-planned and supervised work experience in the sophomore, junior, and senior years during which the student is employed by an approved facility in the tourist, food, or lodging industries. The cooperative plan will take four years plus 2 terms. Selection of Plan A or B must be made at the end of the freshman year.

**Option 3. COMMUNITY NUTRITION**

This curriculum is designed for those students interested in community services or graduate work in public health nutrition.
PLAN A

Freshman
Natural science electives 12
English 1010-20 and 1023 9
HE 1510-20 8
Math 1540 8
Food Sci. 1010 3
FSA 2910 3
Economics 2110 3
Nutrition 1230 3

Sophomore
Statistics 2100 4
HE 2510 4
English 2510 or 2520 or 2530 or 2540 4
Economics 2130 3
Microbiology 2910-11 4
Accounting 2110-20 4
FSA 3220 5
Sociology 1510 5
Psychology 2500 or 2520 4
FSA 3110 5
Speech 2311 or 2351 4

Junior
Food Sci. 4000 or 4040 or 2510 3
FSA 4130, 4150, 4250 9
CIDI 3110 9
Economics 3420 3
Text. & Clio. 3330 3
Marketing 3110-20 3
Accounting 2130 3
Computer Science 1410 3
Electives 14

Senior
HE 3510 4
FSA 3460 3
Business Law 4110 3
FSA 4140 3
FSA 4270 3
FSA 4210 15
FSA 4310 3
Electives 3
TOTAL: 190 hours

Professional Curriculum in Textiles and Clothing

OPTION 1. MERCHANDISING

This curriculum is appropriate for students wishing to prepare for positions in merchandising of apparel and/or fabrics, fashion writing, and in public relations with pattern companies and manufacturers of textile products.

PLAN B:
Cooperative Curriculum in Tourism, Food and Lodging Administration

First Year
Natural science electives 12
English 1010 3
Math 1540 3
HE 1510 4

Winter
Natural science electives 4
English 1020 3
Math 1550 4
Economics 2110 3
Food Sci. 1010 3

Spring
Natural science electives 4
English 1030 3
Micro. 2910-11 3
FSA 2910 2
Economics 2130 3

Second Year
Fall
English 2510 or 2520 or 2530 or 2540 4
HE 1520 4
Statistics 2110 3
Sociology 1510 4

Winter
Nurtion 1230 3
HE 2510 4
Speech 2311 or 2351 3
Accounting 2110 3
Psychology 2500 or 2520 4

Spring
FSA 3110 5
Accounting 2120 3
Economics 3420 3
Text. & Clio. 3330 3
Food Sci. 4000 or 4040 or 2510 3

Summer
Work

Third Year
Fall
Work
FSA 3220 5

Winter
FSA 4130 (on tape) 3
Marketing 3110 3
Accounting 2130 3
FSA 4250 3
Electives 3

Spring
FSA 4150 3
Computer Sci. 1410 3
Marketing 3120 3
Electives 3

Summer
Work

Fourth Year
Fall
Work

Winter
FSA 4260 4
HE 3510 4
FSA 4140 3
Electives 6

Spring
Business Law 4110 3
FSA 4270 3
Electives 8

Summer
Work

Fifth Year
Fall
Work
FSA 4210 15

Winter
CIDI 3110 3
FSA 4310 3
Electives 8

*Natural science electives (12 hr. sequence) from one of the following areas: Biology 1210-20-30, Chemistry 1510-20-30, or Physics 1410-20-30.
*Food Science 2510 requires Chemistry 1530.

Professional Curriculum in Textiles and Clothing

OPTION 1. MERCHANDISING

This curriculum is appropriate for students wishing to prepare for positions in merchandising of apparel and/or fabrics, fashion writing, and in public relations with pattern companies and manufacturers of textile products.

Freshman
Chemistry 1510-20-30, or 1110-20-30 12
English 1510-20, 1033 9
Home Economics 1510 4
Psychology 2500 4
Home Economics 1520 4
Text. & Clio. 1160 3
Text. & Clio. 1165 3
Text. & Clio. 2110 3
Sociology 1510 4
Elective 3

Sophomore
Accounting 2110 3
Literature elective 3
Home Economics 2130 3
Anthropology 2930 3
Text. and Clio. 3420, 3429 4
Zoology 2920-30 or biology elective 8
Text. & Clio. 3510 3
Home economics electives 8
Electives 3

Junior
Psychology 3120 or Sociology 3130 4
Crafts, Interior Design & Housing 3130 3
Speech 2311 4
Marketing 3110-20 and a marketing elective 9
Journalism 2210 3
Home Economics 3510 3
Text. & Clio. 4110 3
Text. & Clio. 4230 3
Text. & Clio. 4620 3
Text. & Clio. 4380 3
Text. & Clio. 4101 3
Electives 3

Senior
CFS 3420 3
CFS 4320 3
Choose 6 hours from: crafts, interior design, and housing; nutrition; child and family studies 6
Text. & Clio. 4630, 4640 15
Electives 15

TOTAL: 181 hours

*Eight-hour sequence from foreign language or philosophy or history or art history or music.
**Spring term only.
**Twenty hours of electives must be upper-division level.
**Approved upper-division courses may be substituted.
**Fall quarter only.
**A minimum grade point average of 2.2 is required to enroll in these courses.

OPTION 2. TEXTILE TECHNOLOGY

This curriculum is appropriate for persons wishing to prepare for positions as research technicians and for graduate students studying to lead college teaching and research in textiles.

Freshman
Chemistry 1110-20-30 or 1510-20-30 12
English 1010-20, 1033 9
Home Economics 1510 4
Psychology 2500 4
Home Economics 1520 4
Text. & Clio. 1160 3
Text. & Clio. 1165 3
Electives 8

Sophomore
Chemistry 3211-19 or Nutrition 3310 4
English 2510 or 2520 or 2530 or 2540 (choose two) 8
Home Economics 2510 4
Mathematics 1540-50-60 or 1840-50-60 12
Sociology 1510 4
Text. & Clio. 3420, 3429 4
Zoology 2920-30 4
Electives 6

Junior
Economics 2110, 2130 6
Humanities electives 8
Journalism 2210 3
Physics 2110-20 or 1210-20 8
Statistics 2100 or 3450 3
Home Economics 3510 4
Electives 15
Senior
CIF 2330 ........................................................................ 3
CIDH 2430, 3130 ................................................................ 6
Text & Clp 3440, 3450, 3480, 5220 ................................. 12
Electives ............................................................................ 9
Text & Clp 4220 .................................................................. 4
Text & Clp 4010, 4120, 4140, 4210 ................................. 12
Electives ............................................................................ 14
TOTAL: 191 hours

Or English 2560 or 2570 or 2580.
*At least 30 hours must be upper-division courses.
 Eight-hour sequence from foreign language or philosophy or history or art history or music.

Professional Curriculum in Vocational Home Economics Education

The teacher education program in home economics planned in cooperation with the College of Education prepares prospective teachers for vocational certification at the secondary level. Preparation is for both the Consumer and Homemaking program and the occupational program. The four-year course of study involves general education and professional courses including home economics subject matter. State certification requirements are met plus provision for capitalizing on one's area of interest.

Total requirements for admission to teacher education, to student teaching and for recommendation for certification are listed on page 105. The State Board for Vocational Education and the United States Office of Education approve programs for vocational education. Only students who have a major in the vocational home economics education curriculum meet certification requirements; students who have a major in other curricula in the College of Home Economics do not meet certification requirements.

All freshman, sophomore, and junior required courses must be completed before a student engages in student teaching. Home Economics Education 4240 should be scheduled within one of the two quarters immediately preceding the quarter in which student teaching is scheduled.

In the undergraduate curriculum, endorsement in one or more of the occupational areas is optional and in addition to the basic Consumer and Homemaking Education requirements. This curriculum will prepare students for graduate study in home economics education; however, it is not a requirement for graduate study in home economics education.

Sophomore
Home Economics 1520 ...................................................... 4
Economics electives .......................................................... 4
Electives ............................................................................ 9
H. Ec. Educ 2240 ................................................................ 4
*Humanities electives .......................................................... 8
Literature electives ............................................................. 4
Psychology electives .......................................................... 4
*Social science electives ....................................................... 6
Zoology 2920-30 ................................................................. 8

Junior
CIF 3210, 3510 .................................................................. 6
Ed. C 1 & 3100-30 ................................................................ 6
Special Education 3333 .................................................... 3
Ed. Psych 3310 ................................................................... 3
Electives ............................................................................ 12
Food Science 3020 ............................................................ 4
H. Ec. Educ 3240, 4100, 4630 ........................................... 3
CIF 3420 or 4210 or 4830 .................................................. 3
Nutrition 3050 .................................................................... 3
CIDH 3110 ........................................................................... 3
Text & Clp 3420 .................................................................. 3

Senior
Electives ............................................................................ 9
H. Ec. Educ 4240 ............................................................... 4
H. Ec. Educ 4310, 4610 ....................................................... 15
CIDH 4320 ......................................................................... 3
CIF 4430* or 3516 ............................................................... 3
CIF 4440 ............................................................................ 4
Nutrition 4050 .................................................................. 4
CIF 4410 ............................................................................ 4
Text & Clp 3440 .................................................................. 3

TOTAL: 190 hours

*13-17 hours of electives can be used for additional endorsement in one or more of the following occupational areas: food services; child care and guidance; clothing management; production and services. If occupational endorsement is not sought, 9 hours of electives are to be selected in additional home economics subject matter.
*See page 107 for humanities requirements.
*Choose courses in history, anthropology, geography, political science, sociology, or Child and Family Studies 2110.
*Requires admission to Teacher Education Program.

Recommended course.

Occupational Endorsement Areas

1. FOOD SERVICES

ENDORSEMENT ........................................................................ 14 hours
Food Science 2510 ............................................................ 3 hours
Food Systems Administration 3110 ................................. 5 hours
Food Systems Administration 3320 .................................. 2 hours
H. Ec. Educ 4509 ............................................................... 4 hours

2. CHILD CARE AND GUIDANCE ENDORSEMENT ........................................ 13 hours
CIF 3110 or LSP 3510 ........................................................ 3 hours
CIF 3120 or LSP 3510 ........................................................ 3 hours
CIF 4240 or 4610 ............................................................... 3 hours
H. Ec. Educ 4509 ............................................................... 4 hours

3. CLOTHING MANAGEMENT, PRODUCTION AND SERVICES ENDORSEMENT ...................................................................................... 17 hours
Text & Clp 3460* or 3470 or 4240 .3 or 4 hours
Text & Clp 4110 or 3510* ......................................................... 3 hours
Text & Clp 4010 or 4120 ......................................................... 3 hours
H. Ec. Educ 4509 ............................................................... 6 hours

*Recommended course.

Graduate Study Programs in the College of Home Economics

Graduate study programs lead to the degree of Master of Science with a major in child and family studies; consumer studies and housing; public policy; crafts, interior design, and housing; food science; food systems administration; home economics education; nutrition; and textiles and clothing. Graduate study programs lead to the degree of Doctor of Philosophy in Home Economics with three options: interdisciplinary, food science, and nutrition. Food systems administration may be taken as a concentration in the food science doctoral option. Graduate programs provide advanced specialized training as needed in each area for college and university teaching, for leadership positions in professional agencies and in the various professions in business, for secondary school and adult teaching, for research and for extended services.

Information regarding graduate assistantships, fellowships, and general requirements for admission to graduate study may be obtained from the department head in the area of the student's major interest or the dean of the College of Home Economics for the interdisciplinary doctoral option.

An application for admission and all official transcripts should be submitted directly to the Graduate School. In addition, application is made to the dean of the College of Home Economics. Those students desiring M.S. major in child and family studies, the interdisciplinary doctoral option, or home economics education are required to take the Graduate Record Examination.

For a complete description of the Graduate Program in the various areas of home economics, see the Graduate Catalog, including the list of available major and minor areas.

Departments of Instruction

Child and Family Studies (245)

Professors: J. L. Kulig (Head), Ph.D. Michigan State; C. Beasley (Emeritus), Ed.D. Columbia; M.L. Bishop (Emeritus), Ph.D. Cornell; R.L. Hightower, Ph.D. Iowa; E.L. Speer (Emeritus), M.A. Columbia.


Assistant Professors: M.F. Kallinowski, Ph.D. Massachusetts; B.C. Miller, Ph.D. Minnesota; H.M. Reed, M.S. Tennessee; P.B. Scott, Ph.D. Tennessee; L.E. Southworth, Ed.D. Tennessee; S.L. Twardosz, Ph.D. Kansas.

Lecturer: J. Marlowe, M.S. Tennessee.

1120 Management and its Contribution to Family Living (3) Decision-making process, relationships among decisions; principles of organization for implementing decisions; evaluation procedures; factors affecting management process; application of management principles to problems.

1500 Introduction to Early Education (3) Introduction and overview of early childhood education; conceptions of children, teachers and teaching. Includes field observation.

2110 Human Socialization (3) Human development with emphasis on processes of development from infancy through adolescence in family, school, and peer group settings. Recommended for non-majors only.

2120 Male-Female Relations (3) Examination of issues and development of communication skills and roles involved in relating to opposite sex. (Not open to majors)

2410 Human Sexuality (3) Dimensions of human sexuality as examined through cultural, social, and psychological influences.
3110 Program Planning (4) Philosophies of preschool education. Analysis of program and teacher-child interaction. Prereq: 3210 or equivalent.

3120 Aesthetic Experiences (3) Examination of subject matter areas—quantity and logic, art, music, literature, social studies, family, and child. Prereq: 3110.

3125 Day Care Programming for Infants and Preschool Children (3) Program planning for children from early infancy through 6 years in day care environments. Prereq: 3210 or equivalent.

3210 Child Development I (3) Comprehensive view of the child 2 to 8 years of age. Analysis of interrelationships among various aspects of development—physical, cognitive, emotional, and social. Prereq: 2110 or Home Economics 1510 or 3 hrs psychology. 3hrs. 1 hr observation per week.

3220 Child Development II (3) Growth and development of the child from 6 to 12 years of age with emphasis on influence of family and community. Special attention given to different social and cultural settings. Prereq: 2110. 4 hrs psychology or equivalent. 3 hrs. 1 hr observation per week.

3420 Family Economics (3) Management of family income and resources. Private and public measures to improve income position and reduce income insecurity. Prereq or coreq: Economics 2120.

3510 Intimacy: Marriage and Alternatives (3) Examination of primary relationships from perspectives of development and relationship development. Emphases are on dating, marriage, and variant family forms.

3515 Family Development (3) Focuses on family from childbearing/childrearing stage to stage of aging family in a developmental framework. Emphasis given to effects of family life cycle stage on marital interaction and parenting. Prereq: CFS 2110 or 3110 or 3220.

3520 The Family and the Adolescent (3) Problems of growth and development during teen years; role of parents and other adults in fostering adolescent development. Upper-division students only. Prereq: 2110 or 4 hrs psychology or 4 hrs sociology.

4000 Observational Methods in Child Development (3) Overview of methods of observing teacher and child behavior and development of individual skills in observational assessment. Prereq: Consent of the instructor.

4110 Student Teaching in Preschool Settings (6) Increasing responsibility for planning and guiding groups of young children under supervision of head teacher includes 2-hr weekly seminar. Prereq: 1500, 3110, 3120, 3210; coreq: 4111.

4111 Student Teaching in Preschool Children (3) Increasing responsibility for planning and guiding groups of young children under supervision of a head teacher includes 2-hr weekly seminar. Prereq: 1500, 3110, 3120, 3210; coreq: 4110.

4210 Family Finance (3) Analysis of alternative ways of meeting financial problems encountered during life cycle of family.

4220 Conserving Time and Energy in the Home (3) Application of management principles to home-making activities; evaluation of equipment, work centers and work procedures in terms of time and energy demands. Adaptations for the handicapped.

4230 Development in Infancy (3) Development during prenatal period and first fifteen months of life. Interaction between infant and his environment. Observational research according to childrearing practices and prediction of later behavior. Prereq: 2110 and Zoology 2930 or equivalent.

4260 Adult Development and Aging (3) Adult life in our society. Adjustment to internal and environmental changes through middle and aged years. Prereq: 2110 or HE 1510 or equivalent background in adult development or consent of instructor.

4300 Advanced Child Development (3) Survey of selected theories relevant to child development with emphasis on research literature and research methodology. Prereq: 4 hrs psychology and 6 hrs child development or equivalent.

4420 Learning Experiences with Parents (3) Dynamics of parent-teacher interaction. Emphasis on a variety of techniques for developing communication and working relationships between parents and teachers through experiences in a variety of settings. Prereq: 3610 or 4110 or equivalent.

4430 Family Relationships (3) Interpersonal relationships among family members and societal roles. Prereq: 3510 or 3515.


4610 Child in the Community (3) Needs of children; community agencies meeting these needs; visits to agencies contributing to welfare of children. Prereq: 2110 or Home Economics 1510 or equivalent.

4620 Administration of Programs for Young Children (3) Planning for staffing, housing, feeding, scheduling, and financing for day care of infants and young children, nursery school programs, and specialized programs for deprived preschool children. Prereq: 3110 or 3130 or 4110.

4630 Field Work in Child, Family and Consumer Studies (3-15) Opportunity for student to work in nursery schools or community agencies; focus on children, families, and/or consumer concerns. Hrs. arranged. May be repeated. Maximum credit 15 hrs.

4710 Contemporary Developments (1-3) Student or staff initiated course for study of special topics pertinent to the field. Topics selected to be determined by students and instructor with departmental approval. Elective credit only. Prereq: Consent of instructor. May be repeated with departmental approval for credit up to 9 hrs.

4810 Afro-American Families (3) Historical background, contemporary family structure and relationships; emerging needs and programs. Prereq: 4 hrs in social sciences and upper-division standing. (Same as Black Studies 4610.)

4830 Consumers and the Market (3) Analysis of elements in marketplace which create problems for consumers. Special attention is given to consumer decision making, need for information and consumer protection as associated with government protection of consumers.

4978 Honors: Child, Family and Consumer Studies (3) Individual special problems for juniors and seniors showing special ability and interests. May be repeated. Maximum credit 9 hrs.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5080 Practicum (1-12)

5110 Field Work in Family Life (3)

5140 Consumption and Standards of Living (3)

5150 Assessment of Family Behavior (3)

5160 Management of Time and Energy in the Home (3)

5170 Consumer Economics (3)

5180 Family Financial Consultation (3)

5190 Standards in Consumer Protection (3)

5210 Theories of Child Development (3)

5220 Family Life Programs (3)

5310 Theory and Research on Human Sexuality (3)

5410 Advanced Family Relationships (3)

5420 Parents and Children (3)

5430 Families in Crisis (3)

5510 Survey of Research in Child and Family Studies (3)

5530 Research Methods in Child and Family Studies (3)

5540 Preschool Curriculum Models (3)

5550 Supervision in Preschool Programs (3)

5610 Theories of Management in the Family Environment (3)

5620 Nursery School Administration (3)

5630 Seminar in Infant Development (3)

5640 Teaching Child and Family Studies (5)

5700 Current Programs and Trends in Child and Family Studies (1-3)

5800 Problems in Child, Family, and Consumer Studies (1-3)

5840 Family Planning Programs (3)

5900 Seminar in Child and Family Studies (1-3)

6110 Seminar in Child Development, Family Relationships and Consumer Studies (3)

6250 Advanced Topics (3)

6310 Individual and Family Development: Physiological Determinants (3)

6320 Individual and Family Development: Cognition (3)

6330 Individual and Family Development: Socialization (3)

6410 Theories of Family Interaction (3)

6450 Conceptual Frameworks for the Family (3)

6540 Seminar in Programs for Infants and Preschool Children (3)

6610-20 Applied Behavior Analysis in Natural Settings (6, 6)

6710 Elements of Consumer Choice (3)

6720 Consumer Protection (3)

Interior Design and Housing

Professors: R.G. Blakemore (Head), Ph.D. Florida State; L.J. Gassett (Emeritus), Ph.D. Purdue; M.G. Heise (Emeritus), M.A. Columbia.

Associate Professor: W. Moran, M.S. Wisconsin.

Assistant Professors: A.K. Barkas, Ph.D. Minnesota; K.L. Tepel, M.S. Massachusetts.

Lecturers: J.R. Burger, M.S. Tennessee; M.W. Hertick, M.S. Tennessee.

Crafts, Interior Design, and Housing (269)

1410 Introduction to Crafts and Interior Design (3) Presence of art in immediate environment; design used in daily living by cultures different from ours; emphasis on awareness of design. 2 hrs and 1 lab.

1419 Crafts and Interior Design Studio (2) Introduction to grammar of design in studio situation with emphasis on design organization, color and general awareness of immediate environment. Prereq or coreq: Home Economics 1620. Required of students specializing in crafts and interior design.

2115 Fundamentals of Interior Design I (6) Introduction to basic drafting techniques, symbols and terminology used in interior design presentations.
2116 Fundamentals of Interior Design II (6) Residential space planning of micro-environments with special emphasis on perspective and subjective techniques as a means of communication of design solutions. Opportunity for individual experimentation.

2210 Creative Design (4) Comparison and criticism of design; requirements for individuality within the limits of appropriateness; appreciation of basic art principles. Combining the original color and composition of objects. Introduction to the use of design elements, color, and composition. Methods for creating interior designs. Prereq: 1410 or equivalent, 1 hr and 2 labs.

2430 Equipment in the Home (3) Principles underlying operation and construction of household equipment; processes and supplies involved in using and caring for equipment; recent developments; estimation of costs; simple maintenance. 1 hr and 2 labs.

3110 Beginning Interior Design (3) Individual and design factors influencing selection, arrangement and combination of furnishings to derive the greatest satisfaction from homes and places of work. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3125 Historic Interiors (5) Survey of the history of interior design and decorative arts of various cultures. Emphasis on stylistic analysis and relation of design to social and political factors. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3130 Color (3) Experimentation in color systems and their significance to the home economist. Effective use of color sources in display, costume, and interior design for personality expression. 1 hr and 2 labs.

3255 Residential Interiors I (6) Design of single family residential structure based on analysis of occupant activities and environmental needs; inclusion of produced of detailed construction drawing and specification of interior furnishings and finishing materials. Prereq: 2116 or consent of instructor.

3256 Residential Interiors II (6) Studio problems dealing with residential interiors other than single family detached dwelling; includes high-rise apartment and condominium; hotel, dormitory, remodeling existing structures, etc. Emphasis on working with individual and family's specific needs and budget. Prereq: 3255 or consent of instructor.

3300 Professional Procedures (3) Preparation of interior design major for in-field training. Emphasis on business practices and procedures as related to interior design. Prereq: 2116, Interior design majors, and consent of department.

3300 Design (4) Design as it relates to crafts. Emphasis upon sources, development and application of design to major crafts. Design procedures, tools, and materials utilized in developing design resources for crafts. Prereq: 1419, 2210.

3310 Metal Design I (4) Experimenting with metals and techniques, stressing relationships of design to function and the need for form and use of tools. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3320 Metal Design II (4) Principles of metal design; possibilities and limitations of materials, techniques, and tools involved in metal design to process; imaginative use of art elements in metal design. 1 hr and 2 labs.

3330 Metal Design III (4) Advanced experiences in metalwork, emphasizing relationships of design to production and development of art elements in metal design. Prereq: 3320 or equivalent. 1 hr and 2 labs.

3410 Weaving I (4) Creative design in elementary weaving. Study of looms: basic weaves and threads. Interpreting and creating drafts; designing warps for various materials; assembling a loom; threading and tying-up of a loom; methods of finishing. Study of weaving of past and present. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3420 Weaving II (4) Same as 3410 except designing, techniques, and materials are explored in rug weaving. 1 hr and 2 labs.

3430 Weaving III (4) Advanced weaving techniques with exploration of pattern, color and texture using various forms, sizes, and shapes. Study of weaving, past and present. Prereq: 3410 or 3420 or equivalent. 1 hr and 2 labs.

3440 Demonstration Techniques in Household Equipment (3) Provides a comprehensive approach to equipment demonstrations emphasizing performance, maintenance and cost; developing and using visual aids. Prereq: Speech 2311. 1 hr and 2 labs.

3510 Textile Design (4) Fundamental principles of textile design, history, and application of textiles and materials. Emphasis on silkscreen and blockprint techniques. Prereq: 1410 or equivalent.

3520 Textile Design (4) Study of resist processes in textile design. Emphasis on acid, wax, and resist methods as emphasized. Works of contemporary designers in the field are discussed, as well as examples from the past. Prereq: 1410 or equivalent.

3530 Fabric Structures (4) Design and construction of fabric structures through use of non-weaving processes: looping, interlooping, coiling, interknitting, interlinking, interfacing, and twining. Investigation of tools, materials and non-weaving processes used in the past and present. Prereq: 1410 or equivalent. May be repeated. Maximum credit 12 hrs.

3610 Wood Design (4) Basic skills and appreciation for design development and problem solving in wood in making the small household objects and toys. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3620 Wood Design (4) Continuation of 3610. 1 hr and 2 labs.

3710 Enameling I (4) Exploring possibilities and limitations of vitreous enamels. Designing and creating enamelled metalwork and jewelry using a variety of materials and techniques. Contemporary and past enameling. Prereq: 1410 or equivalent. 1 hr and 2 labs.

3720 Enameling II (4) Advanced techniques; exploration of design, color and texture. Further study of art of enamelist, past and present. Prereq: 3710 or equivalent. 1 hr and 2 labs.

4110 Home Wiring and Lighting Requirements (3) Service of electricity in modern homes; evaluation of lighting and wiring plans in terms of family desires and need for form and use of tools. Prereq: 3710 or equivalent. 1 hr and 2 labs.

4130 Contemporary Design (3) Furnishings and interiors; economics, technological and sociological influences on development of design; changing living conditions and relation of architecture and furnishings. Significant designers and their work. 1 hr and 2 labs.

4140 Exhibition Design (4) Display of craft and interior design problems in relation to materials, props, and special exhibition area. Emphasis on knowledge and application of design principles as they relate to promotion, design construction, display and evaluation for two and three dimensional display. Annual student craft and interior design exhibit culminates quarter. Prereq: 1410 or equivalent.

4155 Interior Space Planning I (6) Analysis, planning and design of office environment; includes contract specifications. Prereq: 3256 or equivalent.

4165 Interior Space Planning II (6) Studio problems involving large scale non-residential interior spaces such as restaurants, transportation facilities, stores, institutions, etc. Prereq: 4155 or consent of instructor.

4280 Professional Practice (15) Supervised field experience in establishments engaged in practice of interior design. Prereq: Junior standing, Interior design majors, 3260, and consent of department.

4300 Apprenticeship/Field Experience (4-15) Supervised field or apprenticeship experience for craft majors enrolled in field experience with a professional organization, program or designer/craftsperson; subject to departmental approval. Prereq: Senior standing and consent of faculty.

4310 Crafts in America (3) Craft movement; factors that contribute to growth and development. Emphasis on educational and therapeutic values of crafts. Place of craftsperson in society as producer, teacher, designer for individual.

4320 Family Housing Problems (3) Housing requirements of families. Reading and judging house plans; effective use of space; maintenance problems; housing needs for people with special needs; site selection and neighborhood development; financing procedures. Prereq: 6 hrs from Economics 2110-29-30.

4330 Care and Repair of Household Equipment (3) Care of equipment for household; repair of equipment in relation to operation and service cost; understanding of common repair problems. Prereq: 2430. 1 hr and 2 labs.

4410 Craft Media (4) Possibilities and limitations of craft media; understanding educational and social values of craft work. Designing and contemporary ceramics art, using inexpensive materials and tools. 3 labs.

4420 Leather Design (4) Relationship of design to function, techniques and materials. Creating leather design. Prereq: 1410 or equivalent. 1 hr and 2 labs.

4430 Plastics (4) Possibilities and limitations of plastic; methods of fabrication; relation of design to function, processes, types of material and use of tools. Prereq: 1410 or equivalent. 1 hr and 2 labs.

4510 Ceramics I (4) Possibilities and limitations of clay; techniques and use of tools. Designing and making pottery forms using coil, slab or extruding techniques; decorating with slip, underglaze, sgrafitto, incising and embossing; preparation of simple glazes; setting and kilning. Prereq: 1410 or equivalent. 1 hr and 2 labs.

4520 Ceramics II (4) Further study in designing, building, decorating, preparing glazes and firing. Role of the potter, past and present. Prereq: 4510 or equivalent. 1 hr and 2 labs.

4530 Ceramics III (4) Advanced design in relation to function, materials, tools and techniques. Further study of history of pottery and contributions of contemporary ceramics art, architecture and interior design. 1 hr and 2 labs.

4610 Studio Problems in Interior Design (3) Problems for seniors with special ability and interest in interior design. May be repeated to a maximum of 9 hrs. Prereq: Senior standing and consent of department.

4620 Studio Problems in Leather Design (4) Problems for juniors and seniors with special ability and interest in leather design. May be repeated to a maximum of 12 hrs. Prereq: 4 hrs of leather design or consent of department.

4630 Studio Problems in Metal Design (4) Problems for juniors and seniors with special ability and interest in metal design. May be repeated to a maximum of 12 hrs. Prereq: 12 hrs of metal design or equivalent and consent of department.

4640 Studio Problems in Weaving (4) Problems for juniors and seniors with special ability and interest in weaving. May be repeated to a maximum of 12 hrs. Prereq: 12 hrs of weaving or equivalent and consent of department.

4650 Studio Problems in Textile Design (4) Problems for juniors and seniors with special ability and interest in textile design. May be repeated to a maximum of 12 hrs. Prereq: 8 hrs of textile design or equivalent and consent of department.

4655 Studio Problems in Fabric Structures (4) Advanced problems in fabric structures for juniors and seniors with special ability and interest in fabric structures. Emphasis on in-depth research and creative problem solving in one or several areas of fabric structures. May be repeated. Maximum credit 12 hrs. Prereq: 12 hrs of fabric structures or equivalent and consent of department head.
5610 Furniture Design (3)
5613 Housing Management (3)
5614 Housing Regulations and Controls (3)
5615 Housing Programs and Policies (3)
5620 Experimental Methods in Household Equipment (3)
5630 Environmental Requirements for Family Work Centers (3)
5810 Crafts (1-4)
5820 Interior Design (1-3)
5830 Problems in Housing (1-3)
5910-20-30 Seminar (1-4, 1-4, 1-4)
6110 Contemporary Housing Issues and Problems (3)
6120 Advanced Topics in Housing Research (3)
6210 Environmental Design Analysis (3)
6320 Role of Crafts in Society (3)
6410 Conceptual Development in Craft Design (3)
6420 Perspectives in Crafts and Interior Design (3)

The following periodically are offered only at the Pi Beta Phi Arrowmont School of Crafts, Gatlinburg, Tennessee:

2211 Creative Design (1-4) Content same as 2210. May be repeated for credit.
3311 Metal Design (1-4) Content same as 3310. May be repeated for credit.
3321 Metal Design (1-4) Content same as 3320. May be repeated for credit.
3331 Metal Design (1-4) Content same as 3330. May be repeated for credit.
3411 Weaving (1-4) Content same as 3410. May be repeated for credit.
3421 Weaving (1-4) Content same as 3420. May be repeated for credit.
3431 Weaving (1-4) Content same as 3430. May be repeated for credit.
3511 Textile Design (1-4) Content same as 3510. May be repeated for credit.
3521 Textile Design (1-4) Content same as 3520. May be repeated for credit.
3611 Wood Design (1-4) Content same as 3610. May be repeated for credit.
3621 Wood Design (1-4) Content same as 3620. May be repeated for credit.
3711 Enameling (1-4) Content same as 3710. May be repeated for credit.
3721 Enameling (1-4) Content same as 3720. May be repeated for credit.
4311 Crafts in America (1-4) Content same as 4310. May be repeated for credit.
4411 Craft Media (1-4) Content same as 4410. May be repeated for credit.
4421 Leather Design (1-4) Content same as 4420. May be repeated for credit.
4431 Plastics (1-4) Content same as 4430. May be repeated for credit.
4511-21-31 Ceramics (1-4, 1-4, 1-4) Content same as 4510-20-30. May be repeated for credit.
4621 Studio Problems in Leather Design (1-4) Content same as 4620. May be repeated for credit.
4631 Studio Problems in Metal Design (1-4) Content same as 4630. May be repeated for credit.
4641 Studio Problems in Weaving (1-4) Content same as 4640. May be repeated for credit.

4651 Studio Problems in Textile Design (1-4) Content same as 4650. May be repeated for credit.
4661 Studio Problems in Wood Design (1-4) Content same as 4660. May be repeated for credit.
4671 Studio Problems in Enameling (1-4) Content same as 4670. May be repeated for credit.
4681 Studio Problems in Plastics (1-4) Content same as 4680. May be repeated for credit.
4691 Studio Problems in Ceramics (1-4) Content same as 4690. May be repeated for credit.
5331 Craft Design (1-4)
5411 Advanced Problems (1-4)
5441-51-61 Metal Design (1-4, 1-4, 1-4)
5442-52-62 Weaving (1-4, 1-4, 1-4)
5443-53-63 Textile Design (1-4, 1-4, 1-4)
5444-54-64 Wood Design (1-4, 1-4, 1-4)
5445-55-65 Enameling (1-4, 1-4, 1-4)
5446-56-66 Plastics (1-4, 1-4, 1-4)
5447-57-67 Ceramics (1-4, 1-4, 1-4)
5511-21-31 Special Problems in Related Art, Crafts and Interior Design (1-4, 1-4, 1-4)
5591-21-31 Seminar in Related Art, Crafts, Interior Design (1-4, 1-4, 1-4)

Food Science, Nutrition, and Food Systems Administration

Food Science, Nutrition, and Food Systems Administration

Professors: R.E. Beauchene, Ph.D., Kansas State; M.R. Buckley (Emeritus), M.A. Columbia; A.M. Campbell, Ph.D. Cornell; G.E. Goertz, Ph.D., Kansas State; E.B. Green (Emeritus), M.S. Columbia; M.J. Hitchcock, Ph.D. Wisconsin; F.L. Macleod (Emeritus), Ph.D. Columbia; L.M. Otlund (Dean), Ph.D. Wisconsin, D.Sc. Rhode Island; J.R. Savage, Ph.D. Wisconsin; J.T. Smith, Ph.D. Missouri; M.A. Smith*, Ph.D. Tennessee.

Associate Professors: B.L. Beach, Ph.D. Wisconsin; L.A. Ehrke, Ph.D. Tennessee; D.W. Hubbard, Dr. D.P. Tulane; D.E. Lyon, M.S. Cornell; M.P. Penfield, Ph.D. Tennessee; M.N. Perry, Ph.D. Tennessee; M.N. Taylor, M.S. (Georgia).


Lecturer: W.L. Dodson, M.S. Tennessee.

*Memphis

Food Science (386)

1010 Food Principles (3) Principles of food selection, preparation and service. 2 hrs and 1 lab.
2000 Cultural and Scientific Aspects of Foods and Nutrition (2) Cultural and scientific aspects of foods and nutrition as applied to the individual and community. Must be taken concurrently with Nutrition 2000. Prereq: 12 hrs of natural science.
2510 Nature of Food I (3) Classification on basis of composition, type of systems, structure, and consistency, source, food components and their interrelationships. Prereq: 1010, Chemistry 1530 or equivalent. 2 hrs and 1 lab.
Food Systems Administration (388)

2910 Seminar in Tourism, Food and Lodging Ad-
ministration (2) Overview of tourism including food 
and lodging segments of tourism and pro-
fessional curriculum. Contacts with industry 
through field trips and guest speakers. Students 
must pay own expenses for field trips.

3000 Dimensions of Tourism (3) Economic and cul-
tural impact of tourism on society. Examination of 
forces influencing the domestic and international 
tourist industry.

3110 Quantity Food Procurement, Production and 
Service (5) Application of principles necessary for 
determining needs, procuring, storing, producing 
and serving foods in volume. Prereq: Food Science 
1010 or 2510, Economics 2130 or consent of 
instructor. 3 hrs and 2 labs.

3220 Tourism, Food and Lodging Administration 
Externship (5) Planned educational experiences in 
selected food and lodging operations or other 
tourist connected facilities. Prereq: 2910, 3110.

3320 Food Service Administration (2-3) Effective 
and efficient use of management resources in food 
service systems. Two credits to include lectures only. 
Three credits to include quantity food labora-
tory. Prereq: 3110 or consent of instructor. Not 
open to majors in food systems administration.

3820 Survey of Dietsetics (1) Introduction to diet-
etics and to career opportunities; and role of dieti-
tian in health delivery systems. Prereq: Junior 
standing.

4130 Food Systems Administration (3) Functions 
of management applied to food service systems. 
Prereq: 3110.

4140 Food Systems Personnel Development (3) 
Development of training programs for food sys-
tems personnel. Prereq: 4130 or consent of in-
structor.

4150 Design and Layout of Food Service Systems 
(3) Design of physical facilities and selection 
and purchasing of equipment for food service systems. 
Prereq: 3110 or consent of instructor.

4210 Tourism, Food and Lodging Managerial Field 
Experience (5-15) Planned educational manage-
rial experience in selected food services or 
food and lodging systems of tourist related entei-
prises. To be taken at the beginning of the senior 
year with consent of instructor. Prereq: 4130, 4150.

4250 Food and Lodging Managerial Cost Control 
(3) Cost analysis for control. Use of financial 
statements for decision making for food and lodg-
ings systems. Prereq: 4130, Accounting 2210.

4260 Food and Lodging Planning, Planning and 
Maintenance (4) Feasibility, planning develop-
ment and construction of food and lodging physical 
plant and maintenance. Electrical, mechanical, 
heating, plumbing, air conditioning and ventilation 
and illumination systems. Types of building mate-
rials and construction. Prereq: 3110, 4150 or con-
sent of instructor. 3 hrs and 1 lab.

4270 Tourism, Food and Lodging Information Sys-
tems (3) Initial Qualitative and study of the analysis of 
information systems for decision making in food 
and lodging operations or other operations related 
to tourist industry. Prereq: 4130, 4220, Computer 
Science 1410.

4310 Tourism and Lodging Administration (3) Ex-
amination of management principles, processes, 
and concepts applied to various departments in 
tourist and lodging facilities. Current problems in 
hospitality organization and operation. Prereq: 
FSA 4130.

4410-20-30 Clinical Experience in Dietsetics (3, 3, 3) 
Development of technical, human and conceptual 
skills through planned educational experiences at 
increasing levels of administrative responsibility in 
selected food systems. Must be taken in se-
quence. Prereq: 3110; 4410 coreq to 4310; 4420 
coreq to 4140. Open only to students in Coordi-
nated Undergraduate Program in Dietsetics.

4421 Contemporary Developments in Dietsetics (2) 
Relating professional course concepts to clinical 
experiences through small group discussions. 
Open only to majors in the Coordinated Under-
graduate Program in Dietsetics. May be repeated. 
Maximum 6 hrs credit.

4710 Contemporary Developments (1-3) Student 
or staff study of special topic(s) pertinent to the field; 
topics selected to be determined by students and instructor with 
departmental approval. Elective credit only. Prereq: 
Consent of instructor. May be repeated with 
departmental approval for credit up to 9 hrs.

4800 Current Topics (1-3) Assigned reading and 
group discussion of research literature. Hrs and 
credit arranged. Prereq: 3110, or consent of in-
structor.

4900 Seminar (1-3) Review, organization, and re-
porting of literature on selected topics. May be 
repeated for credit. Prereq: 3410 or consent of in-
structor. Hrs and credit arranged.

4978 Honors: Food Systems Administration (1-3) 
Special problems for juniors and seniors showing 
special ability and interest in institution adminis-
tration. May be repeated for credit. Hrs and credit 
arranged.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110-20 Experimental Quantity Food Study (3, 3)

5210 Methods of Food Systems Research (3)

5220 Experimental Design of Food Systems Facili-
ties (3)

5230 Food Systems Evaluation (3)

5240 Financial Management of Food Systems (3)

5310 Administration of Food Service Delivery Sys-
tems (3)

5500 Clinical Training in Health Care Agencies (3)

5700 Current Programs and Trends in Food Sys-
tems Administration (1-3)

5800 Problems in Food Systems Administration 
(1-3)

5850 Field Experience (3-9)

5900 Seminar in Food Systems Administration 
(1-3)

6110 Advanced Topics in Institution Administra-
tion (3)

6210 Manpower Planning and Training for the Food 
Service Industry (3)

6310-20 Quantitative Methods to Control Re-
sources in Food Service Systems (3, 3)

6900 Seminar (1-3)

Home Economics (481)

Professors: L.M. Oidland (Dean), Ph.D. Wisconsin, D.Sc. 
Rhode Island; G.E. Goertz (Associate Dean), 
Ph.D. Kansas State.

Associate Professor: M.N. Perry (Dean for Graduate Studies), Ph.D. 
Tennessee.

Assistant Professor: V.S. Anagnost (Assistant Dean), M.S. 
Tennessee.

1010 Home Economics as a Profession (1) Scope of the profession of home economics; educational and 
professional preparation; personal qualities required and satisfaction to be gained from various 
careers within the profession. S/NC.

1510 Family Systems: Human Development (4) 
Definition, description and utilization of basic sys-
tems concepts as applied to development of indi-
vidual and family; emphasis on professional devel-
oping and contribution.

1520 Family Systems: Aesthetic Environment (4) 
Examination of near and far environment from an 
aesthetic perspective with implications for quality of life of individuals and families.

2510 Family Systems: Physiological Well-Being (4) 
Definition, description and utilization of inter-
disciplinary concepts as related to physiological 
well-being of individuals and families.

3110 Methods of Community Services Develop-
ment (3) Organization, education, responsibility 
objectives, methods and evaluation of community 
services programs. Prereq: Psychology 2500 or 
equivalent.

3510 Family Systems: Consumer Resources (4) 
Appraisal and utilization of effective management 
of resources with implications for role of 
professional in the interactions of individuals and 
families with society. Prereq: 3 hrs of economics, 
junior standing.

4000 Senior Seminar (2-15) Personal application of 
interrelated knowledge and professional competen-
ties through experience in community service 
training to serve society in a professional capacity; 
gaining experience beneficial to chosen pro-
fessional career; scope of current research and 
career opportunities in home economics; compre-
hension of professional ethics required of a home 
economist. May be repeated. Maximum credit 15 
hrs. Prereq: Junior or senior standing. Consent of 
department head required for credit beyond 2 hrs. 
S/NC.

4110 Community Services Programs with Adults 
(3) Procedures and techniques in working with 
adults; individual, group and mass methods. Taken 
as an off-campus course or field training to 
gether with 4120. Prereq: 3110 and consent of instructor.

4120 Community Services Programs with Youth 
(3) Procedures and techniques in working with youth. 
Taken as an off-campus course or field training to 
gether with 4110. Prereq: 3110 and consent of in-
structor.
Textiles and Clothing (971)

Professor: A.J. Treece (Head), Ph.D. Ohio State.

Associate Professors: J.M. Ford, Ph.D. Pennsylvania State; C.G. Goodwin, M.S. (Great Britain); C.J. Noel, Ph.D. Notre Dame; T.L. Vigo, Ph.D. Tulane.

Assistant Professors: C.E. Cox, Jr., Ph.D. Tennessee; R.P. Dowlon, M.S. Tennessee; M.F. Drake, Ph.D. Pennsylvania State.

Instructor: A.L. Bullock, B.S. Mississippi College.

1180 Costume Analysis (2) Analysis and application of material properties and different figure types and activities. 1 hr and 1 lab.

1165 Clothing (3) Fundamentals of pattern alteration, fitting and construction with emphasis on design quality and construction technique. Prereq: 1160. 1 hr and 2 labs.

2110 Fashion (3) How fashion world works, from designer to consumer; fashion trends and cycles.

3330 Textiles (3) Textile products—study of consumer selection, preference and satisfaction with emphasis on performance. For non-majors only.

3410 Cultural and Functional Aspects of Textiles and Clothing (3). Cultural, socio-psychological, functional and technological developments in textiles and clothing. Prereq: 3 hrs of each of the following: child development and family relations; economics; 4 hrs sociology or anthropology or psychology.

3420 Textiles I (3) Consumer-oriented study of textiles, emphasizing fibers, fabric construction and finishes in relation to use, serviceability and care of apparel and household fabrics. Prereq: 12 hrs chemistry or physics or biology or botany.


3440 Clothing II—Advanced Construction (3) Comparative study and investigation of fabric designs and processes utilizing basic principles including fitting, elementary flat pattern, quick tailoring methods and couture finishing techniques. Prereq: 1165. 1 hr and 2 labs.

3450 Consumer Issues: Clothing for Contempo rary Families (3) Problems of clothing consumption encountered during various stages of family life cycle. Prereq: Junior standing.

3460 Design Analysis (3) Interpretation of dress design terminating in finished garments developed through media of flat pattern.

3470 Tailoring (4) Evaluation and use of tailoring methods as applied in selection, fitting and completion of tailored wool garments. Prereq: 3440. 3 labs.

3480 Historic Costume (3) Development of costume from ancient to modern times with consideration of historic, social, and environmental settings.

3510 Fashion Merchandising: Planning and Control (3) Analysis of fashion merchandising practices and problems focusing on application of decision mechanisms. Prereq: or coreq: 3510 and Accounting 2110.

4010 Textiles II (3) Recent textile developments with emphasis on man-made fibers, new construction techniques and opportunities for individual investigation. Prereq: 3420.

4110 Fashion Buying (3) Analysis of buying practices, procedures, activities, techniques and underlying concepts fundamental to fashion merchandising. Prereq: 3510.


4130 Research Experiences (3-15) Individual juniors and seniors showing special abilities may be assigned research within department or work in research and development laboratory or quality control department of fiber, chemical, or textile company. Prereq: Recommendation of department head and research adviser, 4110, 4140, and 3 hrs of statistics. May be repeated. Maximum 15 hrs credit.

4140 Introduction to Textile Testing Methods (3) Methods and equipment used in physical testing as approved by recognized textile groups. Prereq: 3420. 1 hr and 2 labs.

4210 Elementary Textile Microscopy (3) Microscopic techniques as applied to study of textile fibers and fabrics. Prereq: 4010. 1 hr and 2 labs.

4220 Textile Fiber Chemistry (4) Chemistry of textile fibers with emphasis on structure, preparation and reactions. Implications relating to dyeing and finishing of fabrics. Prereq: One quarter of organic chemistry. 3 hrs and 1 lab.

4230 Theory and Interpretation of Fashion Design (3) Analysis and application of historical, sociological, cultural and environmental sources of costume design interpretation with emphasis on original contemporary design. Prereq: or coreq: 1165, 3410, 3480. 2 hrs and one 1 hr lab.

4240 Design Analysis II (3) Interpretation of dress design terminating in finished garments developed through the media of draping.

4510 Teaching Materials (3) Investigation, preparation and evaluation of teaching materials. For students planning to teach or do home demonstration work. Prereq: 3440, senior standing, 1 hr and 2 labs.

4520 Introduction to Field Experience in Merchandising (1) Intersession with store personnel, placement and planning for field experience. Prereq: Economics 2110-30, junior standing, concentration in option, approval of program coordinator, and a minimum grade point average of 2.2. Open only to students who intend to enroll in 4630-40. May not be repeated.

4630 Field Experience in Merchandising (9) Off-campus, supervised experience in a cooperative program with business establishments which merchandise textiles and/or apparel. Prereq: 4620, senior standing, major in merchandising, and a minimum grade point average of 2.2; coreq: 4640. Offered fall quarter only.

4640 Methods in Field Experience (6) Investigation of training systems and store organization analyses of jobs, and evaluation of field experience. Prereq: 4630, senior standing, major in merchandising, and a minimum grade point average of 2.2; coreq: 4630. Offered fall quarter only.


4710 Contemporary Developments (1-3) Student or staff initiated course for study of special topical pertinence to the field; topics selected to be determined by students and instructor with departmental approval. Elective credit only. Prereq: Consent of instructor. May be repeated with departmental approval.

4978-98 Honors: Textiles and Clothing (3, 3, 3) Individual problems for juniors and seniors showing special ability and interest in textiles and clothing with an individual research recommendation of head of department. Hrs arranged.

Graduate

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5110 Textile Testing and Methods of Research in Textiles (3)

5120 Advanced Problems in Textiles and Clothing (3)
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>5130</td>
<td>Advanced Tailoring (3)</td>
</tr>
<tr>
<td>5150</td>
<td>Principles of Design Analysis (3)</td>
</tr>
<tr>
<td>5160</td>
<td>Review of Literature (3)</td>
</tr>
<tr>
<td>5170</td>
<td>Social, Psychological and Economic Aspects of Clothing (3)</td>
</tr>
<tr>
<td>5180</td>
<td>Advanced Textile Economics (3)</td>
</tr>
<tr>
<td>5210</td>
<td>Evaluation of Instructional Materials in the Field of Textiles and Clothing (3)</td>
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<tr>
<td>5220</td>
<td>Historic Textiles (3)</td>
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The University of Tennessee College of Law commenced operation in 1890 and has continuously sought to provide high quality legal education in a university community.

While the principal objective of the college is to prepare students for the private practice of law, its total mission is more broadly conceived. The college exposes students to the legal issues of our society enabling them to develop analytical skills in respect to decisional law and statutes, the ability to communicate effectively to others their knowledge of the law, an awareness of the historical growth of the law, a knowledgeable appreciation of the interrelationship of law and society, and the ability to use law as an implement of societal control and development. Students are thus equipped to serve their community not only as advocates and counselors, but as policy makers and active, responsible citizens.

The coordinated program of the college has three dimensions. Teaching and learning, research into and appraisal of our legal systems and institutions, and service to the community. Each plays a significant role in the college as a modern law center.

The teaching and learning element of legal education at the college involves a cooperative classroom interaction between faculty and students in the analytical study of a host of questions and problems found in today’s legal profession. These involve decisional law, statutory interpretation, administrative regulation, techniques of trial and appellate advocacy, and the roles and responsibilities of the lawyer in advising and representing clients. While proper consideration is given to the problems of Tennessee law, the course of study is conducted with a view toward providing an awareness and understanding of the regional and national perspective so as to prepare our students for service in any state.

The college is also directly involved in providing service to the community of which it is a part. A major element of public service is centered in the Legal Clinic where students, under the guidance of skilled and experienced licensed practitioners, provide legal services to indigent persons of Knox County. Additionally, through research, consultation, and other services to legal institutions and groups within the state, the college seeks to participate in the development and improvement of the society in which its students may eventually practice law. The Public Law Research and Service Program and the Continuing Legal Education Program are primary examples of this function.

In combination, the direction and objectives of the college lead to the development not of a narrow technician, but of a student of the law with the perspective, breadth and understanding necessary for the accomplishment of the many tasks assigned by society to the legal profession.

The College of Law Building

Since 1950 the college has occupied a building especially designed for teaching, study, and research in the law. In the spring of 1971 the college occupied the new wing begun in the fall of 1969. The new addition has doubled the available facilities. The library, the classrooms, and the offices are air-conditioned. Adequate classrooms, courtrooms, seminar rooms, a private office for each full-time faculty member, the well-equipped offices of the Legal Clinic, and a spacious, well-lighted Law Library are contained in this modern building. Stack space for more than 200,000 volumes will permit the repository of one of the largest law book collections in the South.

Legal Clinic

The University of Tennessee Legal Clinic was established in 1947. Though the Legal Clinic provides legal assistance to indigent persons, it is designed primarily as a teaching device to correlate theory and practice. It introduces the student under faculty supervision to the law in practice through personal contact with clients and their problems. The Legal Clinic functions as a large law office in which the student gains experience in interviewing clients, writing legal letters, investigating and evaluating facts, preparing memoranda of law, preparing cases for trial or adjustment, and briefing cases. Classroom work supplements the handling of actual cases. The student is thus trained in the technique of law practice and the management of a law office. The ethical responsibilities of lawyers and their function as public servants are stressed. Under present rules of the Tennessee Supreme Court, students, under the direct supervision of the Legal Clinic staff, are certified to practice before all the courts of Tennessee.

The Law Library

The Law Library contains the official state reports of all states, the complete National Reporter system which covers all states and the federal courts, the Annotated Reports, standard sets of miscellaneous reports, the reports of the Canadian cases and of English cases from the yearbooks to date. In addition to these, there are adequate encyclopedias, digests and dictionaries, standard textbooks, law reviews, and current looseleaf services, totaling together more than 100,000 cataloged volumes. The library is under the supervision of a law librarian who is trained in law and library science. The physical facilities, the collection of books, and the library staff combine to make the Law Library of The University of Tennessee one of the best in the South. Law students also have the use...
of the collections in the University Main Library, which is located across the street from the Law Library, the Undergraduate Library a few blocks away and other branch libraries.

Degree of Doctor of Jurisprudence

The degree of Doctor of Jurisprudence will be conferred upon candidates who complete the required average, nine quarter resident law study and who have 126 quarter hours of credit, including all required courses. The required average is 2.0 and that average must be maintained on the work of all nine quarters and also in the last three quarters. Averages are computed on weighted grades. Grades are on a numerical basis from 0.0 to 4.0. A grade of 0.5 or below is a failure.

Eligible law students may receive credit towards the J.D. degree for acceptable performance in up to three (3) courses taken in other departments at the University of Tennessee. Course selection and registration are subject to guidelines approved by the law faculty which includes the requirement that any such course be acceptable for credit towards a graduate degree in the department offering the course.

Note: Students are advised to consult the University’s degree requirements as stated in the front section of this catalog as well as the requirements for this college.

Dual J.D.-M.B.A. Degree Program

The College of Business Administration and the College of Law offer a coordinated dual degree program leading to the conferment of both Doctor of Jurisprudence and the Master of Business Administration degrees. A student pursuing the dual program may save up to two academic quarters (24 quarter hours) of course work which would be required if the two degrees were to be earned separately. The J.D.-M.B.A. program must make separate application to, and be competitively and independently accepted by, the College of Law and the J.D. Graduate School and College of Business Administration for the M.B.A. degree, and by the Dual Degree Committee. Students who have been accepted by both colleges may commence studies in the dual program at the beginning of any quarter subsequent to matriculation in both colleges, provided, however, that dual program studies must be started prior to entry into the last 24 quarter hours required for the J.D. degree and the last 24 hours required for the M.B.A. degree.

Curriculum. A dual degree candidate must satisfy the graduation requirements of each college. Dual degree students withdrawing from the dual degree program before completion of both degrees will not receive credit toward graduation from either college for courses in the other college, except as such courses qualify for credit without regard to the dual degree program. For students continuing in the dual degree program the J.D. and M.B.A. degrees will be awarded upon completion of requirements of the dual degree program.

The College of Law will award credit toward the J.D. degree for acceptable performance in a maximum of 12 quarter hours of approved graduate-level courses offered by the College of Business Administration. Three of the 12 quarter hours must be earned in Accounting 5810 or a more advanced accounting course. If College of Law credit is given for such accounting course, the dual degree student may not receive College of Law credit for Legal Accounting (Law College Course No. 8590).

The College of Business Administration will award credit toward the M.B.A. degree for acceptable performance in a maximum of 12 quarter hours of approved courses offered by the College of Law. Except while completing the first year courses in the College of Law, students are encouraged to maximize the integrative facets of the joint program by taking courses in both colleges each quarter.

Awards of Grades. For grade recording purposes in the College of Law for graduate business courses and in the College of Business Administration for law school courses, grades awarded will be converted to either Satisfactory or No Credit and will not be included in the computation of the student's grade average or class standing in the college where such grades are so converted. The College of Law will award a grade of Satisfactory for a graduate business course in which the student has earned a grade of B or higher and a No Credit for any lower grade. The College of Business Administration will award a grade of Satisfactory for a College of Law course in which the student has earned a grade of B or higher and a No Credit for any lower grade. Grades earned in courses of either college may be used on a regular graded basis for any appropriate purpose in the college offering the course. The official academic record of the student maintained by the Registrar of the University shall show the actual grade assigned by the instructor without conversion. The student must pass a final written comprehensive examination to receive the M.B.A. degree.

Satisfactory/No Credit Option

1. Course eligibility
   a. Required courses may not be taken on a Satisfactory/No Credit (S/NC) basis except as specifically designated.

2. Satisfactory/No Credit
   a. Election to take courses on a Satisfactory/No Credit basis must be made at the time of registration and cannot be changed thereafter.
   b. Students who register for a course Satisfactory/No Credit when they are ineligible to do so will be required to change to regular grading when the error is discovered.
   c. Credit will be given for a course taken on a Satisfactory/No Credit basis only in quarters in which the student completes (receives a grade in) at least 10 hours on a regular grade basis.

Students electing the Satisfactory/No Credit basis must meet all requirements imposed on students taking the courses on a regular grade basis, e.g., attendance, term paper, recitation, etc.

Examinations and other work of students electing a Satisfactory/No Credit basis shall not be graded separately or differently from that of other students.

For purposes of Satisfactory/No Credit grading, Satisfactory shall mean a grade of at least 2.0.

A student electing Satisfactory/No Credit who makes 2.0 or above shall receive credit for the course, but the grade shall be recorded as S and will not be used in determining the grade average.

A student electing Satisfactory/No Credit who makes below 2.0 will receive an NC for the course and neither this grade nor the hours for the course will be used in computing the grade average or hours credit.

A maximum of three courses may be taken on a Satisfactory/No Credit basis.

Maintenance of a Satisfactory Record

No student will be excluded from the College of Law for academic reasons prior to the completion of three quarters of academic study. A full-time student who fails to achieve an overall average of at least 2.0 upon completion (receipt of a grade) of three quarters of academic study shall be excluded. A student who obtained permission to vary the first-year full course load shall be excluded if such student fails to achieve an overall average of at least 2.0 upon completion (receipt of grade) of all required first-year courses, or upon completion of 40 hours, whichever first occurs.

Maximum Course Load Per Quarter

Eighteen hours is the maximum for the college. If a student does not satisfactorily complete 12 hours in a quarter, then for the remainder of studies the student is restricted to 16 hours per quarter.

Clinical Courses

A student may take no more than a total of three clinical courses for law credit and normally no more than one clinical course per quarter. Clinical courses are 8600, 8605, 8620, 8625, 8630, and 8632-34.

Admission

Information regarding admission, financial aid, academic policies, extracurricular activities, and student services as available in the College of Law Bulletin. Students interested in the college should obtain a copy of the Bulletin from the Office of the Assistant Dean, The University of Tennessee, College of Law, 1505 West Cumberland Avenue, Knoxville, Tennessee 37916. Completed application should be received before March 1 of the year of expected admission.
Program of Instruction

The following program is designed to give the student an adequate preparation for the practice of law. From 12 to 15 hours of classroom work a week are required of all full-time students. The required courses will be taken as early in the law course as possible or as scheduled by the law faculty. See statement of course availability at end of section.

REQUIRED COURSES


8020 Contracts I (5) The basic agreement process and legal protection afforded contracts. Problems of offer, acceptance, consideration, breach,蓝盟水域, and the statute of limitations.

8030 Contracts II (4) Concentration of study begun in Contracts I. Concentrating on remedies, condition, impairment of fraud, third party beneficiaries, assignment and delegation, and discharge.

8040 Criminal Law (4) Course on substantive aspects of criminal law. General principles applicable to all criminal conduct, then specific analysis of particular crimes. Substantive defenses to crimes, including intoxication, mistake, necessity, legal duty, self-defense, and duress.

8070 Legal Process (3) Introductory course on judicial process. Brief survey of judicial organization and procedure, legal history, case analysis, significance of precedent, influence of the judge as policy maker, adversary system, and role and responsibilities of the lawyer as advocate. Legislative interpolation.

8110-11-12 Research and Writing I, II, III (2, 2, 2) This three-quarter sequential offering is designed to provide the student with a progressively more sophisticated involvement in legal research and writing. Fundamentals of legal bibliography with an emphasis upon techniques and research skills will be an integral part. Among other components to be included are preparation of a client letter, drafting of pleadings, contracts and other instruments, the preparation of a memorandum of law, and preparation and presentation of an appellate argument (written and oral). Classes will be divided into small sections, and individual criticism given on all work submitted. Lectures on research writing and advocacy skills will be included. 8110 and 8112 graded S/NC.

8130 Property I (4) Freehold estates, future interests, concurrent ownership, leases, Real estate contract and deed. Principles of personal property.

8140 Property II (5) The recording system, title assurance, easements, nuisances, lateral support, water rights, zoning, and eminent domain.

8180 Torts I (4) Intended interference with the person, assault and battery, false imprisonment. Negligence and standard of care, proof of negligence. Remedies, immunity, actual causation, and contributory causes.


8300 Constitutional Law I (4) Judicial review, limitations on judicial power, national legislative power, regulation of commerce, power to tax and spend, other sources of national power, state power to regulate and tax, intergovernmental immunities.

8310 Constitutional Law II (4) Freedom of expression, association, and religion. Fourteenth Amendment rights of criminally accused, including discrimination as to race, sex, etc., right to franchise and apportionment, concept of state action in matters of civil rights.

Either 8300 or 8310 will satisfy the Constitutional Law requirement. One must be taken for that purpose and the other may be taken as an elective.

8600 Legal Profession (3) Role of the lawyer in society and ethical responsibilities implied in that role. Admission to the Bar, the organized profession, solicitation, advertising, unauthorized practice, conflict of interest, decision to represent or withdraw as counsel; fiduciary relationship, advocacy and its limitations, fees and disciplinary procedures.


ELECTIVE COURSES

8050 American Legal History (3) Examination of historical development of the law, legal institutions, legal profession, and legal education from colonial times to present. Historical relationship of legal system to society emphasized.

8060 Criminal Process I (3) Due process, equality, protection, arrest, search and seizure, wire tapping and electronic eavesdropping, entrapment, right to counsel, self-incrimination, interrogation and confessions, exclusionary rules.

8065 Criminal Process II (3) Bail, prosecutor’s discretion, Grand Jury, preliminary hearing, Jurisdiction and venue, anoint and severance, guilty pleas, speedy trial, notice and discovery, nature and cause of accusation, compulsory process, confrontation, trial by jury, adverse publicity, double jeopardy, appeals, habeas corpus.

8160 Interviewing and Counseling (3) Lawyer’s role as interviewer and counselor. Designed to increase interpersonal skills by developing heightened sensitivity and understanding of emotional and psychological forces. Use of videotape techniques and role playing. Models developed from which students can analyze and evaluate classroom efforts.

8170 Trial Practice (3) Criminal and civil litigation, with primary emphasis on trial problems and preparation. Basic trial strategy, professional responsibility, fact investigation, witness preparation, discovery and presentation of evidence, selection and instruction of juries, opening and closing arguments.
The arts and sciences encompass the entire range of human knowledge, from the earliest records to the latest laboratory results. All that human beings have observed about themselves, about their societies, and about the natural world around them is of concern to one or another of the arts and sciences.

The curriculum of the College of Liberal Arts reflects this wide-ranging concern with the life of the mind. It emphasizes the breadth of human knowledge, perceived not only in terms of the traditional categories of the humanities and the natural and social sciences but also in broader perspectives which extend across academic fields and reach beyond the boundaries of a college of liberal arts. It also stresses depth of learning, thereby seeking to acquaint the student with the rigors of the intellectual process. Through a study of the liberal arts one thus learns to participate in an intellectual tradition which is independent of particular teachers and which guides one in the choice of subjects for investigation and in the interpretation of those subjects. With time the individual begins to apprehend the great outlines of knowledge, the principles upon which it rests, the scale of its parts, and its lights and shadows.

The central purposes of a liberal education include the encouragement of intellectual tolerance, a dedication to the quest for knowledge as a worthwhile goal in and of itself, and the cultivation of a responsible, creative, individual mind. These qualities should enable one to develop throughout life an ability to reason and to express oneself clearly, an incentive to absorb emerging knowledge, and a competence to confront the uncertainties of human experience. For the student whose interests and talents lead into research, scholarship, and teaching, a liberal education provides an invaluable foundation. For the individual who enters business, industry, the professions, or government service, it furnishes a broadly useful and well-rounded educational background. For all it offers the opportunity to share in a rich intellectual heritage, in the adventures of the mind, and in the life of the educated imagination. A liberally educated person is identified not so much by specific knowledge as by quality of mind and by creative response to the challenges of the times.

At the heart of a liberal education is an appreciation of and a familiarity with a great triad: language, literature, and the arts; history and society; science and mathematics. These three great wellsprings of human thought are sources of the programs of study offered students in the College of Liberal Arts.

Programs of Study

Granting the broad, general goals of a liberal education, students come into the college with a wide variety of specific educational and vocational objectives. Recognizing this diversity, the College offers a number of different programs of study leading to the baccalaureate degree, and also several preprofessional curricula which prepare the student for advanced study but do not lead to a degree from this college.

Degrees Offered

(1) BACHELOR OF ARTS

The Bachelor of Arts is the basic liberal arts degree, representing the attainment of a broad knowledge of the arts and sciences as well as a comprehensive understanding of one or more areas of special interest. Four programs leading to this degree are open to the student:

(a) Basic Program—The program appropriate for most B.A. students, it is developed around broad area requirements in the Triad plus intensive study in one or more of the specified departments or interdepartmental major fields described below.

(b) Individualized Program—Designed for students whose educational goals are best met by a program tailored to their particular needs, it is similar to the Basic Program in broad area requirements but permits the student to develop an individual concentration incorporating work in two or more departments.

(c) College Scholars Program—Intended for a limited number of students who are especially highly qualified and motivated and who have been selected to undertake this honors-level program, the College Scholars Program permits the student maximum freedom to design a curriculum to meet particular interests and goals.

(d) Pre-Professional Program—The Pre-Professional Program is offered for those who wish to participate in one of the cooperative 3-1 curricula in the health sciences (medicine, dentistry, pharmacy, or medical technology). The student proceeds directly to specialized training in the chosen area after the third year of liberal arts study and offers the first year of professional study in lieu of a major concentration in the college in satisfying the requirements for the B.A. degree.

(2) BACHELOR OF FINE ARTS

The Bachelor of Fine Arts degree represents intensive study preparing students for graduate study and professional positions in art. The degree is offered with a major in studio art. Recommended course combinations for those who desire to concentrate in communication design, drawing, painting, oil, watercolor, printmaking or sculpture are available in the art department office.

(3) BACHELOR OF MUSIC

The program leading to the Bachelor of Music degree prepares students for graduate study and for positions in which a professional degree is required. The degree is offered with a major in music which has concentrations in music theory,
composition, music history and literature, piano literature, and applied music (voice—organ—strings—woodwind, brass and percussion instruments—multiple woodwind instruments).

(4) BACHELOR OF SCIENCE IN CHEMISTRY

The Bachelor of Science in Chemistry is a professional degree designed in accordance with standards set by the American Chemical Society to train students to go directly into positions in the chemical industry or to enter graduate study leading to positions in research and college teaching. Students may elect either the four-year resident program or a five-year cooperative program in which they alternate a quarter of study with a quarter of work in a chemical industry, thus gaining seven quarters of on-the-job experience while earning the degree.

Program Planning

Each student’s academic program is highly individualistic, reflecting that person’s special interests, goals, and aspirations. Usually it will reveal a growing intellectual sophistication and the development of particular motivations. On occasion, this may be seen as indication of frustration and lack of clear direction. Viewed as a whole it may appear to be a miscellany of unrelated courses which was not planned carefully; or it may be a carefully selected curriculum which the student brought together in a way which represented for that individual the most appropriate and effective way of attaining educational goals.

The importance of program planning can hardly be overstressed. A few students enter the college with firm educational objectives in mind and their programs develop quite readily around these predetermined goals. Many, however, do not reach that stage of certainty until their academic careers are relatively far advanced. For these persons the exploration of possible directions and programs, in consultation with faculty advisers, is an important part of the educational process. It is essential for these students to develop their programs carefully and creatively in order that maximum flexibility in their ultimate decision making may be assured.

A basic decision, of course, is the degree to be sought. If it is one of the three professional degrees (Bachelor of Fine Arts, Bachelor of Music, or Bachelor of Science in Chemistry), the student’s program will be somewhat circumscribed, for these degrees are necessarily more prescriptive than the general liberal arts degree. If the student chooses to work for the Bachelor of Arts degree, the three elements which make up the curricula leading to that degree will need to be kept in balance: the broad requirements in the Triad, the major area, and the elective coursework, which support and supplement the work in the first two categories. Most students find it desirable to lay a broad foundation by taking courses which will satisfy the requirements in the first two years, thus reserving most of the final years for in-depth study in the area of concentration. Elective courses may be taken at any time.

Advisers in the Liberal Arts Advising Center (220 Ayres Hall) in the various major departments, in the University Counseling Center, and elsewhere on campus are available to assist students with their program planning. In the final analysis, however, only the student can determine the program which will best satisfy particular needs.

Requirements for Degrees

Bachelor of Arts

As has already been stated, the general liberal arts degree is the Bachelor of Arts, and it is the appropriate objective for most students in the college. Requirements for this degree and the several curricular programs which lead to it will now be discussed in detail.

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

GENERAL REQUIREMENTS

Each student seeking a Bachelor of Arts degree must develop a program which includes the following:

1. A minimum of 180 credit hours;
2. At least 60 credit hours in courses numbered 3000 or above;
3. Appropriate work to satisfy the broad requirements of the Triad, counting no course for more than one Triad area (Basic Program, Individualized Program, and Pre-Professional Program only);
4. A major consisting of at least 36 credit hours in courses numbered 2000 or above as specified by the department or program, and counting no course in this major which has been used for Triad credit. (A course which satisfies a Triad requirement may serve, however, as prerequisite or corequisite to a major.) A major must be earned in every course counted as part of a major. Students transferring from other institutions must complete at least 12 credits at The University of Tennessee, Knoxville in each major awarded on this campus.

Multiple Majors:

After the general requirements described above have been satisfied, additional majors may be recorded on the transcript without regard to course overlap among majors or among these additional majors and Triad requirements. Students developing multiple majors must specifically declare this intent at the time they apply for graduation. Once a student has graduated, the establishment of additional majors becomes subject to University second-degree requirements.

Optional Minors:

If desired, and at the time of applying for graduation, single or multiple minors may be recorded on the academic record without regard to course overlap among minors and majors or among minors and Triad requirements. Minors require a minimum of 24 credit hours in courses numbered 2000 or above. They are available in most departments or programs in which majors are offered and are available in the following:

Biochemistry
Physical Sciences
Portuguese
Women’s Studies

Minors may be developed in other colleges or schools of the University, but they must be approved by the department head in which the minor is proposed as well as the Assistant Dean for Student Academic Affairs in Liberal Arts. At least 6 of the 24 credit hours required for a minor must be completed at The University of Tennessee, Knoxville.

I. Basic Program

A. THE TRIAD:

Language, Literature, and the Arts

History and Society

Science and Mathematics

Language, literature, and the arts play a vital role in shaping human experience and perception. They give expression to human thought and feeling and give form and order to a sense of the world. The written and spoken word, the dramatic motion and gesture of theatre, film, and dance, the sensuous structures which address the eye and ear in painting and sculpture, architecture and music—all of these help to define what is human.

It is important that every student of liberal arts become acquainted with these modes of experience within this culture and through exposure to cultures that are foreign, distant, and strange. To know what one is not is essential for knowing what one is.

Although there is no universal formula for determining which disciplines, skills, and enjoyments are of primary or of secondary importance, the written and spoken word has a wider range of reference than any other human skill. A basic competence in writing and reading is thus a minimal condition for knowing how to think about and relate all other activities.

The study of history is an integral part of a liberal education. Because human beings build and understand the world as a result of their own historical experience, the study of history provides a basic understanding of the present requires an historical perspective. Such perspective may be developed by a number of courses, including the traditional survey of western civilization or other broad surveys such as Asian history, Latin American history, history of the United States, and Afro-American history. More specialized courses in the history of particular segments of human experience, e.g., philosophy or religion, may also prove valuable.

A liberal education presupposes not only an awareness of the past but also a familiarity with contemporary social institutions, processes, and practices. From a wide variety of offerings in the social sciences the student may choose courses useful in acquiring that familiarity. Only by such knowledge can people of good will hope to maintain humane values in a world which threatens to be preoccupied with economic growth, urbanization, and other dimensions of technological change challenge traditional
patterns of individual and collective behavior.
Study of science and mathematics develops in the student an inquiring attitude toward the natural environment and an ability to understand scientific explanations of diverse phenomena. These ends may be realized through an understanding of the empirical and the rational in scientific methods of inquiry and an awareness of the limitations of science and technology in solving problems. The student should attain a knowledge of the way in which the development of science and technology has affected beliefs, philosophies, and the development of civilization.

Specific Requirements in the Triad

(1) Language, Literature, and the Arts
   (a) Writing Proficiency
   Each student is required to demonstrate ability to use the English language effectively and coherently in one of the following four ways:
   (i) By completing nine credits in English writing courses in one of the following series: (1) English 1010, 1020, and three additional credits drawn from 1021, 1022, or 1033. Students who complete 1020 with the grade of A have the additional option to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the department. (2) English 1018, 1028, 1038. Students who obtain the grade of A or B in 1028 have the additional option, with permission, to satisfy the remaining three credits in any 2000- or 3000-level writing course offered by the department.
   (3) English 1431, 1441, 1451.
   (ii) By earning a score of 4 or 5 on the College Board Advanced Placement Test in English; or, with special permission, by earning a score of 3 on that examination and completing one 2000-level course in English at The University of Tennessee, Knoxville, with a grade of B or better.
   (iii) By passing (normally after completing one quarter of freshman English at UTK) a proficiency examination in writing, administered by the Department of English in cooperation with the Committee on Writing Standards.
   (iv) By completing 3 hours of freshman English followed by a minimum of 6 hours in courses which require substantial emphasis on writing. The writing-emphasis courses are identified by the Committee on Writing Standards; a list of those approved may be obtained in the office of the Department of English or in the Liberal Arts Advising Center.

Note: Students should normally take English in the first quarter of their registration and continue to take English or a writing-emphasis course in each succeeding quarter until this requirement is met.

(b) Literature, Foreign Language, and the Arts
   The student may select any one of the following three options to satisfy this requirement:
   (i) 8 hours of literature in a foreign language in the 3000-level or above. Prerequisites include intermediate-level competence in the language, demonstrated by diagnostic (non-credit) or proficiency (credit) examination or by completion of the 2000-level sequence in that language.
   (ii) Intermediate-level competence in a foreign language demonstrated by diagnostic (non-credit) or proficiency examination or by completing a 2000-level sequence (or an approved equivalent) in that language, and a minimum of two courses of literature in English (originally in English or in translation) drawn from the list of courses published by the Committee on Language, Literature, and the Arts, available in the Liberal Arts Advising Center. A program of two years of high school study will often qualify a student for entry into a 2000-level language sequence.
   (iii) 24 hours in an integrated program in literature, culture, and/or the arts, focusing either on (1) a particular nation or area other than the United States, or (2) a comparative study of literary and artistic modes, genres, or movements. Suggested programs are published by the Committee on Language, Literature, and the Arts and are available in the Liberal Arts Advising Center; students may also propose individual programs to the committee for consideration.

Note: In options (i) and (ii), those who take the diagnostic examination will not receive credit toward graduation but will be exempted from the portion of the requirement satisfied by the examination. Those who take the proficiency examination may earn up to 16 hours of credit toward graduation for prior study of the language, in addition to the credit they earn for course work undertaken in the college. Normally two years of high school language study is regarded as equivalent to one year of college study. Students who have had four years of high school study of the same language should be able to satisfy the requirement for intermediate-level competence in either option by examination and those who have had less than four years of study may be able to satisfy a portion of the requirement in this way, thus reducing the time required to satisfy this requirement. Full credit toward graduation is given for any language study undertaken successfully in the college regardless of the amount of previous study of that language.

Students who have had less than two years of study of the same language in high school are admitted with an entrance deficiency. Satisfying the completion of the final quarter of the first year sequence of college level foreign language study, normally in the freshman year, is necessary to remove this deficiency.

(2) History and Society
   Each student must complete 24 hours of course work in this area including:
   (a) One 8-hour sequence from the several survey courses offered by the Department of History or in a comprehensive interdisciplinary sequence having a substantial emphasis on history.
   (b) 8 hours in courses with emphasis on man and society which are not primarily historical in nature.
   (c) The remaining hours may be taken in either categories (a) or (b).

A list of courses which satisfy this requirement is published by the Committee on History and Society and is available in the Liberal Arts Advising Center.

(3) Science and Mathematics
   Each student must complete 24 hours of course work in this area, including:
   (a) One of the following two options:
      (i) An 8-hour sequence in a biological science; or
      (ii) An 8-hour sequence in a physical science.
   (b) 16 hours drawn from additional courses in the biological and/or physical sciences or from designated courses in:
      (iii) the history, anthropology, or social impact of science;
      (iv) mathematics and logic.

No more than 16 hours may be applied toward this requirement from any one of the above four categories.

A list of courses which satisfy this requirement is published by the Committee on Science and Mathematics and is available in the Liberal Arts Advising Center.

B. THE MAJOR

In many ways the most important part of each student's program is the major, for it is in this intensive study of one more or less limited field of knowledge that the individual begins to find a niche in the world of intellectual endeavor. The major may be drawn from the offerings of a single department or it may bring together related concerns of two or more departments. In either case the student should work out a program of study which has a definite design and aims at some overall objective. Guidelines are published by each major department or interdepartmental committee to assist the student in ascertaining goals and to provide a framework within which to develop a particular program. Additional assistance in the form of personal counseling is available in the Liberal Arts Advising Center and from designated faculty advisers in each major department or area.

Requirements for the specified majors available to students in the Basic Program vary from a minimum of 36 to a maximum of 56 credit hours in courses numbered 2000 and above, including prerequisites and corequisites (i.e., supporting courses in other departments or areas). Insofar as is consistent with the objective of a total program the courses encompassed reasonably between broad area requirements in the Triad, the major, and supplementary courses, the student may elect as many courses as desired in any department or area.

*See Phi Beta Kappa requirements in mathematics, page 38.*
C. SUPPLEMENTARY ELECTIVE COURSES

At least one-fourth of each student's curriculum in the Basic Program will be made up of courses selected according to the individual's interests to supplement and support the work being done in the major and in the Triad. This dimension of the student's experience in the University represents that freedom within which total education may be rounded out as enriched. Elective courses should be chosen so that they will truly enhance the student's total program and help in the achievement of well thought-out educational objectives.

Some of the choices which the student might make in selecting the elective courses are:
1. (1) Additional courses in the major;
   (2) A related minor;
   (3) An area in the arts;
   (4) An off-campus quarter.

Only the student's imagination and initiative and the willingness to conceive and develop a totally meaningful academic program limit the choices of supplementary elective courses.

II. Individualized Program

The Basic Program described above will meet the educational needs of most of the students enrolling in the college. Some, however, come with particular strengths in their preparation or with special interests which do not coincide with the departmental or interdepartmental majors specified in the Basic Program. For these students the Individualized Program has been established as a means of attaining a closer correlation between student needs and academic programs.

Individualized Programs will normally satisfy the broad requirements of the Triad, just as those in the Basic Program do, although some latitude is provided for substitutions approved by the Dean of Undergraduate Studies and the dean of the College. The point at which the greatest degree of individualization takes place, however, is in the area of concentration. Although the quantitative aspect of the area of concentration is the same as for the major in the Basic Program (i.e., a minimum of 36 hours in courses numbered above 2000), there is no restriction in principle on the choice of courses of which it is comprised. The student may design a program, in consultation with an adviser, and submit it for consideration to the Committee on the Individualized Program. The proposed courses of study must have some clear central purpose, usually implemented through intensive work in two or three departmental fields, and an undirected scattering of courses will not be approved. For further information consult the program director, Dr. Harry Jacobson (Ayres Hall).

III. College Scholars Program

A limited number of freshmen, entering transfer students with less than 60 credit hours, and resident students with less than 90 credit hours are invited each year to enroll in the distinguished honors curriculum. Selection is based on previous academic record, test scores, recommendations, a written essay, and a personal interview. Admission is provisional for two quarters; continuation depends upon maintenance of a satisfactory record (normally 3.25 or above) and evidence of ongoing motivation and interest.

The College Scholars Program affords the highest degree of freedom to the student in developing a meaningful curriculum. Each program is worked out individually with the assigned advisor (tutor) who under ordinary circumstances continues to advise the student throughout the college career. Together they determine what kinds of course work and/or other learning experiences will best fulfill the student's objectives, while at the same time achieving the kind of liberal education the college believes is important for every student. In the final two years of the program students will be heavily involved in independent study or research resulting in a senior honors thesis or project report.

Further information and applications may be obtained from the program director, Dr. Harry C. Jacobson, 226 Ayres Hall.

IV. Preparation for the Health Professions

Pre-Dental
Pre-Dental Hygiene
Pre-Medical
Pre-Medical Record Administration
Pre-Medical Technology
Pre-Nursing
Pre-Pharmacy
Pre-Physical Therapy
Other Health Professions

Pre-health professional programs are available for students who plan a career in one of the health professions. The programs preparing students for the study of medicine, dentistry, and pharmacy include specified courses required for admission to the respective colleges of The University of Tennessee School of Medicine at Memphis (UTHCHS), as well as the required for the Bachelor of Arts degree in the College of Liberal Arts at The University of Tennessee, Knoxville. The pre-medical technology program prepares students to undertake professional training during the fourth year of study at UTHCHS. Other pre-health professional programs—dental hygiene, medical record administration, nursing, pharmacy, and physical therapy—are offered for those students who are planning to pursue professional training in health professional areas which lead to an undergraduate degree at UTHCHS but not to a degree from UT.

NOTE: UTHCHS is a state-supported institution and by legislative intent is required to admit all qualified Tennesseans prior to considering out-of-state applicants. At the present time there are more qualified Tennessee applicants than there are places available; therefore, out-of-state applications are not being considered. The only exception to this policy is the non-resident applicant who is the son or daughter of an alumnus or alumnna of UTHCHS and who has completed all or a substantial portion of work at a college in The University of Tennessee system and is otherwise qualified competitively.

Admission to any program at UTHCHS or to the Medical Technology Program at the UT Memorial Research Center and Hospital is at the discretion of that program's admissions committee.

Admission to The University of Tennessee and completion of a pre-professional program in the College of Liberal Arts does not assure admission to any professional training program.

Because the competition for admission to most programs in the health professions is keen, pre-health professional students are encouraged to work towards the completion of a degree program in a major which will enable the individual to adapt to an alternative program in the event admission to the desired program is not achieved. The preparatory courses necessary for professional study can be incorporated in the chosen major program.

Students in a pre-health professional program should consult with a health professional adviser in the Liberal Arts Advising Center (220 Ayres Hall) or the Coordinator of the Health Professions Office (218 Ayres Hall) for more information about the programs outlined below. Bulletins describing the various pre-health professional programs, including a detailed statement of requirements, may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-DENTAL PROGRAM

The college offers both three-year and four-year programs of study, the latter leading to the Bachelor of Arts for students preparing for the study of dentistry. Both programs are based upon the curriculum outlined below. In the three-year program the student must complete at least 36 credit hours while enrolled in the college, and the B.A. degree is granted upon satisfactory completion of the first year of study at UTHCHS. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the college, including a major of 36 or more hours as well as the courses listed below. The requirement for a major is waived for those completing their fourth year at UTHCHS. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at

*Students wishing to prepare for professional training at institutions other than UTHCHS should consult the catalogs of those institutions to determine the specific preparation required for admission.
The University of Tennessee, Knoxville, before entering UTCCHS. Although the B.A. degree is not required for admission to the College of Dentistry at Memphis, most of the students accepted into the study of dentistry have the baccalaureate degree before admission. Therefore, pre-dental students are encouraged to plan to complete all requirements for the B.A. degree before enrolling in the College of Dentistry.

Freshman Hours Credit
1 English 1510-20 8
1 Chemistry 1101-20 8
1 Mathematics (1540) 1550-60 or 1840-50 8
1 Trial I (Language, Literature & the Arts) 8
1 Trial II (History and Society) 8

Sophomore
1 Biology 1210-20-30 or 1840-50 12
Chemistry 3211-21-31 and 3219-29-39 12
1 Trial I 8
1 Trial II 8
1 Elective 4

Junior
1 Physics 2210-20-30 12
1 Speech 2311 4
1 Biology and/or zoology 12
1 Trial I 8
1 Trial II 8
1 Elective 4

Senior
1 Completion of major program and B.A. requirements 45
1 Completion of one year at the UTCCHS 45

Total: 180 hours

PRE-DENTAL HYGIENE PROGRAM
A Bachelor of Science in Dental Hygiene is granted by UTCCHS upon completion of a program which includes 96 hours of prescribed courses in the College of Liberal Arts and 6 quarters of study at UTCCHS. Students interested in the pre-dental hygiene program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the pre-dental hygiene program and requirements in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-MEDICAL PROGRAM
The college offers both three-year and four-year programs leading to the degree of Bachelor of Arts for students preparing for the study of medicine. Both programs are based upon the program outlined below. In the three-year program the student must complete at least 135 credit hours while enrolled in the college, and the B.A. degree is granted upon satisfactory completion of the first year of study at the UTCCHS. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the college, including a major of 36 or more hours in addition to the courses outlined below. The requirements for a major are waived for those taking their fourth year at UTCCHS. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at UTK before entering UTCCHS.

Although the B.A. degree is not required for admission to the College of Medicine, most students accepted into the study of medicine have the baccalaureate degree before admission. Therefore, pre-medical students are encouraged to plan to complete all requirements for the degree before enrolling in the College of Medicine.

Freshman Hours Credit
1 English 1510-20 8
1 Chemistry 1101-20 8
1 Mathematics 1840-50 8
1 Trial I (Language, Literature & the Arts) 8
1 Trial II (History & Society) 8
1 Electives 4

Sophomore
1 Biology 1210-20-30 or 1840-50 12
1 Zoology 1118-28-38 12
Chemistry 3211-21-31 and 3219-29-39 12
1 Trial I 8
1 Trial II 8
1 Elective 4

Junior
1 Physics 2210-20-30 12
1 Trial I 8
1 Trial II 8
1 Elective 4

Senior
1 Completion of major program and B.A. requirements 45
1 Completion of one year at UTCCHS 45

Total: 135 hours

Students interested in the pre-medical record administration program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the medical records administration program in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-MEDICAL TECHNOLOGY PROGRAMS
The college offers two programs leading to the study of medical technology.

1. The Science-Medical Technology Curriculum leading to a Bachelor of Arts degree with a major in medical technology from The University of Tennessee.

2. The Pre-Medical Technology Program leading to a degree of Bachelor of Science in medical technology from UTCCHS.

Science-Medical Technology Curriculum
The Science-Medical Technology Curriculum is a three-year program consisting of a minimum of 135 credit hours in the college. Students who complete this curriculum satisfactorily may apply for admission to the course of study in medical technology at The University of Tennessee Medical Research Center and Hospital in Knoxville (UTMRCH). Successful completion of this course, which results in the granting of 50 credit hours, makes the student eligible for a Bachelor of Arts degree with a major in medical technology from The University of Tennessee. In addition, a Certificate of Laboratory Training will be awarded by UTMRC. Students will then be eligible for examination by the Board of Registry of the American Society of Clinical Pathologists in order to be certified as registered medical technologists.

Freshman Hours Credit
1 English 1510-20 8
1 Biology 1210-20-30 12
1 Zoology 1118-28-38 12
1 Chemistry 3211-21-31 and 3219-29-39 12
1 Trial I 8
1 Trial II 8
1 Electives 4

Sophomore
1 Chemistry 1101-20 8
1 Zoology 1118-28-38 12
1 Biology 3211-21-31 and 3219-29-39 12
1 Trial I 8
1 Trial II 8
1 Electives 4

Senior
1 Completion of major program and B.A. requirements 45

Total: 135 hours

PRE-MEDICAL RECORD ADMINISTRATION PROGRAM
Admission to the medical record administration program at UTCCHS, leading to a Bachelor of Science in Medical Record Administration requires completion of 135 hours of prescribed courses. Classes are admitted in September; applications must be filed by April 15. The selection process usually includes interviews with members of the faculty.
Junior

Microbiology 3061 or 3071 or
Biomathematics 4110.......................... 3
Chemistry 2140-49................................ 4
Triad I ............................................. 8
Triad II ........................................... 8
Electives ........................................ 19

(Total 135)

Senior

Medical technology course of study at UTMRC ........................................... 50

Pre-Medical Technology Program

Students planning to seek admission to the medical technology course of study at UCHTS must complete 135 credit hours of prescribed courses while enrolled in the College of Liberal Arts. The program at Memphis is 12 months in length and leads to the degree of Bachelor of Science in Medical Technology from UCHTS. Classes are admitted in January and July and application must be made one year in advance.

Students interested in the medical technology program of study at UCHTS are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for the specific requirements for admission.

Bulletins describing both pre-medical technology programs and requirements in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

PRE-NURSING PROGRAM

The minimum requirement for admission to the College of Nursing at UCHTS is 48 hours of prescribed courses in the College of Liberal Arts. The program in Memphis, which leads to the Bachelor of Science in Nursing from UCHTS, is three years in length.

Registered nurses who wish to work toward a degree of Bachelor of Science in Nursing must complete 54 hours of prescribed courses to qualify for admission with advanced standing.

Students interested in the pre-nursing program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the pre-nursing program in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

Note: A degree program in nursing is also available at The University of Tennessee, Knoxville. Information may be obtained from the dean of the College of Nursing.

PRE-PHARMACY PROGRAMS

The college offers three programs preparing students for the study of pharmacy at UCHTS. The Bachelor of Science in Pharmacy degree is conferred by UCHTS upon completion of three years of professional study at Memphis following any of the three programs.

The two-year program prepares students to be admitted to the College of Pharmacy upon completion of 90 hours of a prescribed course of study in the College of Liberal Arts. Further information may be obtained from the Health Professions Office, 218 Ayres Hall.

The three-year and four-year programs, which lead to a Bachelor of Arts degree from The University of Tennessee, Knoxville, as well as to the professional degree in pharmacy from UCHTS, are based upon the program outlined below. In the three-year program, the student must complete at least 135 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at Memphis. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the college, including a major of 36 or more hours in addition to the courses outlined below. The requirement for a major is waived for those taking their fourth year at UCHTS. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at The University of Tennessee, Knoxville, before enrolling in the College of Pharmacy.

Freshman

Hours Credit

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<tr>
<th>Course</th>
<th>Hours</th>
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<td>English 1510-20</td>
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<tr>
<td>Computer Science</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 1110-20-30</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics 1500-60</td>
<td>8</td>
</tr>
<tr>
<td>Psychology 2500</td>
<td>4</td>
</tr>
<tr>
<td>Triad I (Language, Literature &amp; the Arts)</td>
<td>8</td>
</tr>
<tr>
<td>Triad II (History, Civics)</td>
<td>4</td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
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<tr>
<td>Total</td>
<td>48</td>
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Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Biology 3120-30 or Zoology 1118-36</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry 3211-32 or 3219-39-31</td>
<td>12</td>
</tr>
<tr>
<td>Speech 2311</td>
<td>4</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Triad II</td>
<td>8</td>
</tr>
<tr>
<td>Elective</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
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Junior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Accounting 2110</td>
<td>3</td>
</tr>
<tr>
<td>Physics 2210-20</td>
<td>8</td>
</tr>
<tr>
<td>Triad I</td>
<td>8</td>
</tr>
<tr>
<td>Triad II</td>
<td>8</td>
</tr>
<tr>
<td>Electives</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
</tr>
</tbody>
</table>

(Total 135)

Senior

Completion of major program and B.A. requirements ........................................... 45

Completion of one year at the UT Center for the Health Sciences

Bulletins describing the three pre-pharmacy programs in detail may be obtained from the Health Professions Office, 218 Ayres Hall.

OTHER HEALTH PROFESSIONS

Cytotechnology

Histotechnology

Optometry

Radiologic Technology

Veterinary Medicine

A library of materials about career opportunities in the health professions, including most allied health areas, has been developed and is located in the Health Professions Office, 218 Ayres Hall.

Academic advisers are available to assist students in planning their programs in order to meet the requirements for admission to other programs.

Bachelor of Fine Arts

The Bachelor of Fine Arts degree represents intensive study preparing the student for graduate programs and careers relating to art.

A minimum of 180 credit hours are required for graduation. Although there are no specific concentrations within the major, guidelines for the following recommended programs are available in the departmental office: (1) communication design, (2) drawing, (3) painting, (4) oil, (5) watercolor, (6) printmaking, and (7) sculpture. Transfer student are advised that a minimum of 28 credit hours in studio courses and 8 upper-division credit hours in art history must be earned at The University of Tennessee, Knoxville. The Bachelor of Fine Arts degree and its major will be recorded as follows:

Bachelor of Fine Arts

Major: Studio Art

Core Curriculum:

The core program is required of all B.F.A. candidates. It is designed to give a broad art background, in both studio and art history, at the earliest possible time.

This background, during the freshman and sophomore years, gives a foundation upon which the student may build, and an opportunity to become acquainted with the various artistic disciplines. This gives each student the understanding to plan a better program during the remaining two years. Unless otherwise stated, the core program is nonsequential, but should be completed by the end of the first two years. Core courses are as follows:

Art History

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art 1810</td>
<td>4</td>
</tr>
<tr>
<td>Art 1825</td>
<td>4</td>
</tr>
<tr>
<td>Art 2710</td>
<td>4</td>
</tr>
</tbody>
</table>

A minimum of 8 hours of history courses.

PRE-PHYSICAL THERAPY PROGRAM

Admission to the physical therapy program at UCHTS, leading to the degree of Bachelor of Science in Physical Therapy from UCHTS, requires completion of 135 hours of prescribed courses while enrolled in the College of Liberal Arts. The program in Memphis is 15 months in length.

Students interested in the pre-physical therapy program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information. Bulletins describing the pre-physical therapy program in detail may be obtained from the Health Professions Office, 218 Ayres Hall.
Studio: Hours Credit
*Art 1115 Studio Fundamentals: Beginning Drawing .............. 4
*Art 1125 Studio Fundamentals: Surface Composition and Color 4
*Art 1135 Studio Fundamentals: Composition and Volume .... 4
Art 2105 Introduction to Drawing 4
Art 2205 Introduction to Painting 4
Art 2505 Introduction to Sculpture 4
Art 2505 Introduction to Communication Design ......... 4
Art 2505 Introduction to Printmaking 4
24 hours

*Prerequisite to 2000-level courses for B.F.A. program.

General Curriculum:
In addition to the core program, B.F.A. candidates must fulfill the following general requirements:

A. Triad Courses
I. Language, Literature and the Arts
   A. A minimum of 8 hours English composition 8
   B. History and Society
      A. A minimum of 8 hours 8
   C. Science and Mathematics
      A. A minimum of 8 hours 8
      B. Preparation in a foreign language 24 hours
B. Philosophy 3910 4
C. Non-Art electives
   A. A minimum of 20 hours. Students entering with a high school language deficiency must take a minimum of 6 hours of a foreign language 20
   B. A minimum of 40 hours. Students will normally choose from courses within the art department. However, up to 20 hours in certain course work from advertising, architecture, art direction, CIDR, classes, and theatre may be accepted with consent of department 40

E. Unspecified electives 180 hours

COLLEGE ARTISTS PROGRAM
A program of 180 hours may be determined by the student and approved by the Department of Art honors committee. This program allows the gifted student greater opportunity for establishing a unique education in studio art, which may include independent study, off-campus study, or foreign study in addition to formal class work. Participation and graduation in the College Artists Program will be noted on the student's transcript.

Students may apply for the program upon completion of 45 credit hours, but will not normally be considered after the completion of 90 hours. Admission to the College Artists Program is based on four criteria: (1) an overall grade-point average of at least 3.0, (2) a portfolio of work, (3) the proposed course of study, and (4) a personal interview. A minimum grade-point average of 3.25, at least 12 hours per quarter, and evidence of continuing motivation and interest must be maintained to remain in the program. Each College Artist will normally enroll in one or more general or departmental honors courses each quarter, and must participate in an honors exhibition prior to graduation.

STUDIO HONORS COURSES
Courses are designed for the exceptional student. Honors courses may be taken in any of the areas of studio instruction, and admittance is based on the following criteria:

A. Grade-point average of 3.2 in studio art courses
B. Portfolio of class and/or outside work
C. Recommendation of the studio faculty, and/or approval of the instructor
Continued participation is subject to periodic review by the faculty. Students qualified for honors courses will enroll in course numbers which most closely parallel their present level, i.e. sophomores in 2008, juniors in 3008, seniors in 4008. Each course number may be repeated for a maximum of 24 hours credit.

Bachelor of Music
The Department of Music offers the degree of Bachelor of Music with concentrations in music theory, composition, music history and literature, piano literature, and applied music (voice—piano—organ—organ and church music—strings—woodwind, brass and percussion instruments—percussion instruments—studio music and jazz). The study is designed to prepare students for graduate study or for positions in music for which a professional degree is required.

Students who plan to work for this degree are assigned an advisor in the Department of Music at the time they enter the program. Continuation in the program at the 3000 level requires the achievement of an average of 2.5 or better in all music courses taken. The minimum requirement for the degree is 180 credit hours, including the specified courses outlined below.

Note: In addition to the concentrations offered in the Bachelor of Music curriculum, a major in music with a concentration in either music history and literature or applied music is available in the Bachelor of Arts curriculum.

MUSIC THEORY

<table>
<thead>
<tr>
<th>Freshman</th>
<th>Hours Credit</th>
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<tbody>
<tr>
<td>English 1510-20</td>
<td>8</td>
</tr>
<tr>
<td>Music 1119-28-38</td>
<td>12</td>
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<td>Music 1113-23-33</td>
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<td>Music 1340</td>
<td>3</td>
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<tr>
<td>Applied music</td>
<td>3</td>
</tr>
<tr>
<td>Ensemble</td>
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</tr>
<tr>
<td>Liberal arts electives</td>
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<table>
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<tr>
<th>Sophomore</th>
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<tbody>
<tr>
<td>Music 2119-28-38</td>
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<td>Music 2500</td>
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<tr>
<td>Applied music</td>
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<tr>
<td>Ensemble</td>
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<tr>
<td>Liberal arts electives</td>
<td>12</td>
</tr>
<tr>
<td>Music 2000</td>
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</tbody>
</table>

Junior

| Applied music | 3 |
| Music 3111-21-31 | 9 |
| Music 3112-22 | 6 |
| Music 3113-23 | 6 |
| Music 4121 or 4141 | 3 |
| Ensemble | 3 |
| Music history/literature (3000-level and above) | 6 |
| Electives | 6 |
| Music 2000 | 0 |

Senior

| Music 4100 | 3 |
| Music 4111 | 3 |
| Music 4121 or 4155 | 3 |
| Music 4121 or 4141 | 3 |
| Music 4131 | 3 |
| Applied music | 3 |
| Ensemble | 3 |
| Music electives | 3 |
| Music 3199 | 3 |
| Liberal arts electives | 4 |
| Electives | 12 |
| Music 2000 | 0 |

TOTAL: 180 hours

COMPOSITION

<table>
<thead>
<tr>
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<th>Hours Credit</th>
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<tbody>
<tr>
<td>English 1510-20</td>
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<tr>
<td>Music 1119-28-38</td>
<td>12</td>
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<td>Liberal arts electives</td>
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<td>Music 2119-28-38</td>
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TOTAL: 180 hours

MUSIC HISTORY AND LITERATURE

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<td>Physics 1810</td>
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<td>Music 2113-23-33</td>
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<td>Applied music</td>
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College of Liberal Arts 183
<table>
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<td>Music 2111-21-31</td>
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| Junior:                |       |
| Music 2340             | 3     |
| Music 3949-59-69       | 6     |
| Music 3113-23          | 6     |
| Music 3699             | 3     |
| Junior recital         | 6     |
| Music electives        | 6     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

| Senior:                |       |
| Music 4010-20-30       | 3     |
| Music 4011-21-31       | 9     |
| Music 4013-23-33       | 9     |
| Music 2000             | 0     |

| VOICE:                 |       |
| Freshman:              |       |
| English 1510-20         | 6     |
| Music 2111-21-31       | 9     |
| Music 2113-23-33       | 9     |
| Music 2130-20-30       | 9     |
| Principal applied study| 12    |
| Music 1040-50-60       | 3     |
| Ensemble               | 3     |
| Music 2000             | 0     |

| Sophomore:             |       |
| Music 2111-21-31       | 9     |
| Music 2113-23-33       | 9     |
| Music 2130-20-30       | 9     |
| Principal applied study| 12    |
| Music 1040-50-60       | 3     |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

| Junior:                |       |
| Music 2340             | 3     |
| Music 3113-23          | 6     |
| Music 3699             | 3     |
| Junior recital         | 0     |
| Foreign language (French, Italian, or German)| 8 |
| Theatre 2121          | 4     |
| Electives             | 9     |
| Music 2000             | 0     |

| Senior:                |       |
| Music 3012-22-32       | 6     |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Senior recital         | 0     |
| Foreign language (French, Italian, or German) | 8 |
| Electives             | 9     |
| Music 2000             | 0     |

| ORGAN AND CHURCH MUSIC:|       |
| Freshman:             |       |
| English 1510-20        | 8     |
| Music 1111-21-31      | 9     |
| Music 1113-23-33      | 9     |
| Music 2130-20-30      | 9     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

| Sophomore:             |       |
| Music 2111-21-31       | 9     |
| Music 2113-23-33       | 9     |
| Music 2130-20-30       | 9     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Senior recital         | 0     |
| Foreign language (French, Italian, or German) | 8 |
| Electives             | 9     |
| Music 2000             | 0     |

| Junior:                |       |
| Music 2340             | 3     |
| Music 3113-23          | 6     |
| Music 3699             | 3     |
| Senior recital         | 0     |
| Foreign language (French, Italian, or German) | 8 |
| Electives             | 9     |
| Music 2000             | 0     |

| Senior:                |       |
| Music 3012-22-32       | 6     |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Senior recital         | 0     |
| Foreign language (French, Italian, or German) | 8 |
| Electives             | 9     |
| Music 2000             | 0     |

| Senior:                |       |
| Music 4060             | 3     |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

| Senior:                |       |
| Music 4060             | 3     |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

| Senior:                |       |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

| Senior:                |       |
| Music 4060             | 3     |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

| Senior:                |       |
| Music 4060             | 3     |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |

<p>| Senior:                |       |
| Music 4060             | 3     |
| Music 4012-22-32       | 3     |
| Principal applied study| 12    |
| Ensemble               | 3     |
| Liberal arts electives | 12    |
| Music 2000             | 0     |</p>
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<th>Credit</th>
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<td>Music 1113-23-33</td>
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<td>Music 1340</td>
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<tr>
<td>Principal applied study</td>
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<tr>
<td>Ensemble</td>
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<tr>
<td>Liberal arts electives</td>
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<tr>
<td>Music 2000</td>
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<tr>
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**Total: 180 hours**

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**Total: 180 hours**

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<tr>
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</tbody>
</table>

**Total: 180 hours**

**NOTE:** The curriculum in strings; woodwinds, brass, and percussion; multiple woodwinds; and voice allow 12 hours of ensemble credit to apply toward electives. This is in addition to the hours in ensemble listed in the tabular resumes.

### Bachelor of Science in Chemistry

Students who desire to major in chemistry may select either the curriculum leading to the degree of Bachelor of Arts or that leading to the degree of Bachelor of Science in Chemistry. This latter program is approved by the American Chemical Society and is designed to train students to go directly into positions in the chemical industry or to enter graduate study leading to positions in research and college teaching.

A minimum average of C must be made on all chemistry courses applied toward the Bachelor of Science in Chemistry degree.

### COOPERATIVE PROGRAM IN CHEMISTRY

A cooperative program is available to students in the B.S. in Chemistry curriculum. After the freshman year the student alternates a quarter in school with a quarter in a job in a chemical industry. The program normally requires five years and involves a total of seven work quarters and twelve school quarters. Students are required to have at least a 2.5 average to enter and remain in the program. Some opportunity exists for students to enter the program later than the end of the freshman year. Students interested should make application to the head of the department at least one quarter in advance of the beginning of the first work period. Further information will be supplied on request.

### CURRICULUM REQUIREMENTS

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<tr>
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<td>Mathematics 1840-50-60 or 1845-56-68</td>
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<td>Language, Literature, Art, Music 9</td>
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<td>History and Social Studies 8</td>
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<td>Chemistry 3211-21-31</td>
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<td>Chemistry 3219-29-39 or 3219</td>
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<td>Mathematics 2840-50-60 or 2845-56-68</td>
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<tr>
<td>Physics 2510, 2310-20</td>
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<td>8(9)</td>
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<tr>
<td>History and Social Studies 8</td>
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</table>
Preparation for Other Professions

Law
Students who plan to study law should consult the statement regarding admission to the College of Law (page 173) and discuss their programs with advisers in the Liberal Arts Advising Center.

Library Science
Certain courses in the Graduate School of Library and Information Science are open to students in the College of Liberal Arts interested in beginning positions in a library or in preparation for future graduate study in library science. For further information, see page 51 or consult the Director of the Graduate School of Library and Information Science.

Planning
Students who wish to consider a career in city and regional planning or a related field will find a brief description of the program of the Graduate School of Planning on page 52. Students are accepted into planning from a broad variety of undergraduate backgrounds. Detailed information on the planning profession, admission requirements and the program of study may be obtained from the Graduate School of Planning.

Public Administration
Students majoring in political science who wish to prepare for an administrative career in the public service may select courses to fit that objective. The concentration appearing below is suggested for students with public service career interests. The degree to be awarded is a Bachelor of Arts with a major in political science, augmented by supportive work in related disciplines.

Freshman
- Political Science 2510-20, 2530 (choose 8 hours).......................... 8

Sophomore
- Economics 2110-20-30...................................................... 9

Junior
- Political Science 3565-66.................................................. 8
- Political Science 3545-48 or 3801-02-03-04.......................... 8
- Economics 3340.................................................................. 3
- Accounting 2110-20-30...................................................... 9

Senior
- Political Science 4610-20.................................................. 7
- Political Science 4410......................................................... 4
- Economics 4340.................................................................. 3
- Accounting 3510.................................................................. 3
- Finance 4350-60................................................................. 6

In addition, sufficient electives in political science must be taken to meet the number of hours required for a major in political science.

Further information may be obtained in the Department of Political Science.

Social Work
Students who wish to prepare for graduate professional training in social work will find a brief description of the program of the School of Social Work on page 53. Detailed information about courses and curriculum requirements for admission, will be found in the catalog of the School of Social Work.

Teaching
Students in the College of Liberal Arts who wish to be certified for secondary school teaching must satisfy state certification requirements as well as all degree requirements of the College of Liberal Arts, and must be recommended for certification by the College of Education. The College of Education is approved by the National Council for Accreditation of Teacher Education (NCATE); recommendation for certification by the college, therefore, in effect certifies the student in thirty states.

Application for admission to the Teacher Education Program should be made during the second or third quarter of the sophomore year in the office of the dean of the College of Education, 212 Claxton Education Building. Criteria for admission are: (1) a 2.2 cumulative grade point average; (2) satisfactory ratings in a speech and hearing exam as determined by tests administered by the Speech and Hearing Center; (3) a personality inventory; (4) satisfactory student conduct records; (5) a successful field experience.

One quarter during the senior year must be reserved for student teaching (Education C8 4710-20). Application for student teaching must be filed not later than January 1 of the year preceding the academic year in which the student teaching will be undertaken. Those planning to student teach during the 1980-81 academic year must apply by January 1, 1980.

Curricula for students seeking teacher certification should include the following:
1) English 1010-20; 1031 or 1032 or 1033
2) 16 hours, representing at least 3 fields, including:

NOTE: The same course may be applied both to certification requirements and to Triad or major requirements of the College of Liberal Arts.

*Admission to the Teacher Education Program is prerequisite for upper-division courses in professional education

Theology
Students planning to study theology should follow one of the Bachelor of Arts curricula. Any liberal arts major is acceptable for admission to most theological schools; strong preparation in literature, philosophy, history, religious
studies, and social science is desirable. Students may wish to consult with faculty members in the Department of Religious Studies in planning their programs.

General Information

Admission to the College

For information regarding admission to the College of Liberal Arts, see page 17.

Course Load

The average course load in the college for any quarter is 14-16 credit hours. The University defines full-time undergraduate students as those who register for a minimum of 12 hours. The maximum number of hours which may be taken by liberal arts students is 17, exclusive of elective work in ensemble music and physical education. Exceptions to this rule will require approval by the Assistant Dean for Student Academic Affairs (218 Ayres Hall).

Lower Division—Upper Division

Courses numbered at the 1000 and 2000 levels are considered lower division and are normally taken by students in the freshman and sophomore years. Courses numbered 3000 and above are upper division and are designed for students at the junior and senior levels.

Satisfactory/No Credit Courses

A few courses in the college are offered only on a Satisfactory/No Credit (S/NC) basis and students may elect to take others on this basis, except in areas where the option is specifically prohibited. Such courses, if successfully completed, will count as hours for graduation although neither S nor NC grades will be calculated in the student’s grade point average. Satisfactory is defined as a C or better work on the traditional grading scale and No Credit is defined as less than a C. The following regulations apply:

1. S/NC courses, except those offered only on this basis, may not count for Triad requirements or major and minor requirements unless specifically permitted by petition. This restriction applies also to major or minor prerequisites or corequisites.

2. The maximum number of S/NC elective hours which may be counted toward graduation is 30, exclusive of courses offered only S/NC, physical education courses and/or satisfactory hours earned by examination, military service, etc.

3. A student who desires to take a course S/NC should indicate that intention at the time of registration. A change from S/NC grading to regular grading or from regular grading to S/NC will not be permitted beyond the add deadline in each quarter. (Exception: Students who register for a course S/NC in a restricted area will be required to change to regular grading when the error is discovered.)

4. A transfer student who has more than 30 S/NC or equivalent hours earned prior to admission to The University of Tennessee, Knoxville, may count all of these hours toward graduation but may not elect additional S/NC hours.

5. A transfer student with S/NC or equivalent credit earned prior to admission to The University of Tennessee, Knoxville, in a course which satisfies a Triad requirement may count it for that purpose. In the case of a course which satisfies a major or minor requirement, statement (1) applies. The option of taking courses on a S/NC basis is provided to encourage the able student to venture beyond the limits of those courses in which the student does well and, motivated by intellectual curiosity, to explore subject matter in which performance may be somewhat less outstanding than work in preferred subject fields.

Note: Students planning to seek admission to graduate or professional schools (especially in the health sciences) should discuss with their advisors possible limits on the exercise of the S/NC option before registering for courses on this basis.

Off-Campus Study

Recognizing that learning is not restricted to formal classroom situations, the college provides for students to earn credit toward graduation for approved off-campus study. Such study may be undertaken only with prior approval of the faculty member and the department concerned. It may include certain kinds of work experiences, community involvement, working in political campaigns, etc. Credit per quarter will vary from 1-16 hours. Up to 24 hours of credit earned in this way may be applied toward a degree in the college, although individual departments may limit the number of hours which may be applied toward a specific major.

Independent Study

Certain educational goals may best be met through independent study done by an individual under the direction of a faculty member. Students who wish to do such independent work should obtain the approval of the faculty members and the departments concerned prior to embarking upon their study. Credit per quarter will vary from 1-16 hours. Up to 24 hours of credit earned in this way may be applied toward a degree in the college, although individual departments may limit the number of hours which may be applied toward a specific major.

Study Abroad and Foreign Study Courses

Several opportunities for study abroad are available to students in the college. One avenue is through group programs arranged and supervised by departments of the college on a full-quarter or summer term basis. A second is through group programs conducted abroad by other academic institutions to which UTK students with approval may enroll for credit. Assistance in identification of and registration in such programs may be obtained through the Overseas Study Information Service located in the University Blvd. Division of International Education. A third opportunity is through individualized programs under the foreign study number 4101. The nature of this work as well as credit for it should be negotiated by students in consultation with the appropriate liberal arts departments. Credit will be awarded only after completion of all agreed upon requirements, and may vary from 1-16 hours in any one department. Up to 24 hours of such credit, exclusive of that earned in group programs offered by departments, could apply toward a degree in the college. Departments may in any of the above forms, however, limit the hours of credit which can be applied toward a given major.

Liberal Arts Advising Center

Academic advising for students of the college is offered through the Liberal Arts Advising Center, 220 Ayres Hall, as well as through the several major departments.

The Advising Center is staffed on a regularly scheduled basis by members of the college faculty, each of whom has been trained for this specialized work. Students in their first quarter of residence are assigned to the Advising Center where they may relate themselves to a particular adviser of their choice or consult the person on duty at the time they need assistance. Most students continue in this relationship with the Advising Center until they have determined their major, normally by the beginning of the junior year, at which time they may be transferred for advising to a faculty member in the major department.

Student Academic Affairs Office

Academic assistance for students is also provided through the Student Academic Affairs Office, 218 Ayres Hall. This office serves primarily those students not assigned to the Liberal Arts Advising Center, helping them meet a variety of academic needs related to the development of their academic programs, satisfying graduation requirements, etc. For those who are planning careers in the health sciences it provides a liaison with the Center for the Health Professions. Each quarter the Student Academic Affairs Office issues the Liberal Arts Quarterly Bulletin in order to keep students informed about changes in the college curriculum as well as matters relating to registration, courses, and requirements.

Office of Black Studies

The Office of Black Studies, 812 Volunteer Blvd., coordinates the different programs of the various departments and colleges of the University with respect to the development of curricular changes and innovations which incorporate the Black experience into academic and nonacademic programs of the institution, supplies information on financial assistance for Black students, and serves as the focal point for the coordination and development of an improved and expanded Black Studies Program at the University.
Black Cultural Center

The Black Cultural Center represents one effort by the University to promote greater awareness of the nature of the Black experience and the contribution of Black America to the national past. The Center seeks to fulfill this role through a variety of programs and occasions. Typical of its cross-campus work is sponsorship of Black History Week, and the Black Arts Festival. Within the Center itself exhibits related to the Afro-American past, small group lectures, group study sessions, and a tutorial program aimed especially at minority students are a few of the ongoing activities.

The Center is located at 812 Volunteer Blvd. All members of the University community are invited to visit this location and utilize the opportunities provided by the Center for increased knowledge about the Black experience. For further information contact the director.

Bureau of Public Administration

The University has established in the college a Bureau of Public Administration, for the purpose of promoting sound governmental administration through research, publication, and consultation. Offices and staff are maintained in both Knoxville and Nashville. The head of the Department of Political Science serves as director of the Bureau of Public Administration.

Psychological Clinic

The Psychological Clinic is an outpatient psychodiagnostic and treatment center established by the University within the Department of Psychology. It provides advanced graduate training for students in clinical psychology and also serves as a training facility for graduate students in the School of Social Work. Referrals for treatment come from many sources, including self-referrals and referrals by relatives and friends and by various social and mental health agencies. Treatment services are available to anyone regardless of residence, sex, age, race, or citizenship.

University Theatres

The Department of Speech and Theatre offers a full schedule of dramatic presentations in three different theatres. The Clarence Brown Theatre has outstanding facilities for prosenium and open staging and for film productions, and, in a separate Studio Theatre, for laboratory productions. Carousel Theatre is designed for arena staging, and can be converted for open-air performances in the summer.

Instructional Facilities

The college carries out its varied teaching and research activities in more than two dozen principal buildings in two areas of the campus, as well as in a number of converted residences which provide office, studio, or clinical space. The center of the two clusters of buildings is on “The Hill,” and includes Ayres Hall (psychology and mathematics), Austin Peay (psychology), Hesler (biological sciences), Physics (physics and astronomy), Geology-Geography (geology and geography), and Dabeau and Buehler (chemistry). West of “The Hill” is a recently built group of buildings for the humanities, social sciences, and fine arts: McClung Tower and the Humanities-Social Sciences classroom building (classics, English, foreign languages, history, human services, philosophy, religion, studies, sociology, and speech and theatre), the Music Building (music), and the Hearing and Speech Center (audiology and speech pathology). In this area also are the McClung Museum and the Clarence Brown and Carousel Theatres, as well as the Undergraduate Library. Anthropology is housed in South Stadium, and art utilizes several small buildings for its studies.

College Offices

The College Administrative Office is in 226 Ayres Hall and houses the office of the Dean. Associate Dean as well as the office of Curriculum and Special Programs. The Student Academic Affairs Office is in 218 Ayres Hall. The Liberal Arts Advising Center is in 220 Ayres Hall.

Departments of Instruction

American Studies
See Cultural Studies.

Ancient Mediterranean Civilizations
See Cultural Studies.

Anthropology (122)

Professors: W.M. Bay(Ahead), Ph.D. Pennsylvania; C.H. Faulkner, Ph.D. Indiana; A.K. Guthe, Ph.D. Michigan; P.W. Parmalee, Ph.D. Texas A&M.

Associate Professors: J. Harrison, Ph.D. Syracuse; R.L. Jantz, Ph.D. Kansas.


Research Assistant Professor: J. Chapman, Ph.D. North Carolina.

*Visiting.

UNDERGRADUATE

A major in anthropology shall consist of 39 hours, 12 of which are to be in the introductory 2000-level courses. Of the remaining 27 hours, 4400 and six hours of 3000 level or above courses are required in each of these subfields: (a) Cultural; (b) Physical; and (c) Archaeology.

(a) Cultural: 3410, 3440, 3450, 3510, 3530, 3540, 3710, 3800, 4111, 4200, 4210, 4240, 4250, 4259, 4400, 4420, 4430, 4440, 4500, 4510, 4550, 4570, 4590, 4740.

(b) Physical: 3070, 3900, 3920, 3930, 4930, 4950, 4960, 4970.
3650 Medical Anthropology: Lecture (3) Survey of medical anthropology. Emphasis on Western and non-Western cultural aspects of health, disease, treatment, death, and related concepts. Focus on analyses and descriptions of anthropological fieldwork.

3659 Medical Anthropology: Laboratory (3) Fieldwork in medical anthropology. Emphasis on cultural aspects of health, disease, and death in industrial societies and folk medicine systems which co-exist with Western, technical medicine. Coreq: Prereq: 4250.

4300 Readings in Anthropology (1-9) Intensive reading, problem oriented. For anthropology majors with senior standing. Others by consent of instructor. May be repeated to a maximum of 9 credit hrs.

4340 Field Work in Anthropology (3-6) Practicum work surveying, excavating, processing, and analyzing of data; intensive reading. Prereq: 2510-20, 30, and consent of instructor. May be repeated to a maximum of 9 credit hrs.

4490 Cultural Ecology (3) Survey of concepts and methods in the study of ecological relations between cultures and their environments. Topics include ecological theory, methods of analysis, and application from selected case studies. Prereq: Anthropology 2520 or 2530, or 3410, or consent of instructor.

4492 Dynamics of Culture (3) Culture change: innovation, diffusion and acculturation; cultural continuity and stability. Prereq: 2530 or consent of instructor.

4430 Personality and Culture (3) Analysis of the relationship between personality, society and culture. Application of psychological techniques across cultural studies. Cultural differences and their influence on personality behavior. Prereq: 2530 or consent of instructor.

4440 Urban Anthropology (3) Survey of theoretical and methodological issues anthropologists encounter researching across-cultural urban settlements. Focus is on anthropological perspective and urban problems and planning. Prereq: 3450 or consent of instructor.

4480 Cross-Cultural Survey of Sex Roles and Behavior (3) Examination of sex roles and sex behavior from cross-cultural and diachronic viewpoints. Draws on cross-cultural and longitudinal study of individuals together and attempts to arrive at conclusions on questions such as how sex roles are learned, the parameters of sex roles and the behavior and degrees of tolerance for sexual variation in various cultures.

4510 Peoples of China I: Chinese Society after 1899 (3) Anthropological survey of Chinese society and culture in the period of intense Western contact, rejection of the West, and development of modern, communist Chinese society and culture. Prereq: 2530 or consent of instructor. Recommended: an East Asian course.

4550 Indians of the Southeastern United States (3) Survey of Southeastern Indian cultures; emphasis on aboriginal adjustment to environment; lifeways of Southeastern Amerind groups prior to Euro-American contact. Prereq: 2530, 3540 or consent of instructor.

4560 Cherokee Ethnology (3) Intensive survey of ideology and material aspects of Cherokee culture existing at time of first European contact.

4570 Peoples of Southeast Asia (3) Survey of representative cultural and indigenous cultures of mainland and island Southeast Asia. Problems of contemporary culture changes. Prereq: 2530, consent of instructor, or an East Asian course.

4580 Asians in the Americas since 1800: Anthropological Perspectives (3) Character, factors, and motives in Asian immigration to Central, Central and South America. Assimilation pattern and enclave communities are major topics. Major focus is on Mexican and Cuban American.

4590 Peoples of Japan (3) Analysis of cultural diversity and unity of peoples of Japan. Prereq: 2530 or consent of instructor. Recommended: 3510 or an East Asian course.

4600 Method and Theory in American Archaeology (3) Historical development of American archaeology with emphasis on theory and field techniques. Prereq: 2520 or consent of instructor.

4610 African Prehistory (3) Survey of cultural history in Africa, folk traditions, economy, clearest evidence of human activity to time of European contact. Prereq: 2520 or consent of instructor.

4640 Zooarchaeology (3) Basic osteological studies of vertebrate classes; emphasis on aboriginal man's utilization of native animals in his subsistence and culture. Identification, analysis, and construction of archaeologically derived molaruscan and vertebrate remains.

4650 Archaeology of Southeastern United States (3) Intensive survey of prehistoric American Indian. Special emphasis on Tennessee prehistory. Prereq: 3610 or consent of instructor.


4720 American Folklore (3) Anthropological perspective on folklore of geographical regions and ethnic groups of the United States. Prereq: 3700 or consent of instructor.

4740 Southern Appalachian Folk Culture (4) Research-oriented course dealing with wide range of traditional culture in southern Appalachia: settlement, subsistence, folk architecture, beliefs, speech, art, song, dance, and oral traditions and customs. Prereq: Consent of instructor. May be repeated for credit.

4750 Mexican Folklore (3) Anthropological perspectives on folklore of Mexico and Spanish-speaking southwestern United States. Prereq: 3700 or consent of instructor and a reading knowledge of Spanish.

4870 Cherokee Language (3) Linguistic survey of structure of the Cherokee language.

4930 Physical Growth and Constitution (3) Comparative growth patterns throughout the life cycle of man, skeletal and chest measurements, sex differences in growth; human constitutional types. Prereq: 2510 or consent of instructor. Biology 2110 strongly recommended.

4950 Primate Studies (3) Survey of field and laboratory investigations of comparative anatomy and non-human primate behavior. Prereq: 2110 or consent of instructor.

4960 Primate Paleontology (3) Survey of fossil primate forms; original development of primate lineages, emphasizing the earliest Hominid and related forms. Prereq: 2110. Recommended: Zoology 4380.


4975 Human Paleontology Laboratory (1) Detailed examination of casts and other materials pertinent to study of human paleontology. Prereq or coreq: 4970.

GRADUATE

The general requirements for the master's and doctoral degrees are given in the Graduate Catalog.

5000 Thesis
5010 Graduate Research (1-9)
5100 Seminar in Cultural Anthropology (3, 3, 3)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5140 Seminar in Zooarchaeology (3)
5149 Laboratory Studies of the Vertebrate Skeleton (4)
5159 Laboratory Study of the Mollusca (4)
5160 Seminar in Archaeology (3-9)
5200 Special Topics in Anthropology (3)
5210 Community Anthropology: The Local Community (3)
5340 Fieldwork in Archaeology (3-9)
5400 History of Anthropological Theory (3)
5440 Peasant Societies (3)
5450 Comparative Social Organization (3)
5460 Quantitative Methods in Anthropology (3)
5470 The Healer in Cross-Cultural Perspective (3)
5600 Theory in Archaeology (3)
5610 Problems in North American Archaeology (3)
5620 Problems in Old World Archaeology (3)
5630 The Maya (3)
5640 Archaeological Resource Management (3)
5660 Seminar in Prehistoric Lithic Technology (3)
5670 Seminar on Aboriginal Lithic Resources (3)
5700 Theory in Folk Culture Studies (3)
5710 Problems in Folk Culture Studies (3)
5900 Dental Anthropology (3)
5910 Measurement of Man (3)
5920 Advanced Physical Anthropology (3)
5930 The Human Skeleton in Forensic Medicine (3)
5940 Skeletal Biology of Early Human Population (3)
5945 Comparative Primate Anatomy (4)
5950 Paleopathology (4)
5960 Dermatoglyphics (3)
5970 Emergence and Early Evolution of Man (3)
5980 Neanderthal Man and Human Evolution (3)
5990 Human Variation (3)
6000 Doctoral Research and Dissertation
6410-20-30 Seminar in Cultural Anthropology (3, 3, 3)
6610 Selected Topics in Archaeology (3)
6910 Selected Topics in Physical Anthropology (3)
6970 Seminar in Human Paleontology (3)

Arabic
See Romance Languages.

Art (140)

Professors:

Associate Professors:

Assistant Professors:

PI BETA PHI ARROWMOUTH SCHOOL OF CRAFTS

Lecturers, summer 1978: C. Adams; D. Allee of Liberal Arts; R. Bacera; F. Ball; B. Burrell; C. Chou; S. Corso; M. Crohn; M.F. Davidson; P. Duft; J. Fumero; N. Getty; J.C. Gordon; P. Grayson; H. Helwig; F. Illian; C. Jansen; H. Jones; M. Kambe; C. Kiprich; J. Klein; L. Knauss; B. Kogli; T. Lang; B. Larson; J. Livingstone; R. McDaniel; M. Matthewson; D. Nichols; E. Pujol; S. M. Revor; T. Riesing; J. Ross; V. R. Schuette; R. Sedstrom; W. Seelig; W. Sollner; A. Stromsten; C. Swedlund; T. Turner; J. Wallace; G. Winter.

Art has two aspects: history of art and practice of art. The practice of art is required of art history majors; knowledge of art history is required of studio majors.

The department reserves the right to acquire the graduate student's work. Each summer the craft workshops in Gatlinburg, Tennessee, are made possible through cooperative efforts between the Department of Art and the Pi Beta Phi Arrowmouth School of Crafts. The Pi Beta Phi Fraternity provides the funds, the facilities and the management for Arrowmouth. The University of Tennessee, Knoxville, Department of Art appoints the instructors, and provides for the administration of craft classes with appropriate accreditation. In addition to providing advanced instruction in design and craft through classes taught by nationally known craftpersons, the craft workshops have expanded to a full-fledged program serving as a training center for artists and craftpersons from throughout the United States. Also, cooperation with national and local craft organizations has so stimulated the work of craftpersons throughout the area that their work has gained national recognition.

UNDERGRADUATE

B.A. Major: Art History—Consists of 36 hours in art history courses numbered 2000 and above. Courses numbered 2000 and above in the following areas may also be included in the 36 hours: Greek and Roman art and archaeology, aesthetics, history and theory of architecture (School of the Architecture), and up to eight hours in studio courses in the Department of Art. Undergraduate work in art history is enhanced by a knowledge of at least one foreign language. Graduate work normally requires a reading knowledge of at least two foreign languages.

B.A. Major: Art (Concentration in Studio)—Art 1115-25-35 and Art 2715, and eight additional hours of art history are prerequisite to major of 36 hours of courses numbered 2000 and above, including a minimum of 21 hours in upper-division coursework.

Minor: none offered.

For information regarding the Bachelor of Fine Arts degree, see page 182.

1115-25-35 Studio Fundamentals (4, 4, 4) 1115—Beginning drawing; 1125—Surface composition and color; 1135—Real space and volume. For art, architecture, related arts and art education majors. Others with consent of instructor only.

1815-25 World Art (4, 4) A survey; 1815—prehistoric to 1400; 1825— to 1400 to present.

2008 Honors: Art (4) Intensified study for the exceptionally able student. May be repeated for a maximum of 24 credit hrs.

2105 Intermediate Drawing (4) Prereq: 1115.

2106 Special Topics in Drawing (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.

2115 Life Drawing (4) Prereq: 2105. May be repeated for a maximum of 8 credit hrs.


2205 Introduction to Painting (4) Oil, acrylic and watercolor. Prereq: 1115-25-35 for art majors.

2206 Special Topics in Painting (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.

2215 Painting II (4) Oil and acrylic. Prereq: 2205. May be repeated for a maximum of 8 credit hrs.

2315 Watercolor II (4) Prereq: 2205. May be repeated for a maximum of 8 credit hrs.

2405 Introduction to Sculpture (4) Prereq: 1115-25-35 for art majors.

2406 Special Topics in Sculpture (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.

2415 Painting III (4) Prereq: 2405. May be repeated for a maximum of 8 credit hrs.


2506 Special Topics in Communication Design (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.


2516 Advertising Design (4) Fundamentals of lettering and layout for newspaper, magazine television, outdoor advertising. Non-art majors only.

2545-55-65 Photo-Graphics (4, 4, 4) Introduction to art of photography.

2605 Introduction to Printmaking (4) Relief, lithography, intaglio, and screen printing. Prereq: 1115-25-35 for art majors.

2606 Special Topics in Printmaking (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.

2615 Intaglio II (4) May be repeated for a maximum of 8 credit hrs.

2616 Lithography II (4) May be repeated for a maximum of 8 credit hrs.
2761 Screen Printing II (4) May be repeated for a maximum of 8 credit hrs.
2715 Survey of Contemporary Art (4) 1945 to present.
2725 Black Art (4) Black artists in society. Emphasis on contemporary art forms.
2935 Film Design (4) Introductory theory and practice of film making. Emphasis on graphic elements through use of motion picture camera. May not receive credit for both 2916 and 2935.
3008 Honors: Intermediate Art (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hrs.
3115 Drawing III (4) May be repeated for a maximum of 12 hrs. Prereq: 2115.
3215 Painting III (4) May be repeated for a maximum of 12 hrs. Prereq: Consent of instructor.
3315 Watercolor III (4) May be repeated for a maximum of 12 hrs credit. Prereq: Consent of instructor.
3415 Sculpture III (4) May be repeated for a maximum of 12 hrs.
3515 Visual Communications I (4) Graphic design: theory and techniques of problem solving for printed material. Prereq: 2255.
3516 Typography (4) Theories and techniques of typography and printing as a fine art medium. May be repeated for a maximum of 12 hrs.
3517 Airbrush (4) Techniques and creative applications. May be repeated once for credit. For art majors only.
3525 Visual Communications II (4) Advanced pictorial perception, concepts, methods, and techniques for designers. Prereq: 2525.
3615 Intaglio III (4) May be repeated for a maximum of 12 hrs.
3616 Lithography III (4) May be repeated for a maximum of 12 hrs.
3617 Advanced Screen Printing (4) May be repeated for a maximum of 12 hrs.
3705 Northern European Painting: 1350-1600 (4) Painting and printmaking of the low countries, France, Germany, and England, includes International style masters, Van Eyck, Bosch, Durer, Holbein, and Bruegel.
3715 Early Italian Renaissance Art: 1300-1500 (4) Painting, sculpture, and architecture. Includes Giotto, Masaccio, Donatello, Brunelleschi, Alberti, Botticelli, and Leonardo.
3725 Art of Southern Europe and New World in Seventeenth and Eighteenth Centuries (4) Emphasis on El Greco, Caravaggio, Zurbaran, Velazquez, Bernini, Tiepolo, Goya, artistic relations between Iberia and Latin America, and the urban development of Rome.
3726 Art of Northern Europe in Seventeenth and Eighteenth Centuries (4) Emphasis on Rembrandt, Vermeer, Hals, Rubens, Poussin, Callot, Georges de la Tour, Watteau, David, urban development of Paris and London, and pilgrimage churches of southern Germany.
3736 History of Twentieth-Century Painting in Europe and America (4) Fauvism, Die Brucks, Cubism, Der Blaue Reiter, Futurism, Dada and Surrealism, geometric abstraction, social commentary, painting, Abstract Expressionism in the U.S.A. and parallels in Europe; Pop, Op, Minimal, and Concept Art.
3746 History of Modern Sculpture in Europe and America (4) From 1800 to 1900: Neoclassicism to Rodin. From 1900 to present: emphasis on Cubism, Constructivism, Expressionism, Assemblage, Pop, Primary Forms, Environmental, and Earthworks.
3765 History of North American Art (4) Survey of landmarks in painting, architecture, sculpture, and design from prehistory to 1900.
3766 History of Twentieth-Century American Art (4) Analysis of developments in architecture, painting, sculpture and design from 1900.
3767 Nineteenth Century American Painting (4) From West and Copley to emergence of "The Ashcan School." The Art of Indian Asia (4) History of Indian art with consideration of art of Central Asia and Southeast Asia.
3776 Chinese Art (4)
3777 Japanese Art (4)
3811 Introduction to Museology (3) Concepts, practices and historical development of museums of art, archaeology, anthropology and science. (Same as Anthropology 3811.)
3935 Film Design (4) Theory and practice of film making. Prereq: 2935.
3945 Cinematography (4) Familiarization with photographic processes and basic production techniques; artistic potential of film, aesthetic problems and challenges of the medium. May be repeated for a maximum of 12 hrs.
4008 Honors: Advanced Art (4) Intensified study for the exceptional student. May be repeated for a maximum of 24 credit hrs.
4010 Individual Problems (4) May be repeated for a maximum of 12 hrs credit. Prereq: Consent of instructor.
4106 Special Topics in Drawing (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.
4101 Foreign Study (1-16) See page 187.
4102 Off-Campus Study (1-16) See page 187.
4103 Independent Study (1-16) See page 187.
4115 Drawing IV (4) May be repeated for a maximum of 12 hrs. Prereq: 12 hrs of 3115.
4206 Special Topics in Painting (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.
4215 Painting IV (4) May be repeated for a maximum of 12 hrs. Prereq: Consent of instructor.
4315 Watercolor IV (4) May be repeated for a maximum of 12 hrs. Prereq: Consent of instructor.
4406 Special Topics in Sculpture (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.
4415 Sculpture IV (4) May be repeated for a maximum of 12 hrs.
4506 Special Topics in Communication Design (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.
4545 Visual Communications Seminar (2) Political, social, economic, and moral problems of contemporary designer. Prereq: 4515.
4606 Special Topics in Printmaking (4) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department. May be repeated. Maximum credit 16 hrs.
4615 Intaglio IV (4) May be repeated for a maximum of 12 hrs.
4616 Lithography IV (4) May be repeated for a maximum of 12 hrs.
4617 Advanced Screen Printing (4) May be repeated for a maximum of 12 hrs.
4855 Studies in Art History (2) Concentration in selected areas. Prereq: 16 hrs of art history and consent of instructor. May be repeated. Maximum credit 6 hrs.

GRADUATE

There are two advanced degrees available in this department: Master of Arts and Master of Fine Arts. In addition to meeting requirements of the Graduate School, applicant must have an undergraduate major in art or outstanding proficiency. Examples of work will be requested. For additional information regarding these programs, write to the head of the department.

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)
5011-21-31 Exhibition in Lieu of Thesis (3, 3, 3)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5115 Graduate Drawing I (2-6)
5155 Graduate Drawing II (2-6)
5215 Graduate Painting I (2-6)
5255 Graduate Painting I (2-6)
5315 Graduate Watercolor I (2-6)
5355 Graduate Watercolor II (2-6)
5415 Graduate Sculpture I (2-6)
5455 Graduate Sculpture II (2-6)
5515 Graduate Communication Design I (2-6)
5555 Graduate Communication Design II (2-6)
5615 Graduate Printmaking—Lithography I (2-6)
5616 Graduate Printmaking—Intaglio I (2-6)
Asian Studies
See Cultural Studies.

Astronomy
See Physics and Astronomy.

Audiology and Speech Pathology (160)

Professors:
H.L. Luper (Head), Ph.D. Ohio State; S. Adler, Ph.D. Ohio State; C.W. Asp, Ph.D. Ohio State; P.J. Carney, Ph.D. Iowa; D.M. Lipscomb, Ph.D. Washington; M. Naber, Ph.D. Czech Technical (Prague); H.A. Peterson, Ph.D. Illinois; B. Silverstein, Ph.D. Purdue.

Associate Professors:
S.B. Burchfield, Ph.D. Michigan State; C.G. Maier, M.Ed. Texas.

Assistant Professor:
T.O. Davidson, M.A. Tennessee.

Instructors:

UNDERGRADUATE

General Information. One of society’s most significant developments has been the acquisition of organized systems of communication. Basic to most human language systems has been dyadic or oral-aural communication. The Department of Audiology and Speech Pathology offers courses in the scientific study of oral-aural communication with special attention to variations considered normal or abnormal. Many of the courses offered in the department cover information that should be valuable to students planning to enter any social service discipline. Suggested electives for nondepartmental majors include: 3010, 3040, 3050, 3710, 4070, 4720, and 4750.

 Majors. The two majors (audiology and speech pathology) within the department are professional; that is, they are preparatory to graduate work and to professional certification in some aspect of communicative disorders. The master’s degree is required for most professional certifications and employment positions. Within the broad coverage of audiology, it is possible for a student to specialize to a limited extent by choosing elective courses which emphasize traditional diagnostic audiology or aural habilitation-rehabilitation. Students in speech pathology may specialize to a limited extent by choosing elective courses which emphasize speech disorders, language disorders, or cultural language differences. Students desiring school certification in speech and hearing for education of the deaf should consult the Department of Special Education and Rehabilitation for specific requirements. A major in speech pathology consists of Audiology and Speech Pathology 3010, 3040, 3050, 3065, 3200, 3310, 4040, 4330, 4650, 4720, plus not less than 9 nor more than 15 credit hours from the following: 3070, 4310, 4340, 4400, 4610, 4930, 4940. Additional recommended courses for audiology majors are Audiology and Speech Pathology 4560, 4610, 4750 and Psychology 2550, 2520, 2540 and 3150. Audiology consists of Audiology and Speech Pathology 3010, 3040, 3050, 3200, 3310, 3710, 4040, 4450, 4720, 4930 plus not less than 10 nor more than 22 credit hours from the following: 3065, 4320, 4460, 4470, and 4940.

Additional recommended courses for speech pathology majors are: Audiology and Speech Pathology 4250, 4450, 4470, 4750, Anthropology 2530 or 3410, Psychology 2530, 2530, 2540, 3150, Special Education 4030, 4341, 4342, 4110, 4120, 4130, 4610, and Child and Family Studies 4810.

1281 English Pronunciation for Foreign Students (3) (Same as English 1261.)

3010 Basic Acoustics in Speech and Hearing (3) Fundamental aspects of acoustics in speech and hearing including physics of sound.

3040 Introduction to Speech Pathology and Audiology (3) Nature, etiology, and incidence of speech, hearing, and language disorders.

3050 Speech Science I: Phonetics (3) Basic phonetics including recognition and production of spoken English sounds with analysis of their formation; acoustic characteristics of speech and speech perception. Prereq: 3010.

3065 Speech Science II (4) Anatomy and physiology of speech production mechanism. Prereq: 3050.

3200 Speech and Language Development (4) Speech and language development in the normal child including development of distinctive features and implications for diagnosis of speech and language development. Prereq: Psychology 3550 or Education 2430.

3310 Articulation Disorders (4) Etiology, diagnosis, and treatment of articulatory defects. Prereq: 3050. (Same as Special Education 3310.)

3710 Audiology I (3) Fundamental aspects of normal hearing including anatomy and physiology of ear and basic audiometric principles. Prereq: 3010. (Same as Special Education 3710.)

4040 Appraisal of Speech and Language Disorders (4) Diagnostic procedures for children and adults with speech and language problems including observation and practice with diagnostic tests. Prereq: 3050. (Same as Special Education 4040.)

4070 Free Association (4) Oral and written free association as process for diagnosing and treating communication disorders. Includes didactic self-analysis.

4101 Foreign Study (1-16) See page 187.

4102 Off-Campus Study (1-16) See page 187.

4103 Independent Study (1-16) See page 187.

4190 Speech Development of the Hearing Impaired (3) Prereq: 3050. (Same as Special Education 4190.)

4200 Practicum in Speech Development of the Hearing Impaired (3) (Same as Special Education 4200.)

4210 Language Development of the Hearing Impaired (3) (Same as Special Education 4210.)

4220 Language Development of the Hearing Impaired II (3) (Same as Special Education 4220.)

4250 Introduction Psychology and Education of the Deaf (3) (Same as Special Education 4250.)

4310 Stuttering (3) Nature and treatment. Review and integration of various theories. (Same as Special Education 4310.)

4320 Clinical Practice in Speech Pathology (1-6) Prereq: 3040, 3050, 3310, 4040, and consent of instructor. S.J./NC. (Same as Special Education 4320.)

4330 Clinical Practice in Speech Pathology (1-6) Prereq: 4320 and consent of instructor. S.J./NC. (Same as Special Education 4340.)

4340 Clinical Practice in Speech Pathology (1-6) Prereq: 4330 and consent of instructor. May be repeated for credit. S.J./NC. (Same as Special Education 4340.)

4340 Voice Disorders (4) Etiology, diagnosis, and treatment of organic and functional voice disorders. Prereq: 3065. (Same as Special Education 4400.)

4450 Clinical Practice in Audiology (1-6) Prereq: 3050, 3050, or 4940. S.J./NC. (Same as Special Education 4450.)

4460 Clinical Practice in Audiology (1-6) Prereq: 3050. S.J./NC. (Same as Special Education 4460.)

4470 Clinical Practice in Audiology (1-6) Prereq: 4460. May be repeated for credit. S.J./NC. (Same as Special Education 4470.)

4520 Speech Pathology (3) Independent study of special problems in speech pathology. Prereq: Consent of instructor.

4550 Problems in Speech Pathology (3) Prereq: Consent of instructor.

4620 Birth Defect Syndromes and Language Retardation (3) Examination of research literature relevant to birth defects and language retardation including clinical, educational and socio-emotional implications of such disorders. Prereq: 4610 or consent of instructor.

4630 Pracitical Applications of Language Habilitation Techniques (3) Discussion and demonstration of various methods and procedures used in treating language retarded children. Prereq: 4610 or consent of instructor.

4640 Parent Participation in Language Habilitation Programs (3) Nature of counseling and educational relationships with parents of exceptional children including consultation and support for families, behavior management strategies, and home training methods. Prereq: 4610 or consent of instructor.

*ADMISSION TO CLINICAL TRAINING IN SPEECH PATHOLOGY AND AUDILOGY* Students who wish to enroll in clinical practice courses in audiology and speech pathology must apply for admission at the Department Office at least one quarter prior to the anticipated enrollment. Clinical course admissions will be decided by the Department Clinical Affairs Committee prior to the preregistration deadline. The number of admissions will be determined by limitations due to available supervisory staff, clinical facilities and clinical caseloads. Applicants will be selected for admission based on their relative adequacy and potential as determined by such measures as overall grade-point averages, grade-point averages in specified basic courses taught in the Department of Audiology and Speech Pathology, aptitude tests or other such indicators the committee may elect to use. Once admitted to the Clinical Training Program, students will be continued in the program as long as they are clinically and academically successful. Whenever possible, students will be informed of their acceptance and continuation and/or discontinuation prior to the advance registration deadline of the subsequent quarter.
4650 Speech and Language of the Culturally Different Child (3) Discussion of speech and language differences of children of various minority groups, of children, ethnic and class membership and from different geographic regions; their causes, and their effects upon educational programs.

4660 Topics in Language Retardation and Its Habilitation (3) Lectures on selected topics by representatives of such fields as special education, early childhood education, educational psychology, genetics, and psychology. Prereq: 4610 or consent of instructor.

4700 Audiology for Educators of the Deaf (4) Fundamental aspects of hearing, including physics of sound, anatomy and physiology of the ear, etiology and rehabilitation of hearing loss and basic audiometric techniques. May not be used to satisfy requirements of major in audiology and speech pathology. (Same as Special Education 4700.)

4719 Audiology Laboratory (1) Prereq: Consent of instructor. Undergraduate credit only. (Same as Special Education 4719.)

4720 Audiology II (4) Etiology and rehabilitation of hearing loss including pediatric and geriatric aspects, medical treatment and diagnostic audiology. Prereq: 3710 or 4700. (Same as Special Education 4720.)

4750 Noise in the Environment (3) Discussion of extent to which noise problem exists, introduction to methods of noise measurement, basic techniques in sound and vibration abatement, acoustical factors, and physiological concomitants in noise stimulation. Knowledge of acoustics is advisable.


4930 Aural Rehabilitation: Speechreading and Auditory Training (4) Speechreading as a receptive language process and development of maximum use of residual hearing in acoustically handicapped. (Same as Special Education 4930.)

4940 Advanced Aural Rehabilitation (4) Prereq: 3710 or 4700; 4930 and 3050 recommended. (Same as Special Education 4940.)

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5040 Advanced Clinical Practice in Audiology (1-6)

5045 Practicum in Hearing Aid Orientation and Communication Counseling (1-6)

5050 Practicum in Aural Habilitation (1-6)

5051 Practicum in Aural Rehabilitation (1-6)

5060 Anatomy and Physiology of Speech (3)

5070 Anatomy and Physiology of Hearing (3)

5071 Physiological Acoustics (3)

5100 Comparative Anatomy of Peripheral Auditory Structures (3)

5110 Introduction to Research in Speech and Hearing (3)

5117 Instrumentation in Audiology and Speech Pathology (2)

5119 Laboratory in Instrumentation in Audiology and Speech Pathology (1)

5200 Seminar on Stuttering (3)

5201 Aphasia (3)

5320-30-40 Advanced Clinical Practice in Speech Disorders (1-6, 1-8, 1-6)

5350-60-70 Advanced Clinical Practice in Speech Diagnosis (1-6, 1-8, 1-6)

5380 Cerebral Palsy (3)

5390 Cleft Palate (3)

5440 Hearing Aid Evaluation (3)

5450 Sound Measurement and Analysis in Hearing Conservation (3)

5460 Differential Diagnosis of Auditory Disorders (3)

5470 Impedance Measurement in Audiology (3)

5490 Practicum in Hearing Conservation (1-6)

5500 Seminar in Audiology (3)

5503 Seminar in Advanced Audiological Procedures (3)

5505 Special Problems in Audiology (1-6)

5520 Seminar in Speech Pathology (3)

5520 Seminar in Language Pathology (3)

5550 Special Problems in Speech Pathology (1-3)

5560 Independent Study in Speech Pathology (1-3)

5600 Independent Study in Audiology (1-6)

5610 Practicum: Language Pathology in Children (3)

5651 Seminar in Language Differences (3)

5730 Seminar in Medical Audiology (3)

5740 Seminar in Pediatric Audiology (3)

5790 Seminar in Psycholinguistic Concepts in Speech Pathology (3)

5950 The Verbo-tional System (3)

6000 Doctoral Research and Dissertation

6010 Experimental Phonetics (3)

6019 Experimental Phonetics Laboratory (2)

6020 Psychoacoustics (3)

6029 Psychoacoustics Laboratory (2)

6060 Applied Anatomy and Physiology of Speech Mechanism (3)

6069 Laboratory in Applied Anatomy and Physiology of Speech Mechanism (2)

6070 Experimental Techniques in Cochlear Physiology and Neurophysiology (3)

6080 Seminar in Speech Science (3)

6090 Seminar in Hearing Science (3)

6110 Experimental Design in Speech and Hearing (3)

6117 Theories of Hearing (3)

6119 Advanced Instrumentation in Speech and Hearing Science (3)

6500 Advanced Seminar in Audiology (3)

6520 Advanced Seminar in Speech and Language (3)

6560 Directed Research (1-6)

6570 Directed Study in Speech Pathology (1-3)

6580 Directed Study in Audiology (1-3)

6590 Directed Study in Speech Science (1-3)

6600 Directed Study in Hearing Science (1-3)

Bacteriology

See Microbiology.

Biochemistry (188)

Professors: J.E. Churchich, Ph.D. Sheffield (England); K.J. Monty (Acting Head), Ph.D. Rochester; T.P. Salo, Ph.D. Michigan.

Associate Professors: S.W. Hawkins, Ph.D. Chicago; J.G. Joshi, Ph.D. Poona (India).

Assistant Professors: L. Brattsten, Ph.D. Illinois; R.E. Bryant, Ph.D. Illinois; R.H. Feinberg, Ph.D. California (Berkeley); L. Huang, Ph.D. Michigan State.

UNDERGRADUATE

No major is offered, although course work in biochemistry is applicable to majors in biology, and chemistry.

For the Bachelor of Arts degree with a minor in biochemistry, the following courses are required: Chemistry 2140-49, 3211-21-31, 3219-29-39, and Biochemistry 4110-20 and 4119. Additional credits from Biochemistry 4210-20-30 and/or 4500 and/or 5010 are desirable.

4110-20 Cellular and Comparative Biochemistry (4, 4) Electrolyte behavior; chemistry and structure of cell membranes; enzymatic function and biological function; catabolism and energy capture; synthetic metabolism; nucleic acid function, protein synthesis and biochemical genetics; regulation of biological processes. Must be taken in sequence. Prereq: Chemistry 3211-21-31, 3219-29-39, and one course from Biology 1210-20-30 or Botany 1110-20. Three lectures and discussion.

4119 Cellular and Comparative Biochemistry Laboratory (2) Basic biochemical procedures of general application in biochemistry and molecular biology. Prereq: 1 quarter of analytical chemistry. Prereq or coreq: 4110.

4210-20 Introduction to Physical Biochemistry (3, 3) 4210—Introduction to thermodynamics; phase stability and phase change; chemical potential; osmotic pressure; activity and the Debye-Huckel model; electrochemistry; membrane permeability. 4220—Elements of statistical mechanics, diffusion, collision theory; chemical kinetics and transition state theory; higher order kinetics; specialized kinetics of enzymatic processes; some bio-polymer considerations. Prereq: Mathematics 1840-50-60, Chemistry 3211-21-31 and 3219-29-39, and an introductory course in biology.

4230 Introduction to Physical Biochemistry (3) Physical characterization of macromolecules; polarized light, absorption and fluorescence, sedimentation and transport hydrodynamics, electrophoretic mobility, light scattering, and structural x-ray crystallography of proteins and nucleic acids. Prereq: 4220 or Chemistry 3430, or equivalent.

4500 Independent Research in Biochemistry (1-6) Special experimental problems under direction of staff member. Limited to undergraduates, and by consent only. May be repeated for credit. Prereq or coreq: 4110-20, 4119.

GRADUATE

Master's and doctoral degree requirements are found in the Graduate Catalog. Master's degree candidates usually should offer an undergraduate major in biology or chemistry. Doctoral degree candidates must present an undergraduate major in biology or chemistry.

5000 Thesis

5010 Biochemical Techniques (2)
A major in biology may be met by completing one of the two following concentrations:

A. **Concentration in Cell Biology.**
Consists of Biology 3110-20-30, Chemistry 3211-21-31, 3219-29-39, Biochemistry 4110-20-30, 12 hours of upper-division courses from Biochemistry 4110, 5010, Botany, any 3000- or 4000-level courses (except 3050, 3070, 3090), Microbiology 3000-09, 3071-79, 4111-21, 4210-20-30, 4521-29, 4811-19, Zoology 3060, 3060, 3080, 3150, 3320, 4010, 4050, 4110-20-30, 4250, 4280, 4310, 4369, 4380, 4450, 4610-20. In meeting upper-division minimum requirement, not more than 8 hours may be credited from any one course in the biological science department, and not more than 4 hours of research courses may be credited. Prerequisites to this concentration are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30.

Corequisites are Math 1481-51; a year sequence in physics (except 1410-20-30); and Chemistry 2140-49.

B. **Concentration in Organismal and Systems Biology.**
Consists of Biology 3110, 3120, 3130, Chemistry 3211-21-31, 3219-29-39, and 18 of upper-division courses from Biochemistry 4110-20, 4119, 5010; Botany, any 3000- or 4000-level courses including not more than one from 3050, 3070, 3090; Microbiology, any 3000- or 4000-level courses; Zoology, any 3000- or 4000-level courses except 3010-20-30 and 3090. In meeting upper-division minimum requirement, not more than 12 hours may be credited from any one biological science department, and not more than 4 hours of research courses may be credited. Prerequisites to this emphasis are Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28; Chemistry 1110-20-30. Corequisites are Math 1481-51; a year sequence in physics (except 1410-20-30); and Chemistry 2140-49.

1210-20-30 **General Biology (4, 4, 4)** 1210—Biology of cells: chemical basis of life, cell structure and function, energy metabolism, cell division, DNA, RNA, and protein synthesis, monera, protista, and fungi. 1220—Biology of plants and animals: survey of plant kingdom, structure and function of plant tissues, plant growth and reproduction, survey of the animal kingdom, reproduction and development in animals, animal tissue and organ systems. 1230—Genetics, evolution, populations and ecology. May be taken in any sequence. Students who receive credit for 1210-20-30 may not also receive credit for Botany 1110-20, 1118-28 or Zoology 1118-28-38.

3110 **General Genetics (4)** Classical and modern principles of heredity. Prereq: 1210-20-30 or Botany 1110-20 or the equivalent of two years of high school biology and satisfactory ACT scores; Chemistry 1110-20-30. 3 hrs and 1 additional class meeting. May be taken in any sequence or combination with 3120 and 3130.

3120 **Cell Biology (4)** Organization and function of the cell. Prereq: Same as 3110. 3 hrs and 1 additional class meeting. May be taken in any sequence or combination with 3120 and 3130.

3130 **General Ecology (4)** Relations between organisms and their environment; including human environmental problems. 3 hrs and 1 additional class meeting. Prereq: Same as 3110. May be taken in any sequence or combination with 3110 and 3120.

**Black Studies**
See Cultural Studies.
Corequisites are Math 1840-50 or Math 1550-60; Physics 1210-20-30 or Physics 2210-20-30 or Chemistry 3211-21-31, 3219-29-39 or Geology 1510-20 plus 4 additional hours in geology.

Minor: Consists of Biology 3110-20-30 and 15 additional hours upper-division in Biology. At least 3 hours from 3050, 3070, 3090 are allowed for minor credit. Prerequisites to this minor are Botany 1110-20, 1140 or 1118-28 or Biology 1210-20-30.1 Corequisites are 4 hours of upper-division courses in a related biological science (zoology, microbiology, biochemistry, agricultural biology, forestry or plant and soil science).

1110-20 Fundamentals of Botany (4, 4) Nature and development of plants, including processes, structure, life histories, inheritance, ecology and importance to man. Enrollment in sequence is desirable. Two 1-hr discussions and approximately 3 hrs audio-tutorial laboratory per week. Students may not receive credit for both Botany 1110-20 and Biology 1210-20-30.

1118-28 Honors: Fundamentals of Botany (6, 6) Honors course designed for superior students in beginning botany. Open to freshmen with a score of 27 or better on natural science section of American College Testing Program, and sophomores who have a cumulative grade point average of 3.25 (or 3.5 in the sciences) or who are approved through an interview with a member of botany faculty. Students receiving C or D in 1118 must transfer to 1120. Three 2-hr lecture-lab-discussion periods. Must be taken in sequence. Students may not receive credit for both Botany 1118-28 and Biology 1210-20-30.

1140 Selected Topics in General Botany (4) Areas will include plant morphology, population genetics, environmental interactions and impact of human activities on biological resources. Lectures, laboratory, field trips and individual projects. Two hrs lecture-discussion and 4 hrs laboratory per week. Occasional field trips. Prereq: Botany 1110-20 or Biology 1210-20-30.

3010-20 Plants in Evolution (4, 4) Monera to angiosperms; emphasis on evolutionary relationships, morphology and development. Not for botany graduate credit. Prereq: 6 hrs in biological sciences.

3020 Field Botany (4) Study of plants in natural environments including plant identification, collection, preservation and basic ecological concepts. Prereq: 6 hrs in biological sciences. Not for botany graduate credit.

3031-32 Field Botany (4, 4) Emphasis on fall and winter flora, respectively. Prereq: 3030. Need not be taken in sequence.

3050 Socio-Economic Impact of Plants (3) Significance of plants in origin and development of human cultures, evolution of cultivated plants, and role of plants in present civilizations. Occasional field trips. Not for botany graduate credit.

3070 Genetics and Society (3) An introduction to genetics, anthropology and evolution with emphasis on their implications for human society. Not for botany graduate credit. (Same as Anthropology 3070.)

3090 Biology and Human Affairs (3) Basic biological principles involved in deterioration and preservation of an environment in which man and his cultures may survive. Not for botany graduate credit. (Same as Zoology 3090.)

3130 Introductory Plant Pathology (4) Same as Agricultural Biology 3130.

3210 Introductory Plant Physiology (4) Organismal physiology of plants; water relations, mineral nutrition, morphogenesis, elements of metabolic processes, effects of age, light, natural rhythms, temperature and other environmental factors. Lecture and lab. Not for botany graduate credit. Prereq: One year general chemistry and one year biological science.

3300 Biological Oceanography (3) Distribution of abiotic factors in the sea and their effect on plankton growth; composition of zoo- and phytoplankton and processes affecting each; food webs in the sea; role of hyper-productive regions (estuaries, upwellings). Prereq: Chemistry 1110-20-30 and either Biology 1210-20-30 or Botany 1110-20 or Geology 2710.

4000 Tutorial in Botany (2) Individual, independent study under guidance of selected staff. By application only. May be repeated with consent of department.

4030 Mechanisms of Plant Speciation (4) Processes of plant speciation emphasizing population genetics, isolation, drift, hybridization, variation in populations, establishment of population barriers and other aspects of plant speciation. Prereq: 3010-20 and Biology 3110.


4240 Paleobotany (4) Same as Geology 4240.

4310 Plant Ecology (4) Interactions between individuals, species communities and their environments. Circulation of energy and matter in ecosystems. Weekly field trips or laboratory periods, and at least two weekend field trips. Prereq: 3030 or equivalent.

4410-20-30 Undergraduate Research Participation (2, 2, 2) Experience in active research projects under supervision of staff members. Prereq: Junior or senior standing, minimum grade average 3.0, consent of instructor.

4710-20-30 Senior Seminar (1, 1, 1) At least 2 hrs of 4710-20-30 are required of botany majors. Prereq: Senior standing.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5003-04 Non-Thesis Research (3, 3)

5011 Mycology (4)

5012 Morphology and Evolution of Phycocyanetes (4)

5017 Field Mycology (4)

5021 Bryology (4)

5022 Lichenology (4)

5031 Vascular Plant Taxonomy (4)

5061 Phylogeny (4)

5065 Phytoplankton Ecology (4)

5070 Principles of Biological Illustration (3)

5080 Pteridology (4)

5090 Morphology and Evolution of Basidiocyanetes (4)

5120 Agrostology (4)

5150 Advanced Morphology of Flowering Plants (4)

5160 Biosystematics (4)

5210 Advanced Plant Physiology I (3)

5220 Advanced Plant Physiology II (3)

5290 Quaternary Problems (4)

5310-20-30 Special Problems in Botany (1-6, 1-6, 1-6)

5340 Plant Geography (4)

5350 Analysis of Plant Communities (4)

5410-20-30 Seminar in Teaching of College Botany (1, 1, 1)

5440 Seminar in Botany (1)

5510-20-30 Systems Ecology (3, 3, 3)

5780 Plant Cytology (4)

5810 Cytogenetics (4)

5820-21-22-23-24 Methods and Instrumentation in Laboratory Investigations (1, 1, 1, 1, 1)

5830 Field Methods in Plant Ecology (4)

5850-61-52-63-64 Methods and Instrumentation in Field Investigations (1, 1, 1, 1, 1)

5870 Experimental Plant Genetics (4)

5910-20 Developmental Plant Morphology (3, 1)

6000 Doctoral Research and Dissertation

6010 Advanced Topics in Morphology of Vascular Plants (2-4)

6020 Paleobotany (3)

6310 Advanced Topics in Cytology and Cell Biology (2-3)

6320 Ecosystems of the World (3)

6420 Advanced Topics in Genetics (2-4)

6620 Seminar in History of Botany (2)

6820 Advanced Topics in Plant Physiology (2-4)

6830 Advanced Topics in Ecology (2-4)

6930 Advanced Topics in Systematic Botany (2-4)

Chemistry (235)

Professors: D. A. Shirley (Head), Ph.D. Iowa State; N. S. Bowman, Ph.D. Princeton; C. A. Buehler (Emeritus), Ph.D. Ohio State; W. E. Bull, Ph.D. Illinois; C. J. Collins, Ph.D. Northwestern; J. A. Dean, Ph.D. Michigan; J. F. Eastham, Ph.D. California (Berkeley); W. H. Fletcher, Ph.D. Minnesota; C. W. Keenan, Ph.D. Texas; D. G. Kleinwetter, Ph.D. Princeton; J. W. Larsen, Ph. D. Purdue; M. H. Lietzke, Ph.D. Wisconsin; G. Ramanujam, Ph.D. Louisiana State; A. D. Malven (Emeritus), Ph.D. Penn State; G. D. O'Kelley, Ph.D. California (Berkeley); G. K. Schweitzer, Ph.D. Illinois; H. A. Smith (Emeritus), Ph.D. Harvard; W. T. Smith (Emeritus), Ph.D. Ohio State; W. A. Van Hook, Ph.D. Johns Hopkins; E. L. Wherry, Ph.D. Purdue; T. P. Williams, Ph.D. London (England); J. H. Wood (Emeritus), Ph.D. North Carolina.

Associate Professors: J. E. Bloor, Ph.D. Manchester (England); J. O. Chambers, Ph.D. Kansas; G. W. Kabalka, Ph.D. Purdue; J. F. Kinsile, Ph.D. Akron; C. A. Lane, Ph.D. California (Berkeley); R. M. Magid, Ph.D. Yale; R. M. Pagni, Ph.D. Wisconsin; J. R. Peterson, Ph.D. California (Berkeley).

Assistant Professors: J. L. Adcock, Ph.D. Texas; F. A. Grimm, Ph.D. Cornell; J. D. Kovac, Ph.D. Yale; L. J. Magid, Ph.D. Tennessee; F. M. Schell, Ph.D. Indiana; C. Woods, Ill, Ph.D. North Carolina State.

*Alumni Distinguished Service Professor.

UNDERGRADUATE

For information regarding the Bachelor of Science in Chemistry degree and the cooperative program in chemistry, see page 185.

There are two alternative routes for the student to take in designing a program for a B.A. degree with a major in chemistry.
Concentration A is designed to prepare the student for a career as a professional chemist or for entrance into graduate school in such fields as chemistry, biochemistry, geochemistry, etc. This program has similarities to that leading to the degree of Bachelor of Science in Chemistry, but it provides a more opportunity for selection of electives outside the department and outside of science. Unlike the Bachelor of Science in Chemistry degree, the B.A. degree using Concentration A is not approved by the Committee on Professional Training of the American Chemical Society.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1840-50-60, 2840-50, Physics 2510, 2310-20. The concentration consists of Chemistry 2140, 2149, 3211-21-31, 3219-29-39, 3410-20-30, 3429 plus at least 10 hours of additional upper-division work in chemistry. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the ten hour requirement.) While not required, it is highly recommended as an elective for majors in this concentration.

Concentration B is designed for students who have career objectives in fields other than chemistry, but in fields where chemistry has direct applications, such as medicine, dentistry, pharmacy, law, business and ecology. This concentration, supplemented by appropriate courses from other areas, is suitable for students planning careers in these areas. Concentration B is specifically designed to provide more elective hours which may be employed in fields which are related to chemistry. Concentration B is not appropriate for students intending to become professional chemists.

The prerequisites consist of Chemistry 1110-20-30, Mathematics 1540-50-60 or 1840-50-60 and any one of the following natural science options: (a) Physics 2210-20-30 or 2510, 2310-20; (b) Geology 1510-20; (c) Biology 1119, 1120, 3110-20 and Microbiology 3000, 3005; (d) Botany 1110-20. The concentration consists of Chemistry 2140, 2149, 3211-21-31, 3219-29-39, 3429 plus at least 10 hours of additional upper-division work in chemistry. (Up to six hours of biochemistry 4000 level and above or Geology 4610 may be applied to the ten hour requirement.)

A minor in chemistry shall consist of the successful completion of 24 hours of chemistry courses numbered 2000 and above including Chemistry 2140-49 (4 hours) and at least one of the following sequences: Chemistry 3211-21-31, 3219-29-39 (12 hours) or Chemistry 3410-20-30 (9 hours) or Chemistry 4910-20-30 (9 hours).

Placement in Freshman Sequences: The sequence which meets all requirements of a year of general chemistry and is a prerequisite for upper-division courses is 1110-20-30. The 1500 and 1600 series have more limited applications. The 1500 series emphasizes organic and biochemistry and may be used as a prerequisite only for 2230 and 3310. The 1600 series is for non-science majors and does not provide an adequate background for any additional courses in chemistry.

It is possible to move from one sequence to another if permission for substitution is obtained in advance. For example, a student who finds a need to complete the sequence after having completed 1510 may substitute 1510 for 1110 with the approval of the chemistry department and may then take 1120 followed by 1130. However, no single quarter of 1120 or 1120 sequences may be substituted for 1120 or 1130. Credit may be received for only one of the courses 1110, 1510, or 1610.

In any chemistry course above the freshman level which has Chemistry 1110-20-30 as a prerequisite, 1510-20-30 may be used as a prerequisite with approval of the chemistry department.

Chemistry 1119-28-38 is an honors course designed for the student who has already made considerable progress in science. Class size may be limited to promote faculty-student interaction. Selection is based on ACT scores in chemistry, high school chemistry grade, and if necessary, performance on a placement examination to be given during the first class meeting. A student receiving a passing grade below B in 1119, 1128, or 1129 is not allowed to work by taking 1120-30. A student receiving a grade of C or D in 1128 will not be eligible for 1138 and must take 1130 to get the full 12 hours credit.

Beginning students who have had high school chemistry and who have had additional experience (e.g., summer institute study, special research projects, home laboratory) are invited to apply during the summer to the head of the department for permission to take a proficiency examination in one or more quarters of freshman chemistry. If a satisfactory grade is made on the examination, credit will be allowed for the quarter (or course) for which the exam was taken.

1110-20-30 General Chemistry (4, 4, 4) General course is based on ACT scores in chemistry, 1110—Modern atomic theory, chemical bonding, stoichiometry and quantitative treatment of gas laws, 1120—Introduction to solution chemistry, kinetics, chemical equilibria, and thermodynamics, 1130—Descriptive chemistry of nonmetals and their electrochemistry and introduction to organic and biochemistry. Must be taken in sequence. 3 hrs and 1 lab.

1118-28-38 Honors: General Chemistry (4, 4, 4) (See explanation above,) 3 hrs and 1 lab.

1410 Chemistry for Nurses (4) Inorganic, organic, and biochemistry, 3 hrs and 1 lab.

1420 Chemistry for Nurses (4) Aromatic compounds and biological chemistry. Prereq: 1410. 3 hrs and 1 lab.

1510-20-30 General Chemistry (4, 4, 4) Introductory course with emphasis on topics relating to living systems, 1510—Bonding and molecular structure, gas laws, liquid and solid state, solutions, colligates, 1520—Aids and bases, oxidation and reduction, kinetics and equilibria, introduction to organic chemistry, alkanes, unsaturated and aromatic hydrocarbons. 1530—Structure and reactions of various organic functional groups. Introductory biochemistry—amino acids and proteins, carbohydrates, lipids, nucleic acids. Must be taken in sequence. 3 hrs and 1 lab.

1610-20 Chemistry and Society (4, 4) Chemistry for non-science majors emphasizing role of chemistry in dealing with current social concerns. 1810—Basic principles including particle nature of substates, their structure, and chemical changes. 1820-Importance and use of chemical principles in modern society with selected topics in areas of energy, environmental, medicine and consumer products. Must be taken in sequence. 3 hrs and 1 lab.

2140 Analytical Chemistry (3) Principles and practice of quantitative measurements in chemical and biochemical systems. Analytical methods include spectrophotometry, pH-metry, polarography, and ion-chromatography. Prereq: 1110-20-30; coreq: 2149.

2149 Analytical Chemistry (1) Experiments on topics discussed in 2140. Prereq or coreq: 2140. 1 lab.

2230 Elements of Organic Chemistry (4) Brief treatment of organic chemistry with emphasis on compounds of biological interest. Prereq: One year of general chemistry. Not open to chemistry majors or minors. Credit may not be received for both Chemistry 2230 and 3211, toward graduation or otherwise.

3211-21-31 Organic Chemistry (3, 3, 3) Compounds of carbon and their reactions, reaction mechanisms, emphasis on synthetic and analytical utilities. Must be taken in sequence. Prereq: 1120-30. Corresponding laboratory (3219-29-39) is coreq for students not having credit for the laboratory.

3219-29-39 Organic Chemistry Laboratory (1, 1, 1) Experiments on topics discussed in 3211-23-1. Corresponding lecture (3211-21-31) is coreq for students not having credit for the laboratory.


3429-39 Physical Chemistry Laboratory (1, 1) Gases, liquids, chemical equilibria, solutions, phase equilibria, reaction kinetics and electrochemistry. Prereq, or coreq: Corresponding courses (3420 and 3430). 1 lab.

3511-21-31 Principles of Organic Chemistry (3, 3, 3) Structure and reactivity of aliphatic and aromatic compounds. Emphasis on molecular utility. Use of spectroscopic and physical techniques to elucidate reaction mechanisms. Reactions in homogeneous and heterogeneous media. Industrial and planning careers in physical or biological sciences. Must be taken in sequence. Prereq: 1120-30. Corresponding laboratory; 3519-29-39 or 3218, 3529-39 is a coreq; latter is recommended.

3529-39 Organic Chemistry Laboratory (1, 1) Experiments on topics discussed in 3521-31. Similar to 3229-39 except that credit will not be given for operating knowledge of various spectroscopic and chromatographic techniques. Corresponding lecture (3521-31 or 3211-31) is coreq for students not having credit for the lecture.

3810 Radioactivity and Its Applications (3) Radioactive materials in tracer and therapeutic applications. Radioactive isotope and tracer techniques, tracer procedures and safety precautions in agriculture, biology, medicine, nutrition, etc. Not for credit for students who have or minors. Prereq: Math 1550 or equivalent, 1 yr of general chemistry.


4119 Physical Chemistry Laboratory (1) Solutions, phase equilibria, and spectroscopy. The corresponding course 4110 is coreq.

4160-70 Intermediate Physical Chemistry (3, 3) Designed for entering graduate students who have had one year of physics and chemistry. The three laws of thermodynamics, phase
specialization in nine areas for the Ph.D.: analytical, environmental, inorganic, organic, physical, theoretical, chemical physics and polymer science.

5000 Thesis
5110-20-30-35 Advanced Organic Chemistry (3, 3, 3, 3)
5129 Advanced Organic Chemistry Laboratory (3)
5140 Introductory Polymer Chemistry (3)
5150 Kinetics of Polymerization (3)
5160 Organic Chemistry of Polymers (3)
5170 Physical Chemistry of Polymers (3)
5220 Analytical Chemistry of Environmental Pollutants (3)
5240 Electronics for Chemists (4)
5250-60-70 Advanced Analytical Chemistry (3, 3, 3)
5259-69-79 Advanced Analytical Chemistry Laboratory (1, 1, 1)
5340-50 Quantum Chemistry (3, 3)
5410-20-30 Advanced Physical Chemistry (3, 3, 3)
5450 Statistical Thermodynamics (3)
5511 Survey of Inorganic Chemistry (3)
5521 Survey of Analytical Chemistry (3)
5531 Survey of Organic Chemistry (3)
5550 Industrial Chemical Research (3)
5610-20-30 Chemical Basis of Energy Conversion (1, 1, 1)
5710-20-30 Theoretical Inorganic Chemistry (3, 3, 3)
5810 Nuclear Chemistry (3)
5911-21-31 Chemistry Seminar (1, 1, 1)
6000 Doctoral Research and Dissertation
6111 Selected Topics in Organic Chemistry (3)
6130 Natural Product Chemistry (3)
6150 Theoretical Organic Chemistry (3)
6160 Physical Organic Chemistry (3)
6165 Orbital Symmetry Control (3)
6175 Organic Photochemistry (3)
6190 Organometallic Chemistry (3)
6210 Advanced Analytical Spectroscopy (3)
6211 Selected Topics in Analytical Chemistry (3)
6311 Selected Topics in Polymer Chemistry (3)
6320 Natural Polymers (3)
6411 Selected Topics in Physical and Theoretical Chemistry (3)
6420 Nuclear Magnetic Resonance (3)
6430 Photochemistry and Radiation Chemistry (3)
6450 Electrochemistry (3)
6475 Electronic Structure of Radicals (3)
6480 Statistical Thermodynamics (3)
6495 Advanced Chemical Kinetics (3)
6510 Thermodynamics of Solutions (3)
6520 Magnetic Resonance (3)
6711 Selected Topics in Inorganic Chemistry (3)
6730 Topics in Quantum Chemistry (3)
6750 Molten Salt Chemistry (3)
Placement Examination: Students who transfer to UTK from other colleges and students who enter with high school units in Latin should register for the courses in which they would normally be placed on the basis of such credits. During the first week of the quarter a placement test will be given, and students will be advised if a change in registration is indicated by the results.

Proficiency Examinations. Students who have acquired a knowledge of Latin through private study or tutoring should request a proficiency test. A student who earns a grade of B or better in this examination is eligible for credit toward graduation. A student who omits any course in a sequence may receive credit for it by passing the appropriate proficiency examination.

Certification for Teaching Latin in Tennessee. Consult Certification Clerk, Room 212, Claxton Education Building.

1110-20-30 Beginning Latin (3, 3, 3) Must be taken in sequence.
2511-21 Intermediate Latin (4, 4) 2511—Readings from the age of Cicero. 2521—Virgil’s Aeneid. Open to those who have had at least two years of high school Latin, or equivalent.
3140 Ovid (3) Prereq: 3 or 4 years of high school Latin or 2521.
3150 Plautus and Terence (3) Prereq: 3 or 4 years of high school Latin or 2521.
3160 Catullus (2) Prereq: 3 or 4 years of high school Latin or 2521.
3440 Livy (3)
3450 Pliny and Martial (3)
3460 Elegiac Poets (3)
4120 Horace, Satires and Epistles (3)
4140 Cicero and Techniques of Latin Prose Composition (4) Recommended for Latin majors and minors, especially those intending to teach or pursue graduate work. Works of Cicero studied as models for prose composition.
4310 Selected Readings from Latin Literature (3)
4320-30 Selected Readings from Latin Literature (3, 3) May be repeated for credit.
4340 Horace, Odes (3)
4350 Tacitus (3)
4360 Lucretius (3)
4370 Readings in Medieval Latin (3)

GRADUATE
5410-20-30 The Latin Epic. Lucretius, Virgil, Lucan (3, 3, 3)
5510-20-30 Roman Comedy. Plautus, Terence (3, 3, 3)

GENERAL COURSES
2700 Greek Etymology (3) Origin and derivation of words. Greek stems most commonly found in English language with special attention to words in scientific and technical vocabularies.
2720 Latin Etymology (3) Origin and derivation of words. Latin stems most commonly found in English language with special attention to words in scientific and technical vocabularies.
2810 Greek Life (4) Manners and customs, social and domestic aspects of classical civilization; family, politics, laws, finance, commerce.
2820 Roman Life (4) Description same as for Greek Life 2420.

3210 Early Greek Mythology (3) Comprehensive study of Greek myths through readings, lectures, and discussion with emphasis on significance of Greek thought and its impact on later works. May be repeated for credit with consent of department.
3220 Greek Mythology in the Classical Period (3) A study of use of myth in literature, history, religion, philosophy, and art of Classical Age of Greece, and it's influence on myth from earlier periods. Familiarity with basic Greek myths is assumed. Readings, lectures, slides, and discussion. (Same as Religious Studies 3230.)
3230 Roman Mythology (3) Study of myths created by Romans, as well as those the Romans borrowed from Greeks, with reference to Roman attitude toward history, religion, and Roman world with emphasis on palaces of Crete and Mycenae, Tiryns, and Pylos, their fall, the following Dark Age, and rebirth of Greece. Homer. Illustrated lectures.
3220 Art and Archaeology of the Aegean Bronze Age and Early Greece (3) Troy, the Cyclades Islands, Greek mainland, and Crete. Emphasis on palaces of Crete and Mycenae, Tiryns and Pylos, their fall, the following Dark Age, and rebirth of Greece. Homer. Illustrated lectures.
3230 Art and Archaeology of Archaic and Classical Greece (3) Survey of development of Greek architecture, sculpture, and painting from 650 B.C. to death of Alexander, through illustrated lectures.
3330 Art and Archaeology of Hellenistic Greece and Rome (3) Hellenistic Greek, Etruscan, and Roman sculpture, painting, and architecture with attention to city planning. Illustrated lectures.
3340 Cities of the Greek and Roman World (3) Archaeological survey of Greek and Roman cities from 3000 B.C. to 500 A.D. with emphasis on development of city planning and quality of life. Such cities as Mycenae, Athens, Rome, Alexandria, Rome, and Lepcis Magna will be studied.
3350 Shrines and Sanctuaries of the Greek and Roman World (3) Survey of major shrines and sanctuaries of Greece and Rome with emphasis on architectural remains. Such sites as Olympia, Epidaurus, Paestum, Cumae, Priene, and Baalbek will be considered. Readings in selected classical authors will add to understanding of place of great shrines and sanctuaries in Greek and Roman life.
3510 Early Greek Literature in English Translation (3) Homer’s epics to Pindar and era of Persian Wars.
3520 Classical Greek Literature in English Translation (3) Age of Pericles: Tragedy, Thucydides, Aristophanes.
3530 Later Greek Literature in English Translation (3) Alexander’s world: Aristophene, Xenophon.
4010 Greek Drama in English Translation (3) Survey of dramatic masterpieces of Greek literature.
4101 Foreign Study (1-16) See page 187.
4210 Teaching of Latin (3) Carries no language credit. For description see Education, Curriculum and Instruction 3666. (Same as Educ. CA 3666)
4220 Seminar in Classical Studies (3) Special problems in literatures and other arts of Greece and Rome. For graduate students and advanced undergraduates. May be repeated for credit with consent of department.
4230 Classical Mythology and Its Uses (3) Intensive review and survey of Greek and Roman mythology for graduate students and advanced undergraduates. Emphasis on use of classical mythology in literature, music, and plastic arts, especially of modern times.
4510 Selected Readings in Latin Literature in Translation charge of attitude toward myth from earlier periods. Familiarity with basic Greek myths is assumed. Readings, lectures, slides, and discussion. (Same as Religious Studies 3230.)

Comparative Literature

See Cultural Studies.

Computer Science (266)

Professors: R.T. Gregory (Head), Ph.D. Illinois; F.W. Donaldson, Ph.D. Texas; E. Plemmons, Ph.D. Auburn; G.R. Sherman, Ph.D. Purdue.


Assistant Professors: C.P. Huang, Ph.D. SUNY (Buffalo); S.R. Jordan, Ph.D. Wisconsin; J.M. Mostell, Ph.D. Ohio; C.P. Piffler, Ph.D. Pennsylvania State; D.W. Straight, Ph.D. Texas.

*Space Institute

UNDERGRADUATE

Computer science offers an undergraduate major and minor as well as a Master of Science degree (for details, see Graduate Catalog). Information about computer science programs may be obtained from the Registrar's office, 8 Ayres Hall or from the Liberal Arts Advising Center, 220 Ayres Hall.

Major: Computer Science 1510 is a prerequisite to all courses in computer science which consists of 2510, 3150, 3510, 3520, 4510, and 4550, and an additional fifteen hours selected from computer science intermediate and advanced courses as listed below. Also required are Math 2340-50-60 (or the honors sequence 2848-58-68) and Statistics 3450.

Minor: A minor in computer science consists of 2510, 3510, 3520, 4550, and an additional 12 hours of computer science upper-division courses.

Introductory and Service Courses

1410 Introduction to Business Oriented Programming (3) Current and potential uses of computers as tools in the business environment with emphasis on learning FORTRAN programming. Not for computer science majors; may receive credit for both 1410 and 1510. Intended primarily for students in College of Business Administration. Prereq: Math 1501 or Math 1840.

1510 Introduction to Computer Science (4) Computer as a tool of modern and modern world; emphasis on programming in FORTRAN. Problem-solving process; organization and characteristics of digital computers. Survey of applications of computers in various disciplines. Students may not receive credit for both 1410 and 1510. Prereq: Mathematics 1560 or Mathematics 1840.


3010 Computers and Society (3) History of computing and computer systems; capabilities of computer; applications in artificial intelligence, humanities, social sciences, sciences and engineering; computer assisted instruction, future advances in computing; careers in computing. Prereq: Consent of instructor.
3150 Introduction to Numerical Algorithms and Programming (3) Roots of equations, systems of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. Introduction to programming in FORTRAN. 3150 and 3155 may not both be taken for credit; students with a knowledge of FORTRAN should take 3150. Prereq: 1510 or 1610 or consent of instructor. Prereq or coreq: Math 2860. (Same as Math 3150.)

3155 Introduction to Numerical Algorithms (3) Roots of equations, systems of linear equations, least-squares data fitting, numerical integration, numerical methods for ordinary differential equations. 3150 and 3155 may not both be taken for credit; students with a knowledge of FORTRAN should take 3150. Prereq: 1510 or 1610 or consent of instructor. Prereq or coreq: Math 2860. (Same as Math 3155.)

3410 Computer Programming—COBOL (3) Computer programming in business oriented language COBOL. Prereq: 1410 or 1510 or 3150 or consent of instructor.

3910 Commercial Computer Concepts and Control (3) Elements, operation, and control of computers in a business environment. Topics include input, storage, data manipulation, output, flowcharting, and error control. Prereq: 3410 and Accounting 3210.

4310 Computation in Statistical Analysis (3) Use of digital computer in standard statistical analyses, such as frequency tabulations, percentiles, double and simple linear regression, correlation, chi-square, and contingency table analyses. Prereq: Statistics 210 or equivalent. An elementary knowledge of a procedure-oriented language such as FORTRAN is also assumed.

4330 Independent Study in Computer Science (1-3) May be repeated; maximum credit 9 credit hrs.

4350 Computer Organization and Programming I (3) Problem formulation and advanced programming in FORTRAN; operation and control of digital computers. Prereq: 1510 or 2510, or 3150 or consent of instructor.


4370 Programming Languages (4) Comparison and analysis of programming languages and their features. Languages to be discussed will include SNOBOL, FORTRAN, ALGOL, and PL/1. Prereq: Math 2110 or Math 2120.

4715 Discrete Structures (3) Introduction to discrete structures useful in computer science. Sets, set logic, Relations, functions, Proof techniques, induction, logic, Graphical representations and algorithms. Prereq: 1510 or 1610 or 3150 (or equivalents). Prereq or coreq: Mathematics 2860. (Same as Mathematics 3715.)

4725 Advanced Discrete Structures (3) Advanced logic in discrete structures useful in computer science. Graphs and algorithms for manipulating data represented by them. Algebraic structures, Boolean algebras, lattices, groups, monoids. Prereq: 3715 or equivalent. (Same as Mathematics 3725.)

4050 Number Systems for Digital Computers (3) Floating point number representation, fixed-point number representation, floating-point number representation, errors in floating-point computation, finite fields and exact computation using digital computers. Prereq: 3155.

4225 Numerical Solution to Equations and Numerical Approximations (3) (Same as Mathematics 4225)

4225 Numerical Methods for Ordinary Differential Equations (3) (Same as Mathematics 4235.)

4245 Numerical Linear Algebra (3) (Same as Mathematics 4245.)

4510 Data Structures and Non-numeric Programming (3) Data structures and algorithms for their manipulation. Arrays and orthogonal lists; stacks, queues, doubly-linked lists, trees, dynamic storage allocation; organization of files, programming languages for information structures. Prereq or coreq: 3520. Prereq or coreq: Knowledge of SNOBOL equivalent to that gained in 3570.

4550 Computer Organization and Programming III (3) Computer organization and advanced programming. Machine language and design of computer, representation of information, microprogramming, software systems, input/output systems, interpreters, macro assemblers. Prereq or coreq: 3520 or equivalent.


4620 Operating Systems—Case Studies (3) Alternatives in operating system design, dynamic relocation, paging, segmentation, time sharing, time slicing, protection, concurrency, real time systems. Examples from different operating systems analyzed as assigned. Prereq: 4610 or equivalent or consent of instructor.

4660 Compiler Construction (3) Practical experience with design of compilers. Scanning, parsing, semantic processing, code generation and optimization, error detection and correction. Term project will include a complete compiler for small block-structured language. Prereq: 4510.


4730 Analysis of Non-numeric Algorithms (3) Study of efficient algorithms for searching (e.g., binary search, tree searches, hash coding) and sorting (e.g., heap sort, Shell's sort, quicksort). Algorithms for other non-numeric applications, such as pattern matching, graph path detection, set operations. Precise notions of time and space complexity. Polynomial complete problems. Prereq: 4510.

4750 Interactive Computer Graphics (3) Point plotting, vector generation, interactive graphical techniques, two and three dimensional transformation, perspective, line elimination, shading, software and hardware system design. Discussion of use of these techniques in design, problem solving, computer architecture, and many other areas. Prereq: Senior standing in computer science, electrical engineering or geography and a knowledge of computer programming, or consent of instructor. (Same as Elec. Engr. 4750 and Geography 4750.)

4820 Introduction to Pattern Recognition (3) (Same as Elec. Eng. 4820.)

4850 Digital Image Processing (3) (Same as Elec. Eng. 4850.)

4850 Small Computer Systems (3) (Same as Elec. Engr. 4850.)

4910 Analysis and Management of Computer Installations (3) Analysis and design of computer systems; implementation, justification, personnel in system perspective on systems. Prereq: 3520 or equivalent.

4980-90 Special Topics in Computer Science (1-4, 1-4) Credit given at time of registration. May be repeated, except 4980 may be repeated only two times with consent of department. Prereq: Recommendation of computer science staff.

GRADUATE

5000 Thesis

5002 Non-Thesis Graduation Completion (3-15)

5010 Computer Assisted Instruction (3)

5050 Computer Modeling and Simulation of Physical Systems (3)

5210 Artificial Intelligence (3)

5250 Medical Computing (3)

5430 Theory of Compilers (3)

5455 Finite Difference Methods for Partial Differential Equations (3)

5465 Finite Element Methods (3)

5475 Advanced Topics in Numerical Partial Differential Equations (3)

5655-65-75 Numerical Mathematics (3, 3, 3)

5670-80 Advanced Operating Systems (3, 3)

5710 Finite Automata Theory (3)

5720 Computability and Computational Complexity (3)

5750 Theory of Formal Languages (3)

5810 Information Organization and Retrieval (3)

5840-50 Pattern Recognition (3)

5910-20-30 Special Topics in Computer Science (1-4, 1-6, 1-6)

5940-50 Advanced Small Computer Systems (3, 3)

5970 Independent Study in Computer Science (1-3)

Cultural Studies

Director: Dr. Charles O. Jackson

Basic Faculty

J. S. Elliott, Ph.D. Russian; E. J. Gangloff, Ph.D. Special Programs; D. M. Fienen, Ph.D. Russian; T. A. Hefferman, Ph.D. English; C. G. Jackson, Ph.D. History; S. B. Kurth, Ph.D. Sociology; H. E. Lewald, Ph.D. Spanish; D. H. Litteljohn, B.A. Special Programs; P. A. Marr, Ph.D. History; C. J. Mellor, Ph.D. German; M. E. Peek, M.A. History; M. P. Rice, Ph.D. Russian; H. C. Rutledge, Ph.D. Classics; P. B. Scott, Ph.D. Home Economics; S. E. Wallace, Ph.D. Sociology.

The ideal curriculum encourages not only proficiency in a given field of knowledge but also the comprehension of similarity and complementarity between areas of intellectual endeavor. One answer to the need for fusion and integration of knowledge is the interdisciplinary program. The college has joined the resources of several departments to offer a cultural studies major with concentrations in American studies, Ancient Mediterranean Civilizations, Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval studies, Russian and East European studies, and urban studies. Minors are provided in Asian studies, Black studies, comparative literature, Latin American studies, linguistics, Medieval studies, urban studies, and women’s studies.

American Studies (099)

History 2510-20 (or equivalent honors courses) are prerequisite to a concentration in American studies which consists of 36 quarter hours: English 3010-20-30, American Studies 3010 and 4010, and 21 hours of upper-division electives dealing with the American experience.
Nine hours of the elective group must be from one of the following disciplines: anthropology, economics, political science, or sociology. A list of acceptable elective courses is published annually by the American Studies Committee. For further information consult the chairman of the American Studies Committee, Dr. Charles Jackson.

3010 Introduction to American Culture (3) Explores dynamics and nature of contemporary American culture.
3233-34 Forms of Popular Literature and Culture (3, 3) Same as English 2333-34.
4010 Topics in American Culture (3) Content varies. May be repeated once.

Asian Studies (145)
The Asian studies concentration consists of 36 quarter hours: Asian Studies 2510-20 plus 28 additional credits from Asian studies or approved departmental courses. The latter should constitute a coherent program, including a minimum of one course (3 or 4 hours) from each of the following three areas: (a) art, Asian culture, literature, and music; (b) economics, geography, history, and political science; (c) anthropology, philosophy, religious studies, and sociology. Students who prefer to use Asian Studies 2510-20 for Triad or elective credit may, with permission of the program chairperson, substitute eight additional upper-division hours in acceptable courses for that required sequence in the concentration.
The Asian studies minor consists of 24 quarter hours: Asian Studies 2510-20 plus 16 additional credits from Asian studies or approved departmental courses. The latter should include a minimum of one course (3 or 4 hours) from each of the following areas: (a) art, Asian culture, literature, and music; (b) economics, geography, history, and political science; (c) anthropology, philosophy, religious studies, and sociology. Students who prefer to use Asian Studies 2510-20 for Triad or elective credit may, with permission of the program chairperson, substitute eight additional upper-division hours in acceptable courses for that required sequence in the minor.
It is strongly recommended that students planning to attend graduate school take an appropriate Asian language through the intermediate level.
Further information may be obtained from the chairperson of the Asian Studies Committee, Dr. Phoebe Marr.

2510-20 Asian Civilization (4, 4) Introduction to Asian civilization by comparative study of development of religion, social institutions, and high culture in India, China, Japan and the Islamic world. 2510—Rise of classical civilizations. 2520—Traditional cultures and their modern developments.
3310 Indian Culture (4)
3320 Chinese Culture (4)
3330 Japanese Culture (4)
3340 Islamic Culture (4)
4010-20-30 Readings in Asian Literature (4, 4, 4) Prereq: Mastery of intermediate-level of Japanese, Chinese, or Arabic and consent of instructor.

4012 Selected Topics in Asian Studies (4) Content varies. May be repeated. Maximum credit 12 hrs.

Asian Language and Literature
ARABIC (127) (See Romance Languages)
1510-20 Spoken Arabic (4, 4)
2110-20-30 Elementary Modern Standard (3, 3, 3)
3510-20 Intermediate Modern Standard (4, 4)
3610 Islamic Literature in English Translation (4)
4101 Foreign Study (1-16)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
CHINESE
Asian Studies 2531-32 Elementary Chinese (4, 4) Taped language program. Must be taken in sequence.
Asian Studies 3531-32 Intermediate Chinese (4, 4) Taped language program. Prereq: 2531-32 or equivalent or consent of instructor. Must be taken in sequence.
Asian Studies 4531-32-33-34 Advanced Chinese (4, 4, 4, 4) Taped language program. Prereq: 3531-32 or equivalent or consent of instructor. Must be taken in sequence.
HEBREW
Asian Studies 2831-32 Elementary Modern Hebrew (4, 4) Taped language program. Must be taken in sequence.
Asian Studies 3831-32 Intermediate Modern Hebrew (4, 4) Taped language program. Prereq: 2831-32 or equivalent or consent of instructor. Must be taken in sequence.
JAPANESE
Asian Studies 2651-32 Elementary Japanese (4, 4) Must be taken in sequence.
Asian Studies 3651-32 Intermediate Japanese (4, 4) Prereq: 2651-32 or equivalent or consent of instructor. Must be taken in sequence.
PERSIAN
Asian Studies 2731-32 Elementary Persian (4, 4) Taped language program. Must be taken in sequence.
Asian Studies 3731-32 Intermediate Persian (4, 4) Taped language program. Prereq: 2731-32 or equivalent or consent of instructor. Must be taken in sequence.

Approved Area Courses
(a) Art, Asian Culture, Literature, and Music
Art 3775 Art of Indian Asia (4)
Art 3776 Chinese Art (4)
Art 3777 Japanese Art (4)
Asian Studies 3310 Indian Culture (4)
Asian Studies 3320 Chinese Culture (4)
Asian Studies 3330 Japanese Culture (4)
Asian Studies 3340 Islamic Culture (4)
Arabic 3610 Islamic Literature in English Translation (4)

Asian Studies 3650-60 Japanese Literature in English Translation (4, 4)
Asian Studies 3660 Modern Japanese Literature in English Translation (4)
Asian Studies 4010-20-30 Readings in Asian Literature (4, 4, 4)
Spanish 4050-60-70 Hispano-Arabic Literature and Culture (3, 3, 3)
Music 4260 Introduction to Ethnomusicology (3)
(b) Economics, Geography, History, and Political Science
Economics 4232 The Political Economy of Asian Development (3)
Geography 3870 Geography of Asia (4)
History 3790-90 History of the Middle East (3, 3)
History 3795 Contemporary Middle East (4)
History 3800 North Africa since 1830 (3)
History 3810-20-30 History of East Asia (3, 3, 3)
History 4791 Modernization of the Middle East (3)
History 4792 Historical Writers in Islamic History (3)
History 4811-21 History of Japan (4, 4)
History 4870 Cultural History of China (3)
History 4880 History of Modern China (3)
History 4890 History of Contemporary China (3)
Political Science 3621-22 Politics of Asian States (4, 4)
Political Science 3641 Government and Politics of Middle East and North Africa (4)
Political Science 3795 Contemporary Middle East (4)
(c) Anthropology, Philosophy, Religious Studies, and Sociology
Anthropology 3510 Peoples and Cultures of Mainland Asia (3)
Anthropology 4510 Peoples of China II: Chinese Society after 1839 (3)
Anthropology 4570 Peoples of Southeast Asia (3)
Anthropology 4590 Peoples of Japan (3)
Philosophy 3650 Philosophy and Religion in India (4)
Philosophy 3660 Buddhist Philosophy and Religion (4)
Philosophy 3671 Religion and Philosophy in China (4)
Religious Studies 3650 Philosophy and Religion in India (4)
Religious Studies 3660 Buddhist Philosophy and Religion (4)
Religious Studies 3671 Religion and Philosophy in China (4)
Religious Studies 3680 Islam (4)
Religious Studies 3760 Eastern Religions and Western Thought (3)
Religious Studies 3770 Zen Buddhism (3)
Religious Studies 4670 Topics in Eastern Religions (4)
Religious Studies 4960 Tradition, Change and Modernity in Asia (4)
Sociology 3672 Religion and Society in Japan (4)
Sociology 4960 Tradition, Change and Modernity in Asia (4)