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

4000 Senior Seminar (2-15) Personal application of interrelated knowledge and professional competencies through experience in community service training to serve society in a professional capacity; gaining experience beneficial to chosen professional career; scope of current research and career opportunities in Home Economics; comprehension of professional ethics required of a Home Economist. May be repeated. Maximum credit 15 hours. Prereq: Junior or senior standing. Permission of department head required for credit beyond 2 hours. S/NC.

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

4120 Community Services Programs with Youth (3) Procedures and techniques in working with youth. Taken as an off-campus course of field training together with 4110. Prereq: 3110 and permission of instructor.

4130 Methods and Procedures for Community Services Work (3) Individual, group, mass and indirect methods in community services work. Prereq: 3110. 2 hrs and 1 lab.

4710 Contemporary Developments (1-3) Recent advances in specialized areas of Home Economics, their implications for Home Economics and related professions. Consent of instructor. Hrs. arranged. May be repeated with departmental approval for credit up to 9 hrs.

4910 International Study Tour (6) See page 140. Prereq: Consent of Instructor.

4978 Honors: Community Services Programs (3) Problems for juniors and seniors with special interest in community services programs. May be repeated. Maximum credit 9 hours. Prereq: permission of department.

GRADUATE

5060 Practicum (1-12)

5210 History and Philosophy of Home Economics (3)

5220 Development of Community Services Programs (3)

5230 Evaluation of Community Services Programs (3)

5600 Home Economics in the Community (3)

5700 Current Programs and Trends in Human Resource Development (1-3)

5800 Problems in Community Services (1-3)

5900 Seminar in Human Resource Development (1-3)

6000 Doctoral Research and Dissertation

6110-20 Theoretical Issues in Human Resource Development (3, 3)

6210 Professional Issues in Human Resource Development (3)

6310 Advanced Topics (3)

6500 Methodological Issues in Home Economics (3)

6900 Seminar (1-3)

Home Economics Education (490)

Professors: N. P. Logan (Head), Ed.D. Tennessee; I. Brown, Ph.D. Florida State

Associate Professor: S. Miller, Ph.D. Ohio State.

Assistant Professor: J.H. McInnis, Ph.D. Florida State.

The Department of Home Economics Education is included as in instructional unit in the Department of Vocational-Technical Education in the College of Education (see page 106 for course offerings).

Professional subject matter courses are offered by the departments of the College of Home Economics for those preparing for secondary school teaching programs. The Home Economics Education Curriculum is designed to provide the requirements for certification in vocational home economics. The curriculum is listed on page 144.

Textiles and Clothing (971)

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

Associate Professors: I.M. Ford, Ph.D. Pennsylvania State; B.C. Goswami, Ph.D. Manchester (Great Britain); C.J. McAlpine, Ph.D. Notre Dame.

Assistant Professor: M.F. Miller, Ph.D. Pennsylvania State.

Instructor: B.C. Henderson, M.S. Purdue.

UNDERGRADUATE

1150 Clothing I — Selection and Construction (5) Application of design principles in selection and construction of garments for the individual including emphasis on design and construction compatibility, pattern alternation, and fitting. 2 hrs and 3 labs. Instructed students will be required to attend an extra lab session.

2110 Fashion (3) How fashion works, 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: junior standing, major family relationships, economics; 4 hrs sociology or anthropology or psychology.

3420 Textiles I (3) Consumer-oriented study of textiles, emphasizing fibers, fabric constructions and finishes and selection in relation to use, serviceability and care of apparel and household fabrics. Prereq: 12 hrs Chemistry or Physics or Biology or Botany. 2 hrs and 1 lab.

3440 Clothing II — Advanced Construction (3) Comparative study and investigation of fabric designs and processes utilizing basic principles including fitting, elementary flat pattern, quick tailoring methods and custom finishing techniques. Prereq: 1150. 1 hr and 2 labs.

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

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

3470 Tailoring (4) Evaluation and use of tailoring methods. Techniques 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 design, structure and economic settings.

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

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

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

4120 Textile Economics (3) Economic background of textile and apparel industries with emphasis on production and distribution. Current national and international problems. Prereq. 3420; Economics 2110-2111.

4140 Introduction to Textile Testing Methods (3) Methods and equipment used in physical testing as approved by recognized textile groups. Prereq. 3420. I 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 dying 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 appreciation of historical, sociological, cultural and environmental sources of costume design interpretation with emphasis on original contemporary design. Prereq. or coreq: 1150, 3410, and 3480. 2 hours and 1 lab.

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

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

4520 Introduction to Field Experience in Merchandising (1) Interviews with store personnel, placement and planning for field experience. Prereq. Economics 2110-20, junior standing, major in merchandising, approval of program coordinator. Open only to students who intend to enroll in 4630-40.

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. Coreq. 4640. Offered fall quarter only.

4640 Methods in Field Experience (6) Investigation of training systems and store organization analyses of job and evaluation of field experience. Prereq. 4620, senior standing, major in merchandising. Coreq. 4630. Offered fall quarter only.


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

4978-88-98 Honors: Textiles and Clothing (3, 3, 3) Individual problems for juniors and seniors showing special ability and interest in textiles and clothing. Admission only upon recommendation of head of department. Hrs arranged.

GRADUATE

5000 Thesis

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

5120 Advanced Problems in Textiles and Clothing (3)
5130 Advanced Tailoring (3)
5150 Principles of Design Analysis (3)
5160 Review of Literature (3)
5170 Social, Psychological and Economic Aspects of Clothing (3)
5180 Advanced Textile Economics (3)
5210 Evaluation of Instructional Materials in the Field of Textiles and Clothing (3)
5220 Historic Textiles (3)
5240 Practicum (1-9)
5250-60-70 Problems in Textile Chemistry (4, 4, 4)
5310 Fashion Analysis (3)
5320 Problems in Historic Costume (3)
5800 Problems in Textiles and Clothing (1-3)
5900 Seminar in Textiles and Clothing (1-3)
6010 Advanced Studies in Textiles and Clothing (3)
6110 Selected Issues in Textiles and Clothing (3)
6910 Seminar in Textiles and Clothing (1-3)
Kenneth L. Penegar, Dean
Donald S. Cohen, Assistant Dean
Curtis L. Wells, Assistant Dean

The University of Tennessee College of Law commenced operation in 1989 and has continuously sought to provide high-quality legal education in a university community.

While the principal objective of the Law College is to prepare students for the private practice of law, its total mission is more broadly conceived. The College of Law exposes students to the legal issues of our society enabling them to develop analytical skills in respect to decisional law and statutes, the ability to communicate effectively to others their knowledge of the law, and 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 as well.

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

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

The College of Law is also most 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, consultative, and other type services to legal institutions and groups within the state, the College of Law seeks to participate in the development and improvement of the society in which its students may eventually practice law. The Public Law Research and Service Program and the Continuing Legal Education Program are primary examples of this function.

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

The College of Law Building

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

Legal Clinic

The University of Tennessee Legal Clinic was established in 1947. Though the Clinic provides legal assistance to indigent persons, it is designed primarily as a teaching device to 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, Clinic students, under the direct supervision of the Legal Clinic staff, are certified to practice before all the courts of Tennessee.

The Law Library

The Law Library contains the official state reports of all states, the complete National Reporter system which covers all states and the federal courts, the Annotated Reports, standard sets of miscellaneous reports, the reports of the Canadian cases and of English cases from the yearbooks to date. In addition to these, there are adequate encyclopedias, digests and dictionaries, standard textbooks, law reviews, and current looseleaf services, totalling together more than 90,000 catalogued volumes. The Library is under the supervision of a law librarian who is trained in law and library science. The physical facilities, the collection of books, and the library staff combine to make the Law Library
of The University of Tennessee one of the best in the South. Law students also have the use of the collections in the University Graduate Library, which is located just across the street from the Law Library and the Undergraduate Library a few blocks away.

**Degree of Doctor of Jurisprudence**

The degree of Doctor of Jurisprudence will be conferred upon candidates who complete, with the required average, nine quarters of resident law study and who have 126 quarter hours of credit, including all required courses, and moot court participation. 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 of from 0.0 to 4.0. A grade of 0.5 or below is a failure.

The satisfactory completion of trail and appellate moot court participation is required of all candidates for the degree of Doctor of Jurisprudence.

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.

**Satisfactory/No Credit Option**

1. **Course eligibility.**
   a. Required courses may not be taken on a Satisfactory/No Credit basis.
   b. Courses taken on a Satisfactory/No Credit basis may not be used to satisfy area requirements.

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. Students who register for a course Satisfactory/No Credit when they are ineligible to do so will be required to change to regular grading when the error is discovered.
   b. Credit will be given for a course taken on a Satisfactory/No Credit basis only in quarters in which the student completes (received a grade in) at least 10 hours on a regular grade basis.
   c. Students electing the Satisfactory/No Credit basis must meet all requirements imposed on students taking the course on a regular grade basis; e.g., attendance, term paper, recitation, etc.
   d. Examinations and other work of students electing a Satisfactory/No Credit basis shall not be graded separately or differently from that of other students.
   e. For purposes of Satisfactory/No Credit grading, satisfactory shall mean a grade of at least 2.0.
   f. A student electing Satisfactory/No Credit who makes 2.0 or above shall receive credit for the course, but his grade shall be recorded as "S" and will not be used in determining his grade average.
   g. A student electing Satisfactory/No Credit who makes below 2.0 will receive an "NC" for the course and neither this grade nor the hours for the course will be used in computing the grade average or hours credit.
   h. A maximum of three courses may be taken on a Satisfactory/No Credit basis.

**Maintenance of a Satisfactory Record**

No student will be excluded from the College of Law for academic reasons prior to the completion of three quarters of academic study. A full-time student who fails to achieve an overall average of at least 2.0 upon completion (receipt of a grade) of three quarters of academic study shall be excluded. A student who obtains a J.D. degree in 18 hours and may vary the first-year full course load shall be excluded if such student fails to achieve an overall average of at least 2.0 upon completion (receipt of grade) of all required first-year courses, or upon completion of 40 hours, whichever first occurs.

**Maximum Course Load Per Quarter**

18 hours is the maximum for Law School. If a student does not satisfactorily complete 12 hours in a quarter, then for the remainder of his studies he is restricted to 16 hours per quarter.

**Admission**

Information regarding admission, financial aid, academic policies, extracurricular activities, and student services is available in the College of Law Bulletin. Students interested in the College of Law should obtain a copy of the Bulletin from the Office of the Dean. The University of Tennessee, College of Law, 1505 West Cumberland Avenue, Knoxville, Tennessee 37916. Completed application should be received before March 15 of the year of expected admission.

**Faculty**

Professors:

Associate Professors:

Assistant Professors:

**Instructors-Staff Attorneys:**

**Program of Instruction**

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

**REQUIRED COURSES**


8020 Contracts I (5) The basic agreement concept and legal protection afforded contracts. Problems of offer and acceptance, interpretation, illegality, and the statute of limitations.

8030 Contracts II (4) Continuation of study begun in Contracts I. Concentrating on remedies, conditions, impossibility and frustration, third party beneficiaries, assignment and delegation, and discharge.

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

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.

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

8110-11-12 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 groups, and intensive individual criticism given on all work submitted. Lectures on research writing and advocacy skills will be included. 8112 graded S/NC.

8130 Property I (4) Freehold estates, future interests, concurrent ownership, leases. Real estate contract and deed. Principles of personal property. 8112 graded S/NC.

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

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

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

8310 Constitutional Law II (4) Freedom of expression, association and religion. Fourteenth Amendment rights excluding 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.

8545 Juvenile Law Seminar (3) After examining the unique history and philosophy of juvenile justice system, course will consider jurisdiction, judicial and extra-judicial functions of juvenile court, and various dispositional alternatives. Students will read judicial opinions and materials from fields of history, sociology, and psychology. Knox County Juvenile Court will serve as laboratory for students, and professional staff from the Court will participate in Seminar on regular basis.

8660 Legal Profession (3) Role of the lawyer in society and ethical responsibilities implied in that role. Admission to the Bar, the organized profession, solicitation, advertising, unauthorized practice, conflicts of interest, decision to represent or withdraw as counsel, fiduciary relationship, advocacy and its limitations, fees, and disciplinary procedures.


ELECTIVE COURSES

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


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.


8220 Agency and Partnership (4) Principal and agent. Master and servand. Authority, unauthorized transactions, notice, ratification, restitution. Parties to contracts in individual and partnership areas. Partnership creation, dissolution, and termination, distribution and winding up. Organizational problems and devices to reduce risk. The Uniform Partnership Act.

8240 Arbitration Seminar (3) Arbitration of labor agreements. Judicial and legislative developments, nature of process, relationship to collective bargaining, selected arbitration problems on various topics under collective agreements, and role of lawyers and arbitrators in the process. When course is not offered, law students, with law faculty permission, may elect Economics 4000.


8280 Conflict of Laws (5) Jurisdiction, foreign judgments, choice of law, constitutional limitations, renvoi, and classification.


8330 Sex Discrimination and the Law (3) Study of judicial, legislative and administrative materials relating to sex discrimination in employment, education, domestic relations, property, consumer rights, welfare and criminal law. Term paper or project may be required in addition to written examination.


8345 Criminal Law Seminar (3) Advanced problems in Criminal Law and Administration of Justice.

8350 Damages (3) Rules and standards including concepts of value, allowance of interest and expenses of litigation, requirements of certainty and avoidable consequences, and credit of benefits accompanying injury; damages in tort actions including exemplary damages with particular emphasis upon personal injuries and personal property; damage in contract actions with emphasis upon foreseeability and other standards.

8360 Family Law (4) Survey of laws affecting the formal and informal family relationship. Topics include premarital disputes, antenuptial contracts, paternity of common law children and illegitimate children, legal effects of marriage, support obligations within the family, legal separation, annulment, divorce, alimony, property settlements, child custody, child support, adoption, abortion, and illegitimacy.

8380 Equity (4) Jurisdiction and power of courts of equity. Specific performance. Injunctions.

8400 Estate Planning (3) Problems of estate planning both inter vivos and testamentary. Advantages and disadvantages of various types of ownership. The law and practice of fiduciary administration, insurance, wills, future interests, trusts, corporations, partnerships, and gifts as related to estate planning. Research on assigned topics. Drafting of estate plan for hypothetical fact situations. Prereq: 8060 and 8840. In addition, recommended that student have had as many of following courses as possible: Wills, Private Corporations, Taxation (Income), Partnerships and Trusts.

8420-40 Evidence I & II (3, 3) Rules regulating introduction and exclusion of oral, written, and demonstrative evidence, including relevancy, competency, impeachment, hearsay, privilege, judicial notice, presumptions, and burden of proof.
8460 Federal Courts (4) Jurisdiction of federal courts, standing of parties before federal and state judicial systems, including nature of judicial power, federal questions, diversity, removal, jurisdictional and collateral estoppel. Evidence, law of evidence, habeas corpus, abstention, enjoining state proceedings, appellate jurisdiction and joinder of parties and claims.

8490 Environmental Law (4) Survey course examining basic federal and state statutory schemes for air and water quality, together with other generic legislation such as the federal (plus related states) Environmental Quality Control Act. Selected introduction to role and scope of federal, state, and local agencies in enforcement and proposing new laws and regulations.

8500 Future Interests (4) The law of future interests, including reversionary, remainder interests, possibilities of reverter and rights of entry, executory interests, construction of limitations, and rule against perpetuities.

8510 Government Contracts (3) Principles relating to government procurement, both federal and state, to include award, performance, and termination of contracts. Administrative settle disputes arising under government contracts. Prereq: 8200.


8525 International Business Transactions (3) Legal status of persons abroad, acquisition and use of property, and conduct of affairs abroad. Foreign corporation, engaging in business within a foreign country, and expropriation or annulment of contracts or concessions. Prereq: 8530.

8530 International Law I (3) International agreements, organizations, recognition of states, nationality, territory, jurisdiction and immunities.

8533 International Law II (3) International claims, expropriation, force and war.

8535 Jurisprudence Seminar (3) A comparative examination of legal theories including natural law, idealism, historical jurisprudence, utilitarianism, analytical jurisprudence, sociological jurisprudence, legal realism, and the policy science approach.

8540-42 Labor Relations Law I, II, I (3, 3) Evolution of labor relations laws, rights of self-organization; employment relations, contract bargaining practices, strikes; boycotts and picketing, collective bargaining, unfair labor practices; employer employee labor relations; internal union structure, discipline, management, employer claims, employment discrimination; federalism and preemption and unions and the antitrust laws. Course recommended in sequence, but one offering may be elected.

8550 Labor Relations Law Seminar (3) Study and discussion of selected labor relations law problems.

8560 Law, Language and Ethics (4) An intermediate level jurisprudence-type course. Law is the mind's attempt to define, direct and administer human activity. Exploration of ethical values underlying formal legal reasoning and statement. Analysis of judicial reasoning and legal concepts through the methods of epistemology.

8570 International Law Seminar (3) Study and discussion of current international law problems. Paper required. Prereq: 8300 and 8310 or permission of instructor.

8580 Law and Current Problems Seminar (2-3) Credit hours determined at the option of the instructor. May be repeated for credit.

8590 Legal Accounting (2) A course designed to familiarize law students with accounting problems and techniques, and to enable them to use and understand accounting information.

8600 Legal Clinic I (3) Participation in legal clinic work supplemented by classroom discussion and exercises. Under supervision by the faculty and staff

the student adapts himself to law office routines, interviewing clients, drafting contracts, preparing pleadings, files papers and motions in court. Emphasis is placed on fact gathering, effective interviewing, oral and written communication, professional skills. One-hour clinic work. Assigned work in Legal Clinic.

8620 Clinic II (3) Substantial criminal and civil litigation under faculty supervision. Students participate in the process from investigation through trial to post conviction remedies. Seminar-type classroom work relating to litigation will also be required.

8630 Clinic III (3) Clinic III is divided into components under direction of faculty supervisors. Components include, but are not limited to, Economic Development (counseling for new business entities within low-income communities); Law Reform (including both litigation and legislative reform); and Advocacy (litigation of the most complex civil and criminal cases). Students represent and counsel actual clients. Seminar-type classroom work may be required.

8640 Legal Draftsmanship (2) Independent drafting by students under direct supervision of instructor.

8670 Legal Writing. Elective course with consent of instructor. In fundamentals of legal writing. One hr credit on a satisfactory-no credit basis.

8680 Legal Writing (3) Approximately half the course is devoted to the development of a legal method approach to such problems as interpretation, drafting, and enacting statutes. The remainder of the course is devoted to class project in which class considers a potential area for legislative reform from preliminary research, through a legislative hearing, to final drafting, parliamentary debate and voting.

8690 Modern Land Use Law (3) Land use planning, nuisance, zoning, and eminent domain.

8700 Local Government Law I (3) Distribution of power between state and local government units. Sources of authority for limitation on local government operations. Creation of local governmental units and determination of their boundaries. Home Rule.

8705 Local Government Law II (3) Problems presented by fragmentation of local government units. Current solutions to include government as a provider of public services and control of our financial of local services. Current constitutional issues (e.g. school financing and land use control). Influence of the local government on local government finance and decision making.

8710 Oil and Gas Law (3) Selected materials on nature of interest, conveying, royalties, rights and reservations, leases, and taxation.

8720 Advanced Constitutional Law (3) Select problems or perspectives in constitutional law. Designation is intended to cover numerous approaches which involve use of instructors from other disciplines such as history, political science, economics, sociology. Prereq: 8300 and 8310 or permission of instructor.

8740 Private Corporations I (3) History and nature of the corporation; selection of appropriate form of business enterprise; judicial and legislative regulation; promoters and preincorporation transactions; incorporation procedures; defective incorporation; disregard of the corporate entity; rights and management duties of shareholders, directors and officers.

8760 Private Corporations II (3) Corporate finance, rights, duties, and liabilities respecting securities; offers for sale, public and private, underwriters and purchase by corporation of its own shares; fundamental corporate changes (sale of assets, mergers, etc.); shareholders' derivative actions.


8790 Advanced Legal Bibliography and Research Techniques (2) Survey of bibliographical research in legal Research and Writing I. Included will be use of U.S. government documents, preparation of legislative histories, use of state and federal legal materials, specialized research tools in areas of taxation, labor law and international law.

8800 Sales (3) Art. 2 (Sales) and Art. 7 (Documents of Title) of the Uniform Commercial Code.

8810 Security Transactions (3) Brief survey of suretyship and guaranty. Art. 9 (Security interests in Personal Property) of the Uniform Commercial Code.

8820 Securities Regulation (3) Advanced problems of governmental regulation of issuance of securities.

8830 Social Legislation and Employee Benefits (3) A study of the legal problems arising under such programs as workmen's compensation, wage and hour laws, unemployment compensation, public assistance, Social Security, and Medicare.

8840 Taxation (Estate, Gift and Inheritance) (3) Federal Estate Gift Tax laws, History and development. Relationship of the two taxes. Procedure and review before boards and courts. Preparation of a tax return of a hypothetical facts, and presentation of research results on assigned topics. Problems involving the law of several states are assigned.

8850 Seminar in Law and Mental Health (3) Composed of equal number of law and medical students. Assigned readings. Pairs of law and medical students to prepare papers. Jointly taught by professor and psychiatrist.


8865 Taxation (Income) II (3) Corporate reorganizations; methods of corporate distributions; sale of corporate business; other income tax problems of corporations; partnerships, and other business organizations.

8870 Seminar in Business Planning (3) Selected problems on corporate and tax aspects of business planning and transactions.

8885 Civil Procedure III (4) Post trial motions, appellate record, appeals and review from judgments, final decree, recording and judicial review. Emphasis upon Tennessee and Federal practice.

8890 Seminar in Environmental Protection (3) Through-teacher and teaching of selected experts, course will focus on specific problems of litigating in defense of the environment and mobilizing public and private efforts in defense of the environment. Problems of proving environmental impact of selected projects, interpretation and evaluation of scientific data, use of expert witnesses. Attention will also be given to special environmental concerns of the region, e.g., TVA operations, strip mining, forest management, wildlife preserves.

8910 Administrative Law Seminar (3) Indepth study of principles of administrative law not covered in basic courses, as discretion, choice of adjudication of rulemaking to develop administrative policy, consistency in administrative action.

8920 Trade Regulation (4) A study of the common law of trade, unfair competition, monopolies, concentration and restraint of trade, mergers and acquisitions; price fixing; resale price maintenance; and other problems arising under federal anti-trust laws.

8930 Seminar in Consumer Protection (3) Selected problems in consumer protection.
8935 Law and Medicine Seminar (3) Examination of medical profession’s involvement in judicial process, including: (1) medical malpractice and alternatives to fault-based liability; (2) responsibilities for disposition and care of dead bodies and legal principles governing organ transplantation; (3) expert medical proof and testimony; (4) medico-legal aspects of euthanasia; (5) other specific matters such as legal import of medical profession’s various canons of ethics.


8945 Trial Moot Court (1) Experience and training in trial of law and equity cases. Third-year students will act as counsel in all aspects of trial practice. Knox County Circuit Court Judges serve as judges of Trial Moot Court. Satisfactory-No Credit.

8950 Trial Moot Court II (1) Training in trial of a law suit. Satisfactory-No Credit.

8955 Seminar in Trade Regulation (3) Selected problems of current import, e.g., franchising, conglomerates.

8960 Trusts (4) Trusts; nature, creation, transfer, termination, modification, and administration.

8965 Unfair Trade Practices (3) Business torts and unfair competition and trade practices. Trademark, trade name, and copyright protection. Prereq: Trade Regulation.

8975 Water Law (3) Survey study in water law, including case studies and water law doctrines. Letter grade given to non-law students. (Same as Environmental Engineering 4810 and Water Resources Development 4810.)


8985 Directed Research (1-3) Independent research by a student or students under direct supervision of instructor. Student may take course maximum of once each year in last two years of study.

8990 Land Finance Law (3) Financing devices such as mortgages, deeds of trust and land contracts, problems involved in transfer of interests subject to these devices, and problems incurred in event of default. Consideration also directed to contemporary problems arising in such areas as condominiums, cooperatives, housing subdivisions and shopping centers.

8995 Land Acquisition & Development (3) Alternative business forms will be assigned teams of students who will then prepare and present for seminar discussion all major documents (notes, deeds, prospectus, etc.) necessary to accomplish the acquisition or development of large pieces of raw land. Prereq: 8990.

Course Offerings Subject to Change

The necessity of adjustments to accommodate changing conditions may dictate modifications in the course offerings and other features of the program described above. Accordingly, the College of Law reserves the right to make such variation in its program as circumstances may require. Prospective students who are interested in the precise course offerings at a given time or who desire other specific information should make inquiry in advance.

It is necessary to offer some courses and seminars only on an every-other-year basis. Choice is based on subject matter and past patterns of student enrollment. In order to facilitate student and faculty planning these courses and seminars are listed as follows: 8320, 8350, 8510, 8520, 8525, 8570, 8705, 8710, 8720, 8780, 8930, 8935, 8955. These may be offered in the Summer Quarter session or upon availability of added faculty, but this will be done only after satisfying other priorities.
College of Liberal Arts

Alvin H. Nielsan, Dean
Charles W. Keenan, Associate Dean
Boyd L. Daniels, Assistant Dean for Student Academic Affairs
Charles O. Jackson, Assistant Dean for Curriculum and Instruction

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 well-springs of human thought are sources of the programs of study offered students in the College of Liberal Arts.

Programs of Study

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

Degrees Offered

(1) BACHELOR OF ARTS

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

(a) Basic Program—The program appropriate for most B.A. students, it is developed around broad area requirements in the Triad plus intensive study in one or more of the specified departmental or interdisciplinary 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 his or her 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 his 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 and Watercolor, or Printmaking and Graphic Design 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—Piano—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 laid down 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, unfortunately, it gives indication of frustration and lack of clear direction. Viewed as a whole, it may appear to be a miscellaneous collection of courses which were chosen almost capriciously; or it may be a carefully selected curriculum which the student brought together in a way which represents for that individual the most appropriate and effective way of attaining his or her 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 descriptive 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 concentration; and the elective courses which support and supplement the work in the first two categories. Most students find it desirable to lay a broad foundation by taking courses which will satisfy Triad requirements in the first two years, thus reserving most of the final years for in-depth study in the area of concentration. Elective courses may be taken at any time.

Advisors 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 his or her 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 of Liberal Arts. Requirements for this degree and the several curricular programs which lead to it will now be discussed in detail.

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

GENERAL REQUIREMENTS

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

(1) A minimum of 180 credit hours;
(2) At least 60 credit hours in courses numbered 3000 or above;
(3) Appropriate course work to satisfy the broad requirements of the Triad (Basic Program, Individualized Program, and Pre-Professional Program only);
(4) One or more concentrations consisting of at least 36 credit hours in courses numbered 2000 or above, as specified by the major and appropriate committees or advisers.

Note: Students who elect to develop two major concentrations may use courses which are suitable for Triad credit and credit in the second concentration to meet simultaneously requirements in both areas. In all other cases, the same course may not satisfy more than one Triad requirement, nor may any course taken to satisfy a Triad requirement also be counted as part of the major. A course which satisfied a Triad requirement may also serve as prerequisite or corequisite for a major, however. Students may not use courses to meet requirements simultaneously in two majors or in a major and minor. A minimum grade of C must be earned in every course counted as part of the major. Students transferring from other institutions must complete at least seven credit hours in the area of concentration 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 our understanding 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 theater and dance, the sensual structures which address the eye and ear in painting and sculpture, architecture and music—all of these help to define what it means to be human.

It is important that every student of liberal arts become acquainted with these modes of experience within his own culture and through exposure to cultures that are foreign, also prove valuable. 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 to other activities.

The study of history is an integral part of a liberal education. Because human beings build on their experience, a clear understanding of the present requires an historical perspective. Such perspective may be developed by a number of courses, including the traditional survey of 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 where industrialization, urbanization, and other dimensions of technological change challenge traditional patterns of individual and collective behavior.

Study of science and mathematics develops in the student an inquiring attitude toward the natural environment and confidence in his 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 his ability to use the English language effec-
tively and coherently, in one of the following four ways:

(i) By completing one of English 1510-20 or 1518-20 or 1111-21-3.
(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 a sociological one quarter of freshman English at The University of Tennessee, Knoxville; a proficiency examination in writing, administered by the Department of English in cooperation with the Committee on Writing Standards.
(iv) By completing 4 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 from 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 English or a related course in writing emphasis 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. Pre-requisite to this option is intermediate-level competency in the language, demonstrated by diagnostic test or proficiency (credit) examination or by completion of the 2000-level sequence in that language.

(ii) Intermediate-level competency in a foreign language, demonstrated by diagnostic (non-credit) or proficiency (credit) examination or by completion of 8 credit hours beyond the introductory sequence, (or an approved equivalent) in that language; and 8 hours 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.

(iii) 24 hours in an integrated program in literature, culture, and/or the arts, focusing on either (1) a particular nation or area other than the United States, or (2) a comparative study of literary and artistic masterpieces, 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 foreign language will not receive credit toward graduation but will be exempted from the portion of the requirement satisfied by the examination. Those who take the proficiency examination may earn up to 16 hours of credit toward graduation for previous study of the language, in addition to the credit they 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 year 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.

(2) History and Society

Each student must complete 24 hours of course work in this area, including:

(a) One 8-hour sequence from the following survey courses offered by the Department of History or in a comprehensive interdisciplinary sequence having a substantial emphasis on history; or
(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 category (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) Sciences 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;
   (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:
   (i) The history, philosophy, or social impact of science;
   (v) 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 CONCENTRATION

In many ways the most important part of each student's program is the major concentration, for it is in this intensive study of one more or less limited field of knowledge that the individual begins to find his or her niche in the world of intellectual endeavor. The major concentration may be drawn from the offerings of a single department or it may bring together courses 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 of study. 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 consistent with the objective of a total program balanced reasonably between broad area requirements in the Triad, the major in concentration, and supplementary courses, the student may elect as many courses as he or she wishes in any department or area.

**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 concentration and in the Triad. This dimension of the student's experience in the University represents that freedom within which his or her total education may be rounded out and enriched. Elective courses should be chosen with the realization 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 his elective courses are:

(1) Additional courses in the major field;
(2) A related minor concentration in another department or area or in another college of the University (24 or more credit hours in courses numbered 2000 or above; see Note below);
(3) A concentration in the arts; objective: an off-campus quarter only; the student's imagination and initiative and his willingness to conceive and develop a totally meaningful academic program limit the choices of supplementary elective courses available.

**Note:** Minors are available in most of the departments and areas in which majors are offered, and also in the following:

<table>
<thead>
<tr>
<th>Asian Studies</th>
<th>Biochemistry</th>
<th>Black Studies</th>
<th>Comparative Literature</th>
<th>Latin American Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Asian</em></td>
<td><em>Biochemical</em></td>
<td><em>Black</em></td>
<td><em>Literature</em></td>
<td><em>Studies</em></td>
</tr>
<tr>
<td><em>Studies</em></td>
<td><em>Sciences</em></td>
<td><em>Studies</em></td>
<td><em>Women's</em></td>
<td><em>Studies</em></td>
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</table>

*See Phi Beta Kappa requirements in Mathematics, page*
Minors may be developed in other colleges of the University, but they must be approved by the appropriate departmental or interdepartmental majors.

II. Individualized Program

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

Students in the Individualized Program will normally satisfy the broad requirements of the Triad, just as do those in the Basic Program, although some latitude is provided for substitutions approved by the student's advisor 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 his own program, in consultation with an advisor, and submit it for consideration to the Committee on the Individualized Program. The proposed course of study must have some clear central purpose, usually implemented through intensive work in two or three departments; an understanding of the subject matter of other courses will not be approved. For further information consult the program director, Harry Jacobson (Ayres Hall).

III. College Scholars Program

A limited number of freshmen, entering transfer students with less than 60 credit hours, and resident students with less than 90 credit hours are invited each year to enter the College Scholars Program. Selection is based on previous academic record, test scores, recommendations, a written essay, and on a personal interview. Admission is provisional until the student has completed two quarters in the program; continuation depends upon the maintenance of a satisfactory record (normally 3.25 or above) and evidence of continued motivation and interest.

The College Scholars Program affords the highest degree of freedom to the student in developing a meaningful curriculum. Each student's program is worked out individually with a special advisor; together they determine what kinds of course work and/or other learning experiences (e.g., independent study, off-campus involvement, study abroad) will best fulfill the student's objectives as well as how to help him or her achieve the kind of liberal education the College believes is important for every student. Participants in the program will be granted certain privileges in the use of the library and in registration for courses and will also be eligible to submit research or creative writings for inclusion in the projected annual publication of the College Scholars Program.

The Individual Scholar will normally enroll in one or more general or departmental honors courses each quarter. In the final two years of the program he or she will elect to work for either General Honors, involving independent study and research on a topic chosen in consultation with the adviser and resulting in an honors thesis or project report, or Departmental Honors, following in this case the honors program prescribed by the particular department. For further information consult the program director, Dr. Harry Jacobson (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-medical professional programs are available for students who plan a career in one of the health professions. The programs preparing students for the study of medicine, dentistry, and pharmacy include the specified courses required for admission to the respective colleges of The University of Tennessee Center for the Health Sciences at Memphis. Other pre-medical 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 from UTCHS but not to a degree from UTK.

NOTE: The College Scholars Program 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 the UT Center for the Health Sciences and who has completed all of the undergraduate work at a college in the University of Tennessee system and is otherwise qualified comparatively.

Admission to any program at the UT Center for the Health Sciences 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, Knoxville, and completion of a pre-health 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 into 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 of Liberal Arts offers both three-year and four-year programs leading to the degree of Bachelor of Arts for students preparing for the study of dentistry. Both programs are based upon the curriculum outlined below. In the three-year program the student must complete at least 135 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at the UT Center for the Health Sciences. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the College, including a major of 36 or more hours in addition to the courses listed below. The requirement for a major is waived for those completing their fourth year at Memphis. Students who choose the three or four-year program must complete the last 45 hours of credit in residence at the University of Tennessee, Knoxville, before entering the UT Center for the Health Sciences.

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

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<thead>
<tr>
<th>Freshman</th>
<th>Hours</th>
<th>Credit</th>
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<tbody>
<tr>
<td>English 1510-20</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Chemistry 1110-20</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics 1540</td>
<td>1000</td>
<td>1500</td>
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<tr>
<td>1840-50</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Triad I (Language, Literature &amp; Fine Arts)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Triad II (History and Society)</td>
<td>12</td>
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<th>Sophomore</th>
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<th>Credit</th>
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<tbody>
<tr>
<td>Biology 1210-20</td>
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<td></td>
</tr>
<tr>
<td>Zoology 1118-28</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>Chemistry 3211</td>
<td>21-23</td>
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<td>3219-29</td>
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<tr>
<td><em>Electives</em></td>
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<td></td>
</tr>
</tbody>
</table>
College of Liberal Arts

Junior

Physics 2210-20-30 ........................................ 12
"Speech 2311 .................................................. 4

*Biology and/or Zoology 2203-20-30 ................. 12
Triad I .......................................................... 4
Triad II .......................................................... 4
Elective ................................................................ 4

Total (135) ............................................................... 180

Senior

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

Completion of one year at the UTCCHS

Total: 180 hours

(Or equivalent honors courses.)

Freshman

Hours Credit

*English 1510-20 ............................................. 8
*Chemistry 1110-20-30 ................................... 12
*Mathematics 1840-50 ...................................... 8
Triad I (Language, Literature & the Arts) ......... 8
Triad II (History & Society) ............................... 4

Sophomore

Biology 1210-20-30 or
Zoology 1118-28-36 ........................................ 12
Chemistry 3211-21-31 &
3219-29-39 .................................................. 12
Triad I .......................................................... 8
Triad II .......................................................... 4
Elective ......................................................... 4

Junior

Physics 2210-20-30 ........................................... 12
Triad I .......................................................... 8
Triad II .......................................................... 4
Electives ....................................................... 15

Total (135) ............................................................... 39

PRE-DENTAL HYGIENE PROGRAM

A Bachelor of Science Degree in Dental Hygiene is granted by the UT Center for the Health Sciences upon completion of a program which includes 96 hours of prescribed courses in the College of Liberal Arts and 6 quarters of study at Memphis. Students interested in the pre-dental hygiene program are encouraged to consult with a health professions advisor in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for more information.

PRE-MEDICAL PROGRAM

The College of Liberal Arts offers both three-year and four-year programs leading to the degree of Bachelor of Arts for students preparing for the study of medicine. Both programs are based upon the program outlined below. In the three-year program the student must complete at least 135 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at the UT Center for the Health Sciences. In the four-year program the degree is granted upon completion of 180 or more credit hours while enrolled in the College, including a major of 36 or more hours in addition to the courses outlined below. The requirement for a major is waived for those taking their fourth year at Memphis. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at the University of Tennessee, Knoxville, before entering the UT Center for the Health Sciences.

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

Freshman

*English 1510-20 ............................................. 8
*Chemistry 1110-20-30 ................................... 12
*Mathematics 1840-50 ...................................... 8
Triad I (Language, Literature &
the Arts) ..................................................... 8
Triad II (History & Society) ............................... 4

Sophomore

Biography 1210-20-30 or
Zoology 1118-28-36 ........................................ 12
Chemistry 3211-21-31 &
3219-29-39 .................................................. 12
Triad I .......................................................... 8
Triad II .......................................................... 4
Elective ......................................................... 4

Junior

Physics 2210-20-30 ........................................... 12
Triad I .......................................................... 8
Triad II .......................................................... 4
Electives ....................................................... 15

Total (135) ............................................................... 39

PRE-MEDICAL RECORD ADMINISTRATION PROGRAM

Admission to the medical record administration program at the UT Center for the Health Sciences, leading to a Bachelor of Science degree from UTCCHS at Memphis, 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.

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

PRE-MEDICAL TECHNOLOGY PROGRAMS

The College of Liberal Arts 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 UTK.

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

Science-Medical Technology Curriculum

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

Freshman

*English 1510-20 ............................................. 8
*Chemistry 1110-20-30 or
Zoology 1118-28-36 ........................................ 12
Chemistry 3211-21-31 &
3219-29-39 .................................................. 12
Triad I .......................................................... 8
Triad II .......................................................... 4
Elective ......................................................... 4

Sophomore

Chemistry 3211-21-31 and
3219-29-39 .................................................. 12
Mathematics ................................................... 4
Biological 3110-20 ......................................... 8
Microbiology 3000-09 ....................................... 5
Triad I .......................................................... 8
Triad II .......................................................... 8

Junior

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

Total (135) ............................................................... 45

Senior

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

(Or equivalent honors courses.)

Students who have had considerable background in biology in high school (e.g., two years of biology or an unusually good one year course) and have completed general chemistry may be eligible to go directly into Biology 3110 or 3120; consult the coordinator of the Biology program for more information. Such students must include at least eight hours in biological science in their elective to satisfy the requirement for admission to the medical technology course of study.

Pre-Medical Technology students are encouraged to complete an entire mathematics sequence (1550-60 or 1540-50). Calculus is required if graduate work is planned.

Pre-Medical Technology Program

Students planning to seek admission to the medical technology course of study at the UT Center for the Health Sciences in Memphis 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 UTCHS. 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 UTCHS are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for specific requirements for admission.

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 the UT Center for the Health Sciences is 48 hours of prescribed courses in the College of Liberal Arts. The program at Memphis, which leads to the Bachelor of Science in Nursing from UTCHS, is three years in length.

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

Students interested in the pre-nursing program are encouraged to consult with a health professions adviser in the Liberal Arts Advising Center or the Coordinator of the Health Professions Office for 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, through the School of Nursing. Information may be obtained from the Dean of the School of Nursing.

PRE-PHARMACY PROGRAMS

The College of Liberal Arts offers three programs preparing students for the study of pharmacy at the UT Center for the Health Sciences in Memphis. The Bachelor of Science in Pharmacy degree is conferred by UTCHS upon completion of three years of professional study at Memphis following any of the three programs.

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

The three-year and four-year programs, which lead to a Bachelor of Arts degree from the University of Tennessee, Knoxville, as well as to the professional degree in pharmacy from the UT Center for the Health Sciences, are based upon the program outlined below. In the three-year program, the student must complete at least 135 credit hours while enrolled in the College of Liberal Arts, and the B.A. degree is granted upon satisfactory completion of the first year of study at Memphis. 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 Memphis. Students in either the three- or four-year program must complete the last 45 hours of credit in residence at the University of Tennessee, The UT Center for the Health Professions Office, before enrolling in the College of Pharmacy.

Freshman

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
<td>English 1510-20</td>
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</tr>
<tr>
<td>Chemistry 1110-20-30</td>
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</tr>
<tr>
<td>Mathematics 1550-60 or 1650-60</td>
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</tr>
<tr>
<td>Psychology 2500</td>
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<tr>
<td>Triad I (Language, Literature &amp; the Arts)</td>
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</tr>
<tr>
<td>Triad II (History &amp; Society)</td>
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<td>Elective</td>
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Sophomore

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<thead>
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<th>Course</th>
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<tr>
<td>Biology 2120-20-30 or Zoology 1118-28-38</td>
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<tr>
<td>Chemistry 3211-21-31 &amp; 3219-29-39</td>
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<td>Speech 2311</td>
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<td>Triad I</td>
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<td>Triad II</td>
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<td>Elective</td>
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Junior

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<tr>
<td>Physics 2110</td>
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<td>Triad I</td>
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<td>Electives</td>
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<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td>or equivalent honors courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*The College of Pharmacy requires a minimum of 6 hours English or foreign language in addition to English 1510-20.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*The College of Pharmacy requires a minimum of 6 hours in social science in addition to Psychology 2500.</td>
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</tr>
<tr>
<td>The remaining hours may include courses chosen from economics, history, political science, psychology, or sociology.</td>
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</tr>
<tr>
<td>Recommended electives include Classics 2710 and 2720 and courses in business administration, particularly Accounting, Economics and Marketing.</td>
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Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of major program and B.A. requirements</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>or Completion of one year at the UT Center for the Health Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulletins describing the three pre-pharmacy programs in detail may be obtained from the Health Professions Office, 218 Ayres Hall.</td>
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</table>

PRE-PHYSICAL THERAPY PROGRAM

Admission to the physical therapy program at the UT Center for the Health Sciences, leading to the degree of Bachelor of Science in Physical Therapy from UTCHS, requires completion of 155 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 physical therapy program 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. The Bachelor of Fine Arts degree and its major will be recorded as follows:

Bachelor of Fine Arts

Major: Studio Art

Transfer students are advised that a minimum of 28 credit hours in studio courses and eight upper division credit hours in art history must be earned on the Knoxville campus.

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 better plan his or her own 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

Art 2715

A minimum of 13 hours other art history courses

Studio:

*Art 1115 Studio Fundamentals: Drawing and the Illusion of Space

*Art 1125 Studio Fundamentals: Surface composition and color

*Art 1135 Studio Fundamentals: Real Space and Volume

Art 2000 Introduction to Drawing

Art 2055 Introduction to Painting

Art 2045 Introduction to Sculpture

Art 2055 Introduction to Communication Design

Art 2065 Introduction to Printmaking

49 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

1. Language, Literature and the Arts
   A minimum of 8 hours English Composition
   A minimum of 8 hours History
   A minimum of 8 hours Science and Mathematics
   A minimum of 8 hours Language, Literature and the Arts

B. Philosophy 3910

C. Non-Art Elective

A minimum of 20 hours. Students entering with a high school language deficiency must take a minimum of 8 hours of a foreign language

College of Liberal Arts 163
D. Art Electives (within Art Department) A minimum of 40 hours .......... 40
E. Unspecified Electives ........................................... 43 180 hours

COLLEGE ARTISTS PROGRAM
A program of 180 hours to be determined by the student and approved by the Art Department 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. Admittance to the College Artists Program is based on four criteria: 1) an overall grade-point average of at least 3.0; 2) a portfolio of work; 3) the proposed course of study; and 4) a personal interview. A minimum grade-point average of 3.25 is required for each hour of credit. This program may not be taken concurrently with other studio art courses and must be approved by the instructor.

Each College Artist will normally enroll in one or more of the 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—strings—woodwind, brass and percussion instruments—multiple woodwind instruments). The study is designed to prepare students for graduate study or for positions in music for which a professional degree is required.

Students who plan to work for this degree are assigned an adviser in the Department of Music at the time they enter the program. Continuation in the program at the 300 level requires the achievement of an average of 2.5 or better on all music courses taken. The minimum requirement for the degree is 180 credit hours, including the specified courses offered 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.

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<thead>
<tr>
<th>MUSIC THEORY</th>
<th>Hours Credit</th>
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<tbody>
<tr>
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<td>English 1510-20 .................................. 9</td>
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<td>Music 1111-21-31 .................................. 3</td>
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<td></td>
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<tr>
<td>Music 1110-20-30 .................................. 6</td>
<td></td>
</tr>
<tr>
<td>Applied Music ........................................ 3</td>
<td></td>
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<tr>
<td>Ensemble ............................................. 3</td>
<td></td>
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<tr>
<td>Liberal Arts Electives ........................... 12</td>
<td></td>
</tr>
<tr>
<td>Music 2000 ........................................... 0</td>
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<table>
<thead>
<tr>
<th>Sophomore</th>
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<tbody>
<tr>
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<td>Music 2310-20-30 .................................. 9</td>
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<td></td>
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<tr>
<td>Applied Music ........................................ 3</td>
<td></td>
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<td>Ensemble ............................................. 3</td>
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<tr>
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<table>
<thead>
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<th>Junior</th>
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<td>Music History/Literature (3000-level and above) Electives .......... 12</td>
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<td>Music 1340 .......................................... 3</td>
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<td>Liberal Arts Electives ........................... 4</td>
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<td>Electives ............................................. 12</td>
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| TOTAL: 180 hours |

| Music History/Literature (3000-level and above) Electives .......... 12 |
| Music 2000 ........................................... 0 |

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### 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 in the first year 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 write directly 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

#### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 1110-20-30 or 1110-29-38</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics 1840-50-60 or 1848-56-68</td>
<td>12</td>
</tr>
<tr>
<td>Language, Literature, Art Triad (Writing Proficiency)</td>
<td>8</td>
</tr>
<tr>
<td>Language, Literature, Art Triad (Literature, Foreign Language II)</td>
<td>8</td>
</tr>
<tr>
<td>History and Society Triad</td>
<td>8</td>
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</table>

#### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 3211-21-31 or 3511-21-31 (latter recommended)</td>
<td>9</td>
</tr>
<tr>
<td>Chemistry 3219-29-39 or 3219, 3203-39 (latter recommended)</td>
<td>12</td>
</tr>
<tr>
<td>Mathematics 2840-50-60 or 2848-56-68</td>
<td>12</td>
</tr>
<tr>
<td>Physics 2510, 2310-20</td>
<td>11</td>
</tr>
</tbody>
</table>

#### Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language, Literature, Art Triad (Literature, Foreign Language II)</td>
<td>8</td>
</tr>
<tr>
<td>History and Society Triad</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry 2140-49</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 3410-20-50</td>
<td>9</td>
</tr>
<tr>
<td>Chemistry 3429-39</td>
<td>2</td>
</tr>
<tr>
<td>Chemistry 4210-20, 4219-29</td>
<td>8</td>
</tr>
<tr>
<td>Computer Science 3150</td>
<td>3</td>
</tr>
<tr>
<td>Language, Literature, Art Triad (Literature, Foreign Language II)</td>
<td>8</td>
</tr>
<tr>
<td>History and Society Triad</td>
<td>8</td>
</tr>
<tr>
<td>Chemistry 4110, 4119</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 4610-20 or 4610 and one quarter of 4710-20-30</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 4420</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry Electives</td>
<td>6</td>
</tr>
<tr>
<td>Electives</td>
<td>27</td>
</tr>
</tbody>
</table>

TOTAL: 185 hours

### Preparation For Other Professions

#### Law

Students who plan to study law should consult the statement regarding admission to the College of Law (page 154) and discuss their programs with advisers in the Liberal Arts Advising Center.

#### Library Science

Certain courses in the Graduate School of Library and Information Science are open to students in the College of Liberal Arts interested in beginning positions in a library or in preparation for future graduate study in professional librarianship. For further information, see page 40 or consult the Director of the Graduate School of Library and Information Science.

#### Public Administration

Students who wish to prepare for an administrative career in the public service are advised to elect the following courses above those needed to satisfy the triad requirements. This special curriculum leads to a Bachelor of Arts degree with a major in Political Science augmented by extensive supportive work in Economics, Accounting and Finance.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Science 2510-20, 2530 (choose 8 hours)</td>
<td>8</td>
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#### Sophomore

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics 2110-20-30</td>
<td>9</td>
</tr>
<tr>
<td>Junior Political Science 3565-66</td>
<td>8</td>
</tr>
<tr>
<td>Political Science 3545-46 or 3801-02-03-04</td>
<td>8</td>
</tr>
<tr>
<td>Economics 3340</td>
<td>8</td>
</tr>
<tr>
<td>Accounting 2110-2120, 2210</td>
<td>3</td>
</tr>
</tbody>
</table>

### 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 pages 41-42. Detailed information about courses and curricula, as well as 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 speech and hearing as determined by tests administered by the Speech and Hearing Center; (3) recommendation of the student's adviser.

One quarter during the senior year must be reserved for student teaching (Education C&I 4710-20). Application for student teaching must be filed not later than December 31 of the year preceding the academic year in which the student teaching will be undertaken. Those planning to teach during the 1977-78 academic year must apply by December 31, 1976.

Curricula for students seeking teacher certification may be the following:

1. English 1510-20 or 1518-28
2. 16 hours, representing at least 3 fields, including:
   - (a) 4 hours of 2000-level English
   - (b) 12 hours of the student's choice from anthropology, art, English literature, Library and Information Science 3510-20-30, foreign language (beyond the elementary level), history (upper division), music, philosophy, or religious studies
3. Language, Literature, and the Arts: 0-24 hours, the number of hours and choice of courses depending upon the options selected and the choices made in (2) above
4. History and Society:
   - (a) One of the 8-hour historical sequences in category (a) of the triad list
   - (b) Psychology 2500 or 2518
Dean for Student Academic Affairs (218 Ayres Hall).
The 17 credit limit was one of three means chosen to implement a 1972 decision by the College faculty to reduce the average number of courses carried by students. A second means has been to introduce four-credit courses into the curriculum on a broader scale than ever before. Using such courses the credits achieved by students each quarter would remain substantially the same as in quarters prior to this innovation but would be generated with fewer courses. A final means has been to decrease the total number of hours required for the degree. The goal of the load reduction is to provide an opportunity for a deeper, more thorough learning experience in the courses which are taken.

Lower Division—Upper Division

Courses numbered at the 1000 and 2000 levels are considered Lower Division and are normally taken by students in the freshman and sophomore years. Courses numbered 3000 and above are Upper Division and are designed for students at the junior and senior level.

Satisfactory/No Credit Courses

A few courses in the College are offered only on a Satisfactory/No Credit 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 C or better work on the traditional grading scale and No Credit is defined as less than C. The following regulations apply:

1. S/NC courses, except those offered only on this basis, may not count toward 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 he usually does well and, motivated by his own intellectual curiosity, to explore subject matter in which his performance may be somewhat less outstanding than his work in his preferred subject fields. Note: Students planning to seek admission to graduate or professional schools (especially in the health sciences) should discuss with their advisers possible limitations on exercise of the S/NC option before registering for courses on this basis.

Off-Campus Study

Recognizing that learning is not restricted to formal classroom situations, the College provides for students to earn credit toward graduation for approved off-campus study. Such study may be undertaken only with prior approval of the faculty member and the department concerned. It may include certain kinds of work experiences, community involvement, work in political campaigns, etc. Credit per quarter will vary from 1-6 hours. Up to 24 hours of credit earned in this way may be applied toward a degree in the College of Liberal Arts although individual departments may limit the number of hours which may be applied toward a specific major.

Independent Study

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

Study Abroad and Foreign Study Courses

Several opportunities for study abroad are available to students in the College of Liberal Arts. One avenue is a group program 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 may with approval enroll for credit. Assistance in identification and registration in such programs may be obtained through the Overseas Study Information Service located in the University's Division of International Education. A third opportunity is through individualized programs under the foreign study number 4101. The nature of this work as well as credit for it will be negotiated by students prior to departure with the appropriate Liberal Arts departments. Credit will be awarded only after completion of all agreed upon requirements, 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 an advisor of their choice or consult the person on duty at the time they need assistance. Most students continue in this relationship to the Advising Center until they have determined their major, normally by the beginning of the junior year, at which time they may be transferred for advising to a faculty member in the major department.

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

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

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

The Center is located at 812 Volunteer Blvd. All members of the University community are invited to visit this location and utilize the opportunities provided by the Center, which has knowledge about the Black experience.

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

Psychological Clinic
The Psychological Clinic is an outpatientpsychodiagnostic 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. Hunter Hills Theatre, located in the foothills of the Great Smoky Mountains near Gatlinburg, is an outdoor theatre in which performances are offered during the summer months.

Instructional Facilities
The College of Liberal Arts carries out its varied teaching and research activities in more than two dozen principal buildings in two major areas and in a number of converted residences which provide office, studio, or clinical space. The older of the two clusters of buildings is on "The Hill," and includes Ayres Hall (psychology and mathematics), South College (psychology), Herder (biological sciences), Physics (physics and astronomy), Geology-Geography (geology and geography), and Dabney and Buehler (chemistry). West of "The Hill" is a recently built group of buildings for the humanities, social sciences, and fine arts: McClung Tower and the Humanities-Social Sciences classroom building (classics, English, foreign languages, history, human services, philosophy, political science, religious studies, sociology, and speech and theatre), the Music Building (music), and the Hearing and Speech Center (audiology and speech pathology). In this area also are the McClung Museum and the Clarence Brown and Carousel Theatres, as well as the

Undergraduate Library. Anthropology is housed in South Stadium, and art utilizes several small buildings for its 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
Numbers in parentheses following the course titles indicate quarter hours credit offered.

American Studies
See Cultural Studies.

Anthropology (122)
Professors: W.M. Bass (Head), Ph.D. Pennsylvania; J.B. Gregor, M.D. Iowa; A.K. Gulyaev, Michigan; P.W. Parnell, Ph.D. Texas A&M.
Associate Professors: C.H. Faulkner, Ph.D. Indiana; I. Harrison, Ph.D. Syracuse; R.L. Jantz, Ph.D. Michcigan; M.C. McCollough, Ph.D. Pennsylvania.
Assistant Professors: A.M. Henderson, Ph.D. Colorado; F.H. Smith, Ph.D. Michigan; P.M. Thomas, Jr., Ph.D. Tulane.
UNDERGRADUATE
A major in anthropology consists of 39 hours, including the 2510, 2520 and 2530 introductory courses. Of the remaining 27 hours, majors are required to take a minimum of six hours of 3000-level or above courses in each of these subfields: Physical Anthropology, Archaeology, and Cultural Anthropology.
A minor in anthropology consists of 27 hours including the 2510, 2520, 2530 introductory courses.
2510 Human Origins (4) Non-technical survey of man's primate background, fossil primates, fossil man, and living races of mankind.
2520 Prehistoric Archaeology (4) Survey of prehistoric cultures with specific emphasis on method and theory in archaeology; prehistory of western Europe and Africa; and archaeology in America.
2530 Human Culture (4) Introduction to ethnology: Survey of nature of culture and society similarities and differences in man's material culture, social, economic, and political organizations, his ideology, art, and language.
3070 Genetics and Society (3) (Same as Botany 3070)
3410 Principles of Cultural Anthropology (3) Basic concepts and objectives in study of culture. Range of cultural phenomena and approaches to its study. 2530 recommended.
3440 Religion of Primitive Peoples (3) Religions of nonliterate peoples. Place of religion in their social and cultural systems. 2530 recommended. (Same as Religious Studies 3440).
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)
6480 Seminar in Social Structure (3)
6970 Seminar in Human Paleontology (3)

Arabic
See Romance Languages.

Archaeology-Greek And Roman
See Classics.

Art (140)

Art: Bachelor of Arts, Minor

Art History—Consists of 36 hours in Art History courses numbered above 2000. Courses numbered above 2000 in the following areas may be included also in the 36 hours: Greek and Roman art and architecture, aesthetics, history and theory of art, and art education majors. The department reserves the right to acquisition of student study work.

UNDERGRADUATE

B. A. Major: Art History—Consists of 36 hours in Art History courses numbered above 2000. Courses numbered above 2000 in the following areas may be included also in the 36 hours: Greek and Roman art and architecture, aesthetics, history and theory of art, and art education majors. The department reserves the right to acquisition of student study work.

B. A. Major: Art (Concentration in Studio) - Art 1115-25-35 and Art 2715, and eight additional hours of art history are prerequisite to a major. Knowledge of the practice of art is required of art history majors; knowledge of art history is required of studio majors. The department reserves the right to acquisition of student study work.

Minor: none offered.

For information regarding the Bachelor of Fine Arts degree, see page 163.
Asian Studies
See Cultural Studies.

Astronomy
See Physics and Astronomy.

Audiology And Speech Pathology (160)

Professors:
H.L. Lupfer (Head), Ph.D. Ohio State;
S. Adler, Ph.D. Ohio State; C.W. Asp, Ph.D.
Ohio State; D.M. Berman; Ph.D. Washington;
H.A. Peterson, Ph.D. Illinois; B. Silverstein, Ph.D.
Puerto.

Associate Professors:
P.J. Carney, Ph.D. Iowa; C.G. Maisel, M.Ed.
Texas; L.V. Nabelek, Ph.D. Czech Technical
Prague.

Assistant Professors:
S.B. Burchfield, Ph.D. Michigan State;
T.O. Davidson, M.A. Tennessee; C.J. Ferrell,
M.A. Tennessee; T.P. Marquart, Ph.D.
Washington.

Instructors:
J.S. Berry, M.S. Tennessee; J. Dickerman,
M.A. Illinois; S.C. Goas, M.A. Wayne State;
K. Hinkle, B.S. East Tennessee State;
M. Nabors, M.A. Tennessee; R. Roettger, M.A.
Tennessee; A.K. Sampson, M.A. Tennessee;
T.R. Singletary, M.S. Colorado State.

UNDERGRADUATE

General Information. One of mankind's most significant developments has been the acquisition of organized systems of communication. Basic to most human language systems has been dyadic oral-aural communication. The Department of Audiology and Speech Pathology offers course work in the scientific study or oral-aural communication with special attention to variations considered normal or different. 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 non-departmental majors include: 3040, 3060, 3220, 4610, 4710 and 4750.

Majors: The two majors (Audiology and Speech Pathology) allow the student to select among 3 or more concentrations. Note carefully the distinction in requirements for each of the concentrations within each major. Students should consult with a departmental advisor concerning recommended electives.

All concentrations within the department are pre-professional, that is, they are preparatory to graduate work and to professional certification in some aspects of communicative disorders. The Master's Degree is required for most professional certificates and employment positions. Students desiring school certification in speech and hearing or education of the deaf should consult the Department of Special Education and Rehabilitation for specific requirements.

A major in Audiology may be met by completing the requirements for either of the following two concentrations:

A. Concentration in Clinical Audiology. Consists of Audiology and Speech Pathology 3040, 3060, 4710, 4720, 4740, 4930, 4940 plus not less than 15 or more than 35 credit hours from the following: 3050, 3200, 3310, 4040, 4060, 4320, 4460, 4470, 4560, 4730, 4750, 4940, 4940; Psychology 2500, 2520.
B. Concentration in Aural Rehabilitation. Consists of Audiology and Speech Pathology 3040, 3050, 3060, 3200, 3310, 3400, 4040, 4060, 4450, 4610, 4710, 4720, 4740, 4930, 4940.

A major in Speech Pathology may be met by completing one of the following concentrations:

A. Concentration in Clinical Speech Pathology. Consists of Audiology and Speech Pathology 3040, 3050, 3060, 3070, 3200, 3310, 4040, 4049, 4060, 4310, 4320, 4330, 4340, 4400, 4610, 4710, and 4720.

B. Concentration in Cultural Language Differences. Consists of Audiology and Speech Pathology 3040, 3050, 3060, 3200, 4650, 4710; Psychology 2500, 2520; Anthropology 2530, 3410, Sociology 3220, 3330, and CFS 4810.

C. Concentration in Pediatric Language Disorders. Consists of Audiology and Speech Pathology 3040, 3050, 3060, 3200, 4040, 4610, 4710, 4720, 4740, and 4940; Special Education 4110, 4120, 4310, and 4610.

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

3050 Phonetics (3) Recognition and production of sounds of spoken English, with analysis of their formation.

3060 Speech Science I (3) Nature of speech science; basic outline of communication; acoustic characteristics of speech; speech perception. Prereq: 3040 or permission of instructor.

3070 Psychology of Speech (3) Psychological factors in speech and language behavior.

3200 Speech and Language Development (3) Speech and language development in the normal child and implications of this process on diagnosis of speech and language problems. Prereq: Psychology 3550 or Education 2430.

3310 Articulation Disorders (3) Etiology, diagnosis, and treatment of articulatory defects. Prereq: 3040 and 3050. (Same as Special Education 3310.)

4040 Appraisal of Speech and Language Disorders (3) Diagnostic procedures for children and adults with speech and language problems. Concurrent enrollment in 4048 required for majors. (Same as Special Education 4040.)

4048 Lab in Appraisal of Speech and Language Disorders (1) Observation and practice with diagnostic tests. Concurrent enrollment in 4048 required by majors. (Same as Special Education 4048.)

4060 Speech Science II (3) Anatomy and physiology of speech production; clinical applications of speech science research. 2 lectures and 1 2-hour lab per week.

4101 Foreign Study (1-16) See page 167.

4102 Off Campus Study (1-16) See page 167.

4103 Independent Study (1-16) See page 167.

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 I (3) (Same as Special Education 4210.)

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

4230 Introduction to the Education and Psychology of the Deaf (3) (Same as Special Education 4250.)

4310 Stuttering (3) Nature and treatment of stuttering. Review of various theories of stuttering, and their integration. Review of psychotherapy and counseling procedures. (Same as Special Education 4310.)

4320 Clinical Practice in Speech Pathology (1-6) Prereq: 3040, 3050, 3310, 4040, and permission of instructor. Satisfactory-No Credit. (Same as Special Education 4320.)

4330 Clinical Practice in Speech Pathology (1-6) Prereq: 3040, 3050, 3310, 4040, and permission of instructor. Satisfactory-No Credit. (Same as Special Education 4330.)

4340 Clinical Practice in Speech Pathology (1-6) Prereq: 3040, 3050, 3310, 4040, and permission of instructor. May be repeated for credit. Satisfactory-No Credit. (Same as Special Education 4340.)

4400 Voice Disorders (3) Etiology, diagnosis, and treatment of organic and functional voice disorders. Prereq: Speech Pathology 3040 and 3060. (Same as Special Education 4400.)

4450 Clinical Practice in Audiology I (1-6) Prereq: 4720, 4930, or 4940. Satisfactory-No Credit. (Same as Special Education 4450.)

4460 Clinical Practice in Audiology I (1-6) Prereq: 4720, 4930, or 4940. May be repeated for credit. Satisfactory-No Credit. (Same as Special Education 4470.)

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

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

4560 Problems in Audiology (1-6) May be repeated to a maximum of 6 hrs credit. Prereq: permission of instructor.


4650 Speech and Language of the Culturally Different Child (3) Discussion of speech and language differences of children of various minority groups, of different ethnic and class membership and from different geographic regions; their causes, and their effects upon educational programs.

4710 Introduction to Audiology (3) Fundamental aspects of hearing, including physics of sound, anatomy and physiology of ear, etiology and re habilitation of hearing loss and psychological ramifications of sensory loss. (Same as Special Education 4710.)

4719 Audiometry Laboratory, Prereq: Permission of instructor. Undergraduate credit only. (Same as Special Education 4719.)

4720 Audiology (3) Assessment of auditory function by pure tone and speech audiometric procedures. (Same as Special Education 4720.)

4730 Medical Audiology (3) Survey of medical aspects of audiology pertaining to pathologies encountered in medical environments, with emphasis on specific etiologies. Prereq: 4710.


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 concommitants 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.)

4939 Laboratory in Aural Rehabilitation (1) (Same as Special Education 4939.)

4940 Advanced Aural Rehabilitation (3) Prereq: 4930 or permission of instructor. (Same as Special Education 4940.)

GRADUATE

5000 Thesis

5040 Advanced Clinical Practice in Audiology (1-6)

5050 Practicum in Aural Habilitation and 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)

5119 Instrumentation in Speech and Hearing Science (3)

5200 Seminar on Stuttering (3)

5201 Aphasia (3)

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

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

5380 Cerebral Palsy (3)

5390 Cleft Palate (3)

5440 Hearing Aid Evaluation (3)

5450 Sound Measurement and Analysis in Hearing Conservation (3)

5460 Differential Diagnosis of Auditory Disorders (3)

5470 Impedance Measurement in Audiology (3)

5500 Seminar in Audiology (3)

5503 Seminar in Advanced Audiological Procedures (3)

5520 Seminar in Speech Pathology (3, 3, 3)

5540 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)

5790 Seminar in Psycholinguistic Concepts in Speech Pathology (3)

5950 The Verbo-Phonal System (3)

6000 Doctoral Research and Dissertation

6010 Experimental Phonetics (3)

6020 Psychoacoustics (3)

6060 Applied Anatomy and Physiology of Speech Mechanism (3)

6070 Experimental Techniques in Cochlear Physiology and Neurophysiology (3)

6080 Seminar in Speech Science (3)
Bacteriology  
See Microbiology.

Biochemistry (188)  
Professors: J.W. Greenanwall (Head), Ph.D. Purdue; J.E.Churick, Ph.D. Michigan (Elect); K.J. Monty, Ph.D. Rochester; T.P. Salo, Ph.D. Michigan.  
Associate Professor: J.G. Joshi, Ph.D. Poona (India).  
Assistant Professors: R.H. Feinberg, Ph.D. California (Berkeley); S.W. Hawkins, Ph.D. Chicago; B.C. Klime, 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 4510-20-30 are desirable.

4110-20 Cellular and Comparative Biochemistry (4, 4) Electroyte behavior; chemistry and structure of proteins; enzyme behavior and biological function; catalytic action 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 and an introductory course in biology (i.e., Biology 1210-20-30 or Botany 1110-20-30). 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-polymers considered. Prereq: Math 1810-20-30; Chemistry 3211-21-31; and an introductory course in biology.

4320 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 permission only. May be repeated for credit. Prereq or coreq: 4110-20, 4119.

GRADUATE  
The Master's Program  
Master's degree requirements are found in the Graduate School Catalog. Candidates usually should offer an undergraduate major in either biology or chemistry.

The Doctoral Program  
Requirements for the Doctor's degree are found in the Graduate School Catalog. An incoming student must present an undergraduate major in either chemistry or biology.

5000 Thesis  
5010 Biochemical Techniques (2)  
5110 The Metabolism of Nitrogen Containing Compounds  
5120 Membranes, Compartments, and the Regulation of Energy Metabolism (3)  
5130 Protein Structure and Enzyme Function (3)  
5220 Structures and Functions of the Nucleic Acids (3)  
5230 Protein Synthesis and its Role in Metabolic Regulation (3)  
5300 Graduate Research Participation (3-9)  
5310-30 Experimental Techniques (2, 2, 2)  
5450 Special Topics (1-3)  
6000 Doctoral Research and Dissertation  
6110 Enzyme Kinetics and Mechanisms of Enzyme Action (1)  
6120 Functions of the Vitamins (1)  
6130 Functions of the Trace Elements (1)  
6210 Structure and Function of Macromolecules (1)  
6220 Biochemical Genetics (1)  
6230 Metabolic Regulation (1)  
6310 Biological Energy Transformations (1)  
6320 Antigen-Antibody Interactions (1)  
6330 Biochemistry of Specialized Physiological Processes (1)  
6410-20-30 Current Topics in Biochemistry (2, 2, 2)  

Biology (190)  
Coordinator: K.J. Monty  
A major in Biology may be met by completing one of the two following concentrations:

A. Concentration in Cell Biology. Consists of Biology 3110-20-30, Chemistry 3211-21-31, 3219-29-39, Biochemistry 4110-20, and 12 hours from approved upper division courses in Biochemistry, Botany, Microbiology, and Zoology. 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 1840-50; a year sequence in Physics (except 1410-20-30); and Chemistry 2140-49.

B. Concentration in Organismal and Systems Biology. Consists of Biology 3110, 3120, 3130, Chemistry 3211-21-31, 3219-29-39, and 18 hours from approved upper division courses in Biochemistry, Botany, Microbiology, and Zoology. 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 1840-50 or 1550-60 (Math 1840-50 is recommended for Chemistry). A year sequence in Physics (except 1410-20-30) or Geology 1510-20.

Note: Students majoring in Biology are advised to exercise care in fulfilling the Science and Mathematics trial requirements. Math 1840-50 (or in some cases 1550-60) and Chemistry 1110-20-30 or equivalent (20 hours altogether) must be completed by Biology majors. Students majoring in Biology are advised to consider completion of a Physical Science minor (page 200).

Minor: Consists of Biology 3110-20-30 and 12 hours of upper division courses chosen from the list below. Biochemistry 4110-20, 4119; Botany, any 4000- or 5000-level courses; Microbiology, any 3000- or 4000-level courses; Zoology, any 3000- or 4000-level courses except 3010-20-30. (In meeting the upper division minimum requirement, not more than 10 hours may be credited from any one biological science department, and not more than 4 hours of research courses may be credited.) Prerequisites to the minor are: Introductory Biology courses (Biology 1210-20-30 or Botany 1110-20 or 1118-28 or Zoology 1118-28); Chemistry 1110-20-30. Note: Certain upper division courses require organic chemistry or other prerequisites - consult the catalog description in each case.

1Biochemistry 4119, Botany, any 3000- or 4000-level courses (except 3050, 3070, 3090); Microbiology 3000-09, 3071-79, 4111-21, 4210-20-30, 4521-39, 4811-19, Zoology 3050, 3060, 3090, 3150, 3300, 4010, 4050, 4110-20-30, 4250, 4280, 4310, 4380, 4380, 4450, 4610-20. (In meeting the upper division minimum requirement, not more than 10 hours may be credited from any one biological science department, and not more than 4 hours of research courses may be credited.)

1Biochemistry 4119, Botany, any 3000- or 4000-level courses except 3010-20-30 and 3090. (In meeting the upper division minimum requirement, not more than 12 hours may be credited from any one biological science department, and not more than 4 hours of research courses may be credited.)
Black Studies
See Cultural Studies.

Botany (198)

Professors:
R.W. Holton (Head), Ph.D. Michigan; E.E.C. Clebsch, Ph.D. Duke; H.R. DeSelm, Ph.D. Ohio State; W.R. Herndon (Vice Chancellor for Academic Affairs), Ph.D. Vanderbilt; L.R. Hester (Emeritus), Ph.D. Cornell; G.E. Hunt, Ph.D. Cornell; L.W. Jones, Ph.D. Texas; J.F. McCormick (Director of Ecology Program), Ph.D. Emory; F.H. Norris, Ph.D. Ohio State; J.S. Olson, Ph.D. Chicago; R.H. Peterson, Ph.D. Columbia; A.J. Sharp (Emeritus), Ph.D., Ohio State; P.L. Wne, Ph.D. Texas.

Associate Professors:
C.C. Armada, Ph.D. Colorado; S.L. Bell, Ph.D. Chicago; J.D. Caponetti, Ph.D. Harvard; A.M. Evans, Ph.D. Michigan; A.S. Heilman, Ph.D. Ohio State.

Assistant Professors:

Instructor:

Lecturer:
J. Witherspoon, Ph.D. Tennessee

ORNL

UNDERRADUATE

Major: Consists of Biology 3110, 3120, 3130; 23 upper division hours of Botany including 3210 and 4710-20-30; plus 4 hours of upper division courses from a related biological science (Zoology, Microbiology, Biochemistry, Agricultural Biology, Forestry, or Plant and Soil Science). Not more than 3 hours from 3050, 3070, 3090 allowed for major credit. Prerequisites to this major are Botany 1110-20-40 or 1118-28 or Biology 1210-20-30* and Chemistry 1110-20-30. Corequisites are Math 1840-50 or Math 1550-60, Physics 1210-20-30 or Physics 2210-20-30 or Chemistry 3211-21-31, 3219-29-39 or Geology 1510-20 plus 4 additional hours in Geology.

Minor: Consists of Biology 3110-20-30 and 15 upper division hours in Botany. Not more than 3 hours from 3050, 3070, 3090 are allowed for minor credit. Prerequisites to this minor are Botany 1110-20, 1140 or 1118-28 or Biology 1210-20-30. Corequisites are 4 hours of upper division courses in a related biological science (Zoology, Microbiology, Biochemistry, Agricultural Biology, Forestry or Plant and Soil Science).

*Students with 2 years of high school biology and satisfactory ACT scores may, with the permission of the department, omit the freshman year sequence and enter Biology 3110-20-30 directly (see course listings under Biology).

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-hour discussions and approximately 3 hours of audio-tutorial laboratory work 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 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.

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

3010-20 Plants in Evolution (4, 4) Monera to angiospermae; 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: 3020. 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. (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 of a biological science.

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


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 week-end 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, permission of instructor.

4550 Botanical Microscopy (4) Theory and methods of preparing living and preserved plant materials for light microscopy, employing fixation, staining and sectioning. Data recording by graphic and photographic techniques.

4710-20-30 Senior Seminar (1, 1, 1) Required of all botany majors. Prereq: Senior standing.

GRADUATE

5000 Thesis

5011 Mycology (4)

5012 Morphology and Evolution of Phycocystes (4)

5013 Morphology and Evolution of Ascomycetes (4)

5017 Field Mycology (4)

5021 Bryology (4)

5022 Lichenology (4)

5031 Vascular Plant Taxonomy (4)

5061 Phyecology (4)

5070 Principles of Biological Illustration (3)

5080 Pteridology (4)

5090 Morphology and Evolution of Basidiocystes (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)

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

5780 Plant Cytology (4)

5800 Experimental Cell Biology (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)

5840 Microbes in Ecosystems (3)

5850-51-52-53-54 Methods and Instrumentation in Field Investigations (1, 1, 1, 1, 1)

5910-20 Developmental Plant Morphology (3, 1)
Chemistry (235)

Professors: D.A. Shirley (Head), Ph.D. Iowa State; N.S. Bowman, Ph.D. Princeton; C.A. Buehler (Emeritus), Ph.D. Illinois; D.I. 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 (Associate Dean), Ph.D. Texas; E. Reinfeldt, Ph.D. Princeton; M.H. Lietzke, Ph.D. Wisconsin; G. Mamantov, Ph.D. Louisiana State; A.D. Melaven (Emeritus), Ph.D. D.O. Kelley, Ph.D. California (Berkeley); G.K. Schriver, Ph.D. Illinois; G.P. Smith, Ph.D. Virginia; H.A. Smith (Vice Chancellor for Graduate Studies and Research), Ph.D. Harvard; W.T. Smith (Emeritus), Ph.D. Ohio State, W.A. Van Hook, Ph.D. Johns Hopkins; T.F. Williams, Ph.D. London (England); J.H. Wood (Emeritus), Ph.D. North Carolina.

Associate Professors: J.E. Bloom, Ph.D. Manchester (England); J.Q. Chambers, Ph.D. Kansas; C.A. Lane, Ph.D. California (Berkeley); J.W. Larsen, Ph.D. Purdue; R.M. Magid, Ph.D. Yale; J.R. Peterson, Ph.D. California (Berkeley); E.L. Wehry, Ph.D. Purdue.


Alumni Distinguished Service Professor:

For information regarding the Bachelor of Science in Chemistry degree and the cooperative program in chemistry, see page 166.

There are two alternative routes for the student to take in designing his 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, Geochimistry, and related fields. Concentration B has similarities to that leading to the degree of Bachelor of Science in Chemistry, (page 166), but with more opportunity for selection of electives outside the department and outside of science. Unlike the Bachelor of Science in Chemistry degree, the B.A. degree using Concentration A is not approved by the Committee on Professional Training of the American Chemical Society.

The prerequisites consist of Chemistry 2140, 2149, 3211-21-31 or 3511-21-31 (latter recommended), 3219-29-39 or 3219, 3529-39 (latter recommended), 3410-30-30, 4329 plus at least 10 hours of additional upper division work in Chemistry. (Up to six hours of Biochemistry 4000-level and above or Geology 4610 may be applied to the ten hour requirement). While not required, Math 2860 is highly recommended as an elective for majors in this concentration.

Concentration B is specifically 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 greatest part of Concentration B consists of Chemistry 1110-20-30, Mathematics 1540-50-60 or 1840-50-60 and any one of the following natural science options: (a) Physics 2210-10-30 or 2510, 2310-20; (b) Geology 1510-20; (c) Biology 1210-20 (d) Biochemistry 3110-20 and Microbiology 3000, 3008; (e) Botany 1110-20. The concentration consists of Chemistry 2140, 2149, 3211-21-31 or 3511-21-31 (latter recommended), 3219-29-39 or 3219, 3529-39 (latter recommended), 4910-20-30. 4929 plus at least 10 hours of additional upper division work in Chemistry. (Up to six hours of Biochemistry 4000-level and above or Geology 4610 may be applied to the ten hour requirement).

A minor in chemistry shall consist of the successful completion of 24 hours of chemistry courses numbered 2000 and above including Chemistry 2140-49 (4 hours) and at least one of the following sequences: Chemistry 3211-3221-3231, 3219-3229 (or 3529-3329) (12 hours) or Chemistry 3410-3420-3430 (9 hours) or Chemistry 4910-4920-4930.

Freshman Sequences. The sequence which meets all requirements of a year of general chemistry is 1110-20-30. The 1510 and 1610 series have more limited applications. The 1510 series emphasizes organic and biochemistry and may be used as a prerequisite for 2230 and 3810. The 1610 series is for non-science majors.

It is possible to move from one sequence to another if permission for substitution is obtained in advance. For example, a student who finds that he needs to complete the 1110 series after having complete 1510 or 1610 may obtain permission to substitute either 1510 or 1610 for 1110. The student has approval of the Chemistry Department and then he may take 1120 followed by 1130. However, no quarter of the 1510 or 1610 sequences may be substituted for the 1110 which has been received for only one of the courses 1110, 1510 or 1610; and only one of 1520 or 1620.

In any chemistry course above the freshman level which has Chemistry 1110-20-30 as a prerequisite, 1510-20-30 may be used as a prerequisite with approval of the Chemistry Department.

Chemistry 1118-28-38 is an honors course designed for the student who has already made considerable progress in science. Selection is based on placement test scores and the high school chemistry grade. A grade of A or B in 1118 also gives credit for 1138 with the same grade. A student receiving a grade below B in 1118 will complete the year's work by taking 1120-30. A student receiving a grade of C or D in 1128 must take 132 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.

UNDERGRADUATE

1110-20 General Chemistry 4, 4, 4 General course of theoretical and descriptive chemistry. 1110—Modern atomic theory, chemical bonding, stoichiometry and quantitative treatment of gas laws. 1120—Quantitative aspects of solution chemistry. 1130—Kinetics, chemical equilibria, and thermochemistry. 1150—Descriptive chemistry of nonmetallic and metallic elements, electrochemistry, and formation and uses of organic and biochemistry. Must be taken in sequence. 3 hrs and 1 lab.

1118 Honors: General Chemistry 4 (See explanation above.) 3 hrs and 1 lab.

1128-38 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 (4) Aromatic compounds and biological chemistry. Prereq: 1410. 3 hrs and 1 lab.

1510-20-30 General Chemistry 4 (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, colloids, 1520—Acids and bases, oxidation and reduction, kinetics and equilibria. Introduction to organic chemistry, alkanes, unsaturated and aromatic hydrocarbons. 4350—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. Basic principles of chemistry relate to nature of substances, their structures and chemical changes. Must be taken in sequence. 3 hrs and 1 lab.

1630 Chemistry and Society 4 (4) The impact of chemistry on modern society, with selected topics in areas of geochemistry, biochemistry, organic chemistry, and radiochemistry. Prereq: 1 year of General Chemistry or 1620. 3 hrs and 1 lab.


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. For students taking 1 year of general chemistry. Not open to chemistry majors or minors.

3000 Searching the Chemical Literature 2 Use of abstracts, journals, reference, compendia, books, chemical journals and other sources of chemical knowledge.
information. 2 hrs. Open only to upper division chemistry majors and some others in the department by permission. Corresp. laboratory (3219-29-39) is coreq. for students not having credit for the laboratory.

3219-29-39 Organic Chemistry Laboratory (1, 1, 1) Experiments on topics discussed in 3211-21-31. Corresponding lecture (3211-21-31) is coreq. for students not having credit for the lecture.


3429-39 Physical Chemistry Laboratory (1, 1, 1) Gases, liquids, chemical equilibria, solutions, phase equilibria, reaction kinetics and electrochemistry. The corresponding courses (3420-39 and 3430-39) are corequisites.

3511-21-31 Principles of Organic Chemistry (3, 3, 3) Structure and reactivity of aliphatic and aromatic compounds emphasizing reactions of synthetic utility. Use of gas and liquid chromatographic techniques to elucidate reaction mechanisms. Recommended for chemistry majors and students planning careers in medical or biological sciences. Must be taken in sequence. Prereq: 1110-20-30. Corresponding laboratory: 3219-29-39 or 3219-3529. 3529 is a corequisite, latter is recommended.

3529-39 Organic Chemistry Laboratory (1, 1) Experiments on topics discussed in 3521-31. Similar to 3229-39 except designed for students who have need for operating knowledge of various spectroscopic and chromatographic techniques. Corresponding lecture (3521-31 or 3221-31) is a corequisite for students not having credit for the lecture.

3810 Radioactivity and Its Applications (3) Radioactive materials in tracer and therapeutic applications. Radioactive decay, detection apparatus and techniques, tracer procedures and safety precautions in agriculture, biology, medicine, nutrition, etc. Not for credit by chemistry or physics majors or minors. Prereq: Math 1550 or equivalent, 1 yr. of General Chemistry.


4119 Physical Chemistry Laboratory (1) Solutions, phase equilibria, reaction kinetics, and spectroscopy. The corresponding course 4110 is corequisite.

4160-70 Intermediate Physical Chemistry (3, 3) (Designed for entering graduate students who had one year of physical chemistry. (4160—The three laws of thermodynamics, phase equilibria and solutions, and chemical equilibria. 4170—Gases and kinetic theory, chemical kinetics, molecular spectroscopy, and introduction to chemical statistics.

4210 Advanced Analytical Chemistry (3) Chemical separations including chromatography, ion exchange and solvent extraction; spectrophotometric techniques. Prereq: 2140-40.

4219 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4210. Coreq: 4210.

4220 Advanced Analytical Chemistry (3) Electroanalytical methods of analyses (including potentiometry, coulometry, polarography and voltammetry); magnetic resonance methods; mass spectrometry; x-ray absorption and fluorescence techniques. Prereq: 2140-49, 3420 or 4620 recommended.

4229 Advanced Analytical Chemistry Laboratory (1) Experiments on topics discussed in 4220. Coreq: 4220.

4420 Physical Inorganic Chemistry (3) Theoretical concepts leading to an understanding of inorganic chemistry; quantum theory of the atom, principles of molecular structure, and elementary nuclear chemistry. Prereq: 3410-20-30, 4110.

4430 Intermediate Inorganic Chemistry (3) Application of theoretical concepts to inorganic elements, their chemical states, and their reactions. Prereq: 4420.

4510 Organic Qualitative Analysis (3) Identification of pure organic compounds and mixtures. Prereq: 3211-21-31, 3219-29-39 or 3219, 3529-39, 3 labs. (Not open to students who have completed 4610.)


4610-20 Advanced Chemical Experimentation (2, 2) Laboratory course in application of modern experimental techniques to solution of chemical problems. Synthesis and characterization of organic and inorganic compounds with emphasis on independent study using advanced techniques. Prereq: 3521-39 or 3521-3539. 3430-39, 4220. Students who receive credit for 4610 may not also receive credit for 4510.

4640 Electronics for Chemists (4) Electrons in design and construction of chemical instrumentation. 2 hrs and 2 labs. Prereq: Physics 2310.

4710-20-30 Research in Chemistry (2, 2, 2) Open to senior majors with permission of department head. Written report must be submitted to research director at termination of project.

4910-20 Biophysical Chemistry (3, 3, 3) Physical-chemical principles with applications to biological systems. Must be taken in sequence. Not open to students having 4910-20-30. 4910—Gas laws, first, second and third laws of thermodynamics; equilibria. 4920—Solution chemistry; electrochemistry; kinetics; nuclear chemistry. 4930—Elementary quantum chemistry; optical and magnetic spectroscopy; light scattering; macromolecular properties. Prereq: 1110-20-30. Math 1540-50 or equivalent.

4929-39 Biophysical Chemistry Laboratory (1, 1) Experiments on topics discussed in 4920-30-39. Must be taken in sequence. Not open to students taking 4910-20-30 sequence. 4920 is coreq or prereq for 4929. 4930 is coreq or prereq for 4939. 1 lab.

GRADUATE

Students majoring in chemistry for the M.S. or Ph.D. degree are required to present a prerequisite one year each of general, analytical, organic, and physical chemistry with a satisfactory record. Students lacking any of these prerequisites may be admitted with appropriate deficiencies which must be removed without graduate credit.

For students minorning in chemistry, the prerequisite is two years of chemistry including quantitative analysis.

The Master's Program

Master's degree requirements are found in the Graduate School Catalog.

The Doctoral Program

Doctoral degree requirements are found in the Graduate School Catalog. The department offers specialization in eight areas for the Ph.D. degree: 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)

5240 Electronics for Chemists (4)

5250-60-70 Advanced Analytical Chemistry (3, 3, 3) 5259-69-79 Advanced Analytical Chemistry Laboratory (1, 1, 1)

5280-90 Clinical Chemistry (3, 2)

5299 Clinical Chemistry Laboratory (1)

5310-20-30 Research in Chemistry (3, 3, 3) 5340-50-60 Quantum Chemistry (3, 3, 3) 5410-20-30 Advanced Physical Chemistry (3, 3, 3) 5440 Experimental Methods of Infrared and Raman Spectroscopy (3)

5450 Statistical Thermodynamics (3)

5460 Radiation Chemistry (3)

5480 Molecular Spectroscopy Laboratory (3)

5511 Survey of Inorganic Chemistry (3)

5521 Survey of Analytical Chemistry (3)

5531 Survey of Organic Chemistry (3)

5710-20-30 Theoretical Inorganic Chemistry (3, 3, 3) 5740 Advanced Inorganic Chemistry Laboratory (3)

5810 Nuclear Chemistry (3)

5911-21-31 Chemistry Seminar (1, 1, 1)

6000 Doctoral Research and Dissertation

6110 Stereochemistry (3)

6111 Selected Topics in Organic Chemistry (3)

6120 Carbohydrates (3)

6140 Heterocyclic Compounds (3)

6150 Theoretical Organic Chemistry (3)

6160 Physical Organic Chemistry (3)

6180 Alkaloids (3)

6190 Organic Compounds of Sulfur, Silicon and Metals (3)

6210 Topics in Analytical Chemistry (3)

6211 Selected Topics in Analytical Chemistry (3)

6311 Selected Topics in Polymer Chemistry (3)

6411 Selected Topics in Physical and Theoretical Chemistry (3)

6420 Nuclear Magnetic Resonance (3)

6430 Photochemistry (3)

6450 Electrochemistry (3)

6460 Catalytic Chemistry (3)

6480 Statistical Thermodynamics (3)

6510 Thermodynamics of Solutions (3)

6520 Magnetic Resonance (3)

6710 Crystal Chemistry (3)

6711 Selected Topics in Inorganic Chemistry (3)

6730 Topics in Quantum Chemistry (3)

6750 Molten Salt Chemistry (3)

6810 Vibrational Problems in Molecular Spectra (3)

6820 Molecular Vibration-Rotation Theory (3)

6811 Selected Topics in Nuclear Chemistry (3)
The Latin minor consists of 24 hours in language courses numbered above 2000 including Classics 4220. Six hours from the following general courses may be substituted: Classics 3210-20-30, 3310, 3320, 3330. Placement Examination: Students who transfer to The University of Tennessee from other colleges and students who enter with high school units in Latin should register for the course 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 their 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. Undergraduate A major in Greek consists of 39 hours of language courses numbered above 2000 but including Classics 4220. Nine hours from the following general courses may be substituted for language courses at the discretion of the department: Classics 3210-20, 3310-20, 4010. 4010 may be taken for a maximum of 6 hours. The Greek minor consists of 24 hours in language courses numbered above 2000 including Classics 4220. Six hours from the following general courses may be substituted: Classics 3210-20, 3310, 3320. 3330. Placement Examination: Students who transfer to The University of Tennessee from other colleges and students who enter with high school units in Latin should register for the course 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 their 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. Undergraduate A major in Latin consists of 39 hours in language courses numbered above 2000 but including Classics 4220. Nine hours from the following general courses may be substituted for language courses at the discretion of the department: Classics 3210-20-30, 3310, 3320, 3330. 4010 may be taken for a maximum of 6 hours. Greek language courses numbered above 2000 may be substituted for a maximum of 9 hours of Latin courses with permission of department.
3010 Computers and Society (3) History of computing, computer systems, capabilities of a computer, applications in artificial intelligence, humanities, social sciences, sciences and engineering, computing in foreign countries, computer assisted instruction, future advances in computing, careers in computers. Prereq: Permission of instructor.

3030 Introduction to Structured Programming (4) Intermediate computer programming. Use of general purpose language such as PL/1. Concept of structured programming. Prereq: 3 hrs in programming or permission 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. Prereq: Coreq: Math 2860. 2 lectures and 1 two-hour lab; 3150 and 3155 may not both be taken for credit; students with no knowledge of FORTRAN should take 3155. (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. Coreq: Math 2860. 3 lectures; 3150 and 3155 may not both be taken for credit; students with no knowledge of FORTRAN should take 3150. (Same as Math 3155).


3910 Computer Concepts and Control (3) Elements, operating, and control of computers in a business environment. Topics include input, storage, data manipulation, output, flowcharting, and error control. Prereq: 3410 and Accounting 2210.

4010 Discrete Structures and Logical Foundations of Computing (3) Sets, relations, ordering, Boolean algebra, propositional logic, functions and computable functions; graph theory and its applications to computer systems; set theoretic characterization of computing machines; formal languages and grammars. Prereq: 3150 or permission of instructor.

4020 Introduction to Algorithms, Languages, and Automata (3) Introduction to finite automata; effective processes in formal languages and grammars. Prereq: 4010 or equivalent.

4035-45 Introduction to Numerical Linear Algebra (3, 3) Floating-point numbers and arithmetic on modern digital computers; numerical algorithms for solving systems of linear equations; linear least-squares methods and eigenvalue computations. Prereq: 3150 or 3155. (Same as Math 4035-45).

4225-35 Introduction to Numerical Analysis (3, 3) (Same as Math 4225-35).

4310 Computation in Statistical Analysis (3) Use of digital computer in standard statistical analyses, such as frequency tabulations, percentiles and data reduction, correlation and regression, analyses of variance. Elementary programming in a problem-oriented scientific language, e.g., FORTRAN. Prereq: Statistics 2100 or equivalent. 3 lectures. Not for credit for persons who have credit for a computer course.

4320 File Maintenance and Data Processing (3) Applied computer programming. Error analysis of FORTRAN programs, overlay structures, maintenance of tape and direct access information storage files, use of utility programs, sort and merge. Not for credit as a major course. Prereq: one course in FORTRAN program.

4330 Special Problems in Applied Programming (3) Applied programming in area of students' primary interest using the digital computer. To be directed jointly by Computer Science faculty and students' faculty advisor(s). Oral and written reports. Prereq: 4320 or equivalent. 1-3 hrs. (Not for credit for Computer Science majors.) May be repeated for a maximum of nine hours credit.

4410 Computer Organization and Programming (3) Problem formulation and advanced programming in procedure oriented languages such as FORTRAN and PL/1 and operation of digital computers. Assumes knowledge of FORTRAN programming language. Prereq: 2010, 3150, or 3030 or permission of instructor.


4430 Computer Organization and Programming III (3) Computer organization and advanced programming. Machine language and design of computers representation of information, software system, input/output system, interpreters, macro assembler, other techniques and language speciations. Prereq: 4420 or equivalent.

4510 Data Structures and Nonnumerical Programming (3) Data structures and algorithms for their manipulation. Arrays and orthogonal lists; stacks, queues, rings, doubly-linked lists, trees, dynamic storage allocation; organization of files, programming languages for information structures. Prereq: 4420 or consent of instructor.

4510-20 Operating Systems (3, 3) Hardware interrupt systems and concurrence of input/output operations, simple input/output systems and program monitors, multiprocessing systems, memory management, protection, resource allocation and control, job management and task management, real time systems, time sharing systems, paging, virtual memory, schedulers, reliability, multiprocessing systems, graceful degradation, file management services, system accounting. Prereq: 4430.

4850 Small Computer Systems (3) (Same as Elec. Engr. 4850.)

4910 System Management (3) System analysis and design; system implementation; system justification; personnel in systems, perspective on systems. Prereq: 4420 and 4430.

4890-90 Special Studies in Computer Science (1-4) Credit determined at time of registration. May be repeated for credit to a maximum of 9 hours with permission of department. Prereq: recommendation of computer science staff.

GRADUATE

5000 Thesis

5010 Computer Assisted Instruction (3)

5050 Computer Modeling and Simulation of Physical Systems (3)

5210 Introduction to Artificial Intelligence (3)

5410 Theory of Formal Languages (3)

5420 Formal Languages and Their Relation to Automata (3)

5430 Compiler Design (3)

5455 Finite Difference Methods for Partial Differential Equations (3)

5485 Mathematical Aspects of the Finite Element Method (3)

5655-65-75 Numerical Mathematics (3, 3, 3)

5670-80 Advanced Operating Systems (3, 3)

5710-20 Automata Theory (3, 3)

5810 Information Organization and Retrieval (3)

5840-50 Introduction to Pattern Recognition (3, 3)

5910-20-30 Special Topics in Computer Science (1-3, 1-3, 1-3)

5940-50 Advanced Small Computer Systems (3, 3)

5970-80-90 Seminar (1-3, 1-3, 1-3)
Cultural Studies
Director: Dr. Charles Jackson

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, Black Studies, Greek and Roman Civilization, Latin American Studies, Medieval Studies, and Russian and East European Studies. Minors are provided in Asian Studies, Black Studies, Comparative Literature, Latin American Studies, Medieval Studies, and Women’s Studies.

American Studies (099)

History 2510-20 (or equivalent honors courses) is prerequisite to a concentration in American Studies which consists of 36 quarter hours: English 2010-20-30, 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 The American Character (3) Study of why and how Americans are as they are, drawing upon vast literature which deals with these questions.

4010 Topics in American Culture (3) Content varies. May be repeated once.

Asian Studies (145)

This concentration consists of 36 quarter-hours, including Asian Studies 2510-20 and at least eight hours from Asian Studies 3310-20-30. In addition to courses with Asian Studies numbers, courses from at least two other departments must be selected. The Asian Studies minor consists of 24 quarter-hours, including Asian Studies 2510-20 and at least four hours from Asian Studies 3310-20-30-40. Students completing the minor successfully will upon application to the program chairperson, be awarded the Asian Studies certificate in acknowledgement of the work. In addition to courses with Asian Studies numbers, courses from at least two other departments must be selected from the list below.

For further information consult the chairperson of the Asian Studies Committee, Dr. Stephen Young.

Anthropology:

3510 Peoples and Cultures of Mainland Asia (3)
4500 Peoples of China I: Chinese Society Before 1839 (3)
4510 Peoples of China II: Chinese Society After 1839 (3)
4570 Peoples of Southeast Asia (3)
4590 Peoples of Japan (3)

Art

3775-77 History of Oriental Art (4, 4, 4)
4875-76-77 Studies in Oriental Art History (4, 4, 4)

Geography:

3870 Geography of Asia (4)

History:

3810-20 History of East Asia (3, 3, 3)
3780-90 History of the Middle East I, II (3, 3)
3795 Contemporary Middle East (4)
4811-21 History of Japan I, II (4, 4)
4870 Cultural History of China (3)
4880 History of Modern China (3)
4890 History of Contemporary China (3)

Music:

4260 Introduction to Ethnomusicology (3)

Political Science:

3821-22 Politics of Asian States (4, 4)
3641-42 Government and Politics of Middle East and North Africa (4, 4)

Philosophy-Religious Studies:

3860 World Religions (4)
3850 Philosophy and Religion in India (4)
3660 Buddhist Philosophy and Religion (4)

Religion and Philosophy in China and Japan (4)

Religious Studies:

3680 Islam (4)
3760 Eastern Religions and Western Thought (3)
3770 Zen Buddhism (3)
4670 Topics in Eastern Religions (4)
4740-50-60 Elementary Sanskrit (3, 3, 3)
3770-80 Classical Sanskrit (3, 3, 3)
4960 Transition, Change and Modernity in Asia (4)

Romance Languages

Arabic:

1510-20 Spoken Arabic (4, 4)
2510-20 Elementary Modern Standard (4, 4)
3510-20 Intermediate Modern Standard (4, 4)
3610 Islamic Literature in English Translation (4)

2510-20 Asian Civilization (4, 4) Introduction to Asian civilization by comparative study of development of religion, social institutions, and high culture in India, China, Japan and the Islamic world. 2510-20-40 classical civilizations 2520-traditional cultures and their modern developments.

2531-32 Elementary Chinese (4, 4) Must be taken in sequence.

2631-32 Elementary Japanese (4, 4) Must be taken in sequence.

3000 Selected Topics in Asian Studies (4)

3310-20-30-40 Asian Cultures (4, 4, 4, 4) Readings in translation from classical and modern literature togethner with study of religion/philosophy, society, art and music, 3310-India, 3320-China, 3330-Japan, 3340-Islam.

3531-32 Intermediate Chinese (4, 4) Prereq: 1521-22 or equivalent or permission of instructor. Must be taken in sequence.

3631-32 Intermediate Japanese (4, 4) Prereq: 2621-22 or equivalent or permission of instructor. Must be taken in sequence.


Black Studies (195)

The Black Studies concentration and minor offer in-class, independent, and off-campus study to foster knowledge of the Black experience through a traditional academic approach as well as experiential learning.

Concentration: History 1950-60 is prerequisite to a Black Studies concentration which consists of Black Studies 2010-20, Black Studies 4200, and 24 additional hours at the upper division level taken from the courses in the Black Studies curriculum. In addition to courses with Black Studies numbers, courses from at least two other departments must be selected from the list below.

Minor: Black Studies 2010-20 and 16 additional hours at the upper division level taken from the courses in the Black Studies curriculum. In addition to courses with Black Studies numbers, courses from at least two other departments must be selected from the list below.

For further information consult the chairman of the Black Studies Committee, Mr. Marvin Peek.

2010-20 Introduction to Black Studies (4, 4)
3330 Prejudice and Racism in the United States (4) (Same as Sociology 3330).
3340 Sociology of Poverty and Inequality (4) (Same as Sociology 3340).
3490 African Religions (4) (Same as Religious Studies and Anthropology 3490).
3550 Religion and Racism in America (4) (Same as Religious Studies 3550).
3560 Black Religion in America (4) (Same as Religious Studies 3560).

3630-40 The Education of Black People (4, 4) Sequence will trace and analyze and interpret educational systems established for and by Blacks. Special emphasis will be given to colonial experience and the Washington-DuBois controversy in 1960. 3630-40 will deal with present urban educational problems of Blacks. Recent proposed remedies and solutions as integration, compensatory programs, decentralization, voucher systems, Black Studies and Freedom Schools will be discussed. 2010-20, History 1950-60 recommended. Prereq: consent of instructor.

4101 Foregin Study (1-16) See page 167.
4102 Off-Campus Study (1-16) See page 167.
4103 Independent Study (1-16) See page 167.

4200 Senior Seminar on Pan-Africanism (4) Explores concepts and philosophers of Pan-Africanism and implication of this ideology for various societal institutions.

4310 Research in Black Studies (4) Deals with Black experience and research process.

4500 Current Issues and Topics in Black Studies (3, 4) Problems, topics and issues in area of Black Studies. Content and credit determined by instructor. May be repeated. Maximum credit 12 hours.
4810 Afro-American Families (3) (Same as Child and Family Studies 4810).
4880 Afro-American Psychology (4) (Same as Psychology 4880).

Anthropology 3530 Peoples and Cultures of Africa (3)
Anthropology 3930 Biology of the Races of Man (3)
Art 2725 Black Art (4)
CFS 4310 The Afro-American Family (3)

English 2540 The Literature of Black America (4)

English 4610-20-30 Black Literature (3, 3, 3)

Geography 3830 Geography of Africa (3)

History 1950-60 Afro-American History: An Introduction (4, 4)

History 2950 Introduction to Afro-American History (3)

History 4950-60 The Negro in American History (3, 3)

Music 3350 Introduction to Afro-American Music (4)
Music 4270 Evolution of Jazz (3)
Political Science 3615-16 Black Africa: The Politics of Change and Stability (4, 4)
Political Science 3555 Minority Group Politics in the U.S. (4)
Psychology 4880 Afro-American Psychology (4)
Religious Studies 3550 Religion and Racism in America (4)
Religious Studies 3560 Black Religion in America (4)
Sociology 3330 Race, Class, and Power (4)
Sociology 3340 Sociology of Poverty and Inequality (4)
Sociology 4820 African American Minority Ethnic Groups (4)
Speech 4582 Black Rhetoric (4)

Recommendations for the concentration and the minor:
1. Those with a concentration in Black Studies are encouraged to take a second major, with which an individually designed program in Black Studies can be correlated.
2. Students should seek academic advising from the Chair of Black Studies, which relate to career plans, preparation for graduate study, and relationship to the second major.
3. Those with a concentration and a minor are strongly encouraged to combine classroom and experiential learning through a carefully selected section of courses, e.g. Human Services 4400 and/or Black Studies 4102.

Comparative Literature (260)
This Cultural Studies minor consists of 24 hours of work including Comparative Literature 3010, Classics 4010, Classics 4510, and 15 hours in literature courses numbered above 3000 in at least two literatures. Foreign language majors may take these 15 hours in literature in translation, but all others must take these 15 hours in a foreign language above the 3000 level. In addition to the courses listed below and literature courses offered by the participating language departments, certain courses in the departments of Philosophy, Religious Studies, and Speech and Theatre may be accepted by the Comparative Literature Committee towards the minor.

For further information, consult the chairperson of the Comparative Literature Committee, Dr. Harry C. Rutledge.

3010 Introduction to Comparative Literature (3)
Basic knowledge, techniques, and sources necessary to compare literatures of various cultures, ages, and nations. Required of all minors.

4012-22-32 Special Topics in Comparative Literature (3, 3, 3) Content varies; may be repeated for credit.

5012 Comparative Theories of Literature (3)
5022 Approaches in Comparative Literature (3)
5032 Studies in Comparative Literature (3)
Classics 3210-20-30 Greek and Roman Mythology (3, 3, 3)
Classics 4010 Greek Drama in English Translation (3)
Classics 4510 Selected Reading in Latin Literature in Translation (3)
English 3710 Literature of the English Bible (3)
English 3910-20-30-40 Comparative Literature (3, 3, 3, 3)
English 4720 Folklore (3)
English 4730 Popular Ballad (3)
English 4950 Approaches to Literature (3)
English 5860 Introduction to Literary Research (3)
German 3210-20-30 Masterpieces of German Literature in English Translation (3, 3, 3)
German 4030 German Drama in English Translation (3)
German 4040 The Modern German Novel in English Translation (3)
German 4050 The Faust Legend (3)
Russian 3210-20-30 Survey of Russian Literature in English Translation (3, 3, 3)
Romance Languages 4010 Masterpieces of French Literature in English Translation (3)
Romance Languages 4020 Masterpieces of French Drama in English Translation (3)
Romance Languages 4030 Masterpieces of Spanish Literature in English Translation (3)
Romance Languages 4040 Masterpieces of Spanish Drama in English Translation (3)
Romance Languages 4050-60-70 Dante and Medieval Culture (3, 3, 3)

Greek and Roman Civilization
The Greek and Roman Civilization concentration consists of Classics 2810 and 2820 and 30 hours from courses numbered above 3000. Students are encouraged to satisfy the Triad requirement in language, literature and the arts with either Greek or Latin in either Option 1 or Option 2. The following courses are required in this concentration: Classics 4010 and 4510; 9 hours from Classics 3210-20-30, 3310-20-30. For no more than 6 of these 15 hours students may substitute courses numbered above 3000 in Greek and should either form a related pattern (for example, courses in the literature and history of Medieval England or Italy, etc.) or should revolve around a particular disciplinary related disciplines (for example, courses in the History of Art and Architecture). A minor in Medieval Studies consists of Medieval Studies 2010 and 4010 and 16 additional hours distributed among the categories listed above for the major concentration. Each student’s program, major or minor, must be approved in advance by the Medieval Studies Coordinating Committee, chairperson Sarah Blandshei, 1113 McClung Tower.

It is strongly recommended that students selecting the Medieval Studies concentration choose a foreign language option for the Triad requirement (Latin and Spanish, or Medieval Latin and English). Latin is the most appropriate language for students and is essential for those who plan to continue their studies in graduate school. In addition, students planning to go on to graduate school are strongly advised to supplement their Medieval Studies concentration with extensive work in one of the traditional disciplines.

Latin American Studies (600)
Concentration consists of 36 hours including Spanish 3710-20 or Portuguese 3510-20, History 3870-80-90, Political Science 3625-26, and Geography 3800 or 3790 and 7 hours of acceptable elective courses in any of the participating departments or in the Latin American Studies sequence 2510-20 (4, 4) or Independent Research 4010.
Two years of Spanish or Portuguese or a practical working knowledge acquired independently are a prerequisite.

Minor: Consists of 24 quarter hours selected from Geography 3800 or 3790.
Category #1

History, Philosophy, Political Science and Religious Studies.

History 3061 History of Western Religious Thought and Institutions (4)

History 3411 Renaissance (3)

History 3710 History of Germany (3)

History 3780 History of the Middle East (3)

History 4011 European History Colloquium (3) (when subject is part of medieval culture and society)

History 4500 History of Medieval England (3)

History 4710-20-30 Medieval History (3, 3, 3)

Philo 4430 Medieval Philosophy (4)

Political Science 3802 Studies in Political Thought (4)

Religious Studies 3061 History of Western Religious Thought and Institutions (4)

Religious Studies 3411 Renaissance and Reformation (3)

Religious Studies 4610 Topics in Western Religious Thought and Institutions (4) (when subject is part of medieval culture and society)

Category #2 Language and Literature

Class 4310 Selected Reading from Latin Literature (3) (readings in Latin)

Comparative Literature 4012-22-32 Special Topics in Comparative Literature (3, 3, 3) (when subject is part of medieval culture and society)

Comparative Literature 4050-60-70 Dante and Medieval Culture (3, 3, 3)

English 4410 Introduction to Study of English Language (3) (no language requirement)

English 4420 History of English Language (3) (no prerequisites)

English 4910-20 Chaucer (3, 3) (readings in Middle English)

French 4350-60-70 Medieval French Literature (3, 3, 3) (readings in French)

French 4410 French Civilization (3) (readings in French)

French 3210 French Literature in English Translation (3)

German 4310 History of German Language (3) (readings in German)

German 3210 German Literature in English Translation (3-4)

German 3240 Old Norse Language in English Translation (3)

Italian 4050-60-70 Dante and Medieval Culture (3, 3, 3) (readings in English or Italian)

Italian 4330 History of Italian Language (readings in Italian) (3)

Italian 4010 Italian Drama in English Translation (or in Italian) (3)

Spanish 4050-60-70 Hispano-Arabic Literature and Culture (in English Translation) (3, 3, 3)

Category #3 The Arts

Architecture 3320 Medieval and Byzantine Architecture (3)

Architecture 4010 Special Problems in Architecture (when subject is part of medieval culture and society, e.g. Gothic and Scholasticism) (1-8)

Architecture 4390 Seminar in Medieval Architecture (3)

Art 2735 History of Medieval Art (4)

Art 3715 Early Italian Renaissance Art, 1300-1500 (4)

Art 3705 Northern European Painting, 1350-1600 (4)

Music 4200 Independent Study in Music History and Literature (when subject is part of medieval culture and society) (1-3)

Music 4280 The Mass to 1600 (3)

Music 4290 Gregorian Chant (3)

Theater 3252 History of the Theater (4)

Russian and East European Studies (887)

There are two approaches for the student to take in designing a program with a concentration in Russian and East European Studies:

Track I is designed for students whose major interest is in a career in the academic world or in some branch of government service. Prerequisites to this track are Russian 2510-20 and 2640-50. The track consists of Economics 4000: Geography 3880; six hours from History 3470-80-90, 4470, 4480, and 4490; Political Science 4815 and four hours from Political Science 3631-32, 3715; Russian 3110-20-30 or 3810-20-30; and six hours from Russian 3210-20-21-30, 3240, 3250, 3260.

Track II is designed for students whose major interest is in a career in the world of international business and/or finance specifically oriented toward trade with the Soviet Union and Eastern Europe. Prerequisites to this track are Russian 2510-20 and 2640-50. The track consists of Economics 3210, 4000, and 4230; three hours from History 3470-80-90 and three hours from History 4480, 4490, or Geography 3880; Political Science 4815 and four hours from 3631-32, 3715; Russian 3110-20-30 or 3810-20-30; Marketing 4230; and Finance 4420.

For further information, consult the chairman of the Russian and East European Studies Committee, Dr. Martin Rice.

4010 Selected Topics in Russian and East European Studies (3) An interdisciplinary seminar on a selected topic using a comparative approach.

Women's Studies (594)

Minor: Consists of Women's Studies 2010-20 and 16 hours of appropriate courses numbered 3000 or above. Supporting courses are drawn from several departments and colleges on the UTK campus. A list of available courses will be published annually by the Women's Studies Committee. For further information consult the chairperson of Women's Studies, Dr. Suzanne Kurth.

2010-20 Women's Studies (4, 4) Explores basic knowledge and sources necessary to understand current and past societal experiences of women. 2010 utilizes perspective of humanities; 2020 employs that of social sciences.

Cultural Studies (265)

UNDERGRADUATE

4000 Selected Interdisciplinary Cultural Topics (1-12) Acceptable for credit in any Cultural Studies concentration or minor with the permission of the Director of Cultural Studies and the respective chairperson. May be repeated for credit up to a maximum of 12 hours.

4101 Foreign Study (1-16) Acceptable for credit in any Cultural Studies concentration or minor except Black Studies. Registration by consent of Director of Cultural Studies and the respective chairperson. See page 167.

4102 Off-Campus Study (1-16) Acceptable for credit in any Cultural Studies concentration or minor except Black Studies. Registration by consent of Director of Cultural Studies and the respective chairperson. See page 167.

4103 Independent Study (1-16) Acceptable for credit in any Cultural Studies concentration or minor except Black Studies. Registration by consent of Director of Cultural Studies and the respective chairperson. See page 167.

GRADUATE

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

Ecology (278)

J. Frank McCormick, Director.


The Graduate Program in Ecology offers Master of Science and the Doctor of Philosophy degrees. This interdepartmental program provides advanced courses in contemporary ecology for students from undergraduate programs in basic and applied biology, social sciences, mathematics and engineering. Research opportunities in both fundamental and applied ecology are intended to prepare students for academic careers as well as professional positions in industry or government. The Environmental Sciences Division of the Oak Ridge National Laboratory and the Tennessee Valley Authority provide advisors and research facilities. The Great Smoky Mountains, Cumberland Plateau, valley and ridge topography, TVA lakes and wild rivers provide locally a spectrum of natural habitats and consequent biological diversity which is truly unique. In addition, faculty research...
programs provide opportunities for student research elsewhere on this continent and abroad.

ADMISSION

Requirements for admission to the program are: (1) admission to the Graduate School of The University of Tennessee; (2) at least 12 quarter hours of college chemistry, 9 quarter hours of college mathematics, and 4 quarter hours of ecology at the upper division level. Candidates for the doctoral degree are expected to take the Graduate Record Examination.

Application forms for admission should be obtained from the Graduate School. Inquiries concerning the admission requirements should be addressed to the Director, Graduate Program in Ecology, 408 10th Street, University of Tennessee, Knoxville, Tennessee 37916.

COURSES ACCEPTABLE IN PROGRAM

Agricultural Biology
4010 Biology of Soil Microorganisms (4)
4510 Freshwater Fishery Biology (4)
4520 Management of Lakes and Ponds (4)
Botany
4310 Plant Ecology (4)
5340 Plant Geography (4)
5350 Analysis of Plant Communities (4)
5510-20-30 Systems Ecology (3, 3, 3)
5830 Field Methods in Plant Ecology (4)
Ecology
5000 Thesis
5100 Special Problems in Ecology (1-3)
5210-20-30 Principles of Ecology (2, 2, 2)
5310 Ecology for Planners and Engineers (3)
5320 Implementation of Environmental Policy (3)
6000 Doctoral Research and Dissertation
6100 Special Topics in Ecology (3)
6110 Seminar in Animal Behavior (2)
6120 Seminar in Aquatic Ecology (2)
6130 Seminar in Physiological Ecology (2)
6140 Seminar in Community Ecology (2)
6150 Seminar in Radiation Ecology (2)
6160 Seminar in Systems Ecology (2)
Economics
4260 Economics of Resources (3)
4700 Air Pollution-Air Resources Management (3)
Forestry
4005 Forest Ecosystems (3)
4450 Game Mammals (4)
4460 Game Birds (4)
5210 Seminar in Wildlife Conservation (3)
5220 Seminar in Forest Tree Biology (3)
5240 Seminar in Forest Genetics (3)
Geography
5610 Selected Topics in Climatology (4)
Geology
5290 Quaternary Problems (4)

Plant and Soil Science
4320 Soil Formation, Morphology, and Classification (4)
5240 Soil Productivity and Management (3)
5250 Pedology (4)
5810 Crop Climatology (4)
5820 Advanced Crop Physiology and Ecology (4)
Psychology
5750 Ethological Psychology (3)
Zoology
4240 Animal Ecology (4)
4660-70 Limnology (4, 4)
5570 Animal Populations (3)
5850 Insect Aecology (4)
5860 Geographic Distribution of Animals (4)
5870 Insect Systematics (4)

Economics (283)

See Faculty list, page 75.

Economics courses offered in the Department of Economics of the College of Business Administration provide opportunity for a major or minor in Liberal Arts. See page 75 for description of the courses available.

Information regarding requirements for a major or minor in Economics under the revised B.A. curriculum may be obtained in the departmental office or in the Liberal Arts Advising Center, 220 Ayres Hall.

Latin American Studies. See Cultural Studies.

Russian and East European Studies. See Cultural Studies.

English (339)

Professors:

Associate Professors:

Assistant Professors:
J.M. Armstrong, Ph.D. Duke; L.H. Burghardt, Ph.D. Chicago; D.R. Cox, Ph.D. Missouri; B.J. Gaines, Ph.D. Wisconsin; R.T. Goode, Ph.D. Texas; D.F. Gostee, Ph.D. Yale; N.M. Gostee, Ph.D. Yale; J.A. Koger, Ph.D. Rice; M.P. Richards, Ph.D. Wisconsin; F.K. Robinson, Ph.D. Texas.

Instructors:
P.S. Adams, M.A. Tennessee; E.D. Badgett, M.A. Tennessee; E.W. Bare, M.A. East Tennessee State; S.A. Bryan, M.A. Tennessee; B. Counihan, M.A. Marquette; D.M. Craven, Ph.D. Tennessee; W.J. Curtis, B.S. Tennessee; S.M. Eichelman, M.A. Tennessee; K.S. Feinrick, M.S. Columbia; L.B. Ferrell, M.A. Mississippi State; L.F. Fuller, M.A. Tennessee; P.G. Hammon, M.S. Tennessee; T.J.A. Heflman, M.A. New York; C.M. Hoffmann, M.A. Iowa; J.C. Isenhour, M.A. Tennessee; G.C. Johnson, M.A. Illinois; N.V. Lee,
D. Advanced Writing: 3450, 3460, 3470, 3830, 4960. 
Minor: 24 hours, including at least 18 at the upper-division level.

American Studies. See Cultural Studies
Comparative Literature. See Cultural Studies.

Certification for Teaching English and Speech in Tennessee
Consult Certification Clerk, Room 212, Claxton Education Building.

General Prerequisites
English 1510-20 or equivalent are prerequisite to all English courses numbered above 2000.
Note: English 1510-20 and English 1518-28 are offered on a grade system of A, B, C- No Credit.

1111 Written and Oral English for Foreign Students
(6) Rapid review of English grammar structures and pronunciation with intensive oral and written drill. Required during the first quarter of residence of all foreign students (graduates, undergraduates, and transfer students) who are not excused from it on basis of English Proficiency Examination required of every new foreign student. Meets 10 hours a week.

1112 Written and Oral English for Foreign Students'
(3) Emphasis on more advanced structures of English grammar and on paragraph writing. Required during first quarter of residence of foreign students who pass English Proficiency Examination demonstrate need for work in English structure, but not at intensive level of English 1111. Meets 5 hours a week.

1121 English Composition for Foreign Students(3)
Comprehensive reading and writing for students whose native language is not English. Emphasis on organization, paragraphing and theme structure, with attention to grammar and mechanics. Open to graduate students. Prereq: 1112 or recommendation based on English Proficiency Examination.

1131 English Composition for Foreign Students(3)
Typical writing problems encountered by foreign undergraduate and graduate students, with attention to library research and to writing of research papers. Open to graduate students. Prereq: 1121 or recommendation based on English Proficiency Examination.

1510-20 English Composition (4, 4)
Writing, revising, conferences; intensive reading for meaning and ways of expressing meaning. 1510—Writing with emphasis on organization, paragraph structure, style; attention to grammar and mechanics. 1520—Writing based on reading of literature; use of library and preparation of documented papers. Must be taken in sequence. A, B, C, No Credit grading.

1518-28 Honors: English Composition (4, 4) For students selected on basis of placement scores and high school record. Must be taken in sequence. A, B, C, No Credit grading.

1550 Research Writing (2) Use of library, forms of documentation, preparation of research paper. Prereq: English 1510-20 or the equivalent.

2150 Colloquium for English Majors (3) Introduction to methods and objectives of literary study; conferences to plan student's program in major.

2510-20 English Masterpieces (4, 4) 2510—To the mid-eighteenth century. 2520—Since the mid-eighteenth century.

2530 American Masterpieces (4)

2540 The Literature of Black America (4) Poetry, fiction, drama; emphasis on twentieth century.

2560-70-80 Literature of the Western World (4, 4, 4) 2560—Ancient and medieval. 2570—Renaissance through the eighteenth century. 2580—Nineteenth and twentieth centuries.

2590 Special Topics (4) Content varies. Each section will deal with specific topic as it is embodied in works from several historical periods and literary genres. Topics will be announced.

2640-50 English Culture (4, 4) 2640—Beginnings to the late eighteenth century. 2650—From the late eighteenth century to the present.

2660 Introduction to Drama (4) Study of selected plays to provide critical techniques necessary for understanding of drama.

2670 Introduction to Poetry (4) Study of selected poems to provide critical techniques necessary for reading of different types of poetry.

2680 Introduction to the Novel (4) Study of selected novels to provide critical tools necessary for judging longer works of fiction.

3010-20-30 American Literature (3, 3, 3) 3010—John Smith through Poe. 3020—Emerson through Mark Twain. 3030—Henry James to present.

3070 Modern British Poetry (3) From Housman to Thomas and more-recent poets.

3080 Modern American Poetry (3) From Robinson to Stevens and more-recent poets.


3150 Melville (3)

3160 The Short Story (3) British and Continental European, with emphasis on Twentieth Century.

3170 The American Short Story (3) From nineteenth-century beginnings to present, emphasis on twentieth century.


3310 Women Writers in England and America (3) Emphasis upon the literary consciousness of women in the nineteenth and twentieth centuries.

3330 Introduction to Study of English Language (3)

3340 Varieties of English (3) Theories, methodologies, and findings of English and American dialectology.

3411-12-20-30 Modern Drama (3, 3, 3, 3) 3411—Continental to 1930. 3412—Continental since 1930.

3420—British. 3430—American. (Graduate credit normally limited to students in Speech and Theatre.)

3440 Literature and Film (3) Aesthetic relationships, emphasis upon media comparison.

3450 Writing of Fiction (3) Practice based upon analysis of modern fiction. (Sophomores admitted with instructor’s written permission.)

3460 Advanced Fiction-Writing (3) Prereq: English 3450 and permission of instructor.

3470 Writing of Poetry (3) Practice based upon analysis of poetry.

3510 Sixteenth-Century Prose and Poetry (3) More and Wyatt to Spenser.

3520 Elizabethan Drama (3) Marlowe, Jonson, and others.

3530 Jacobean Drama (3) Beaumont and Fletcher to Massinger and Shirley.

3610 Restoration and Eighteenth Century Poetry (3) Emphasis upon Dryden and Pope.

3620 Restoration and Eighteenth-Century Drama (3) Dryden through Sheridan.

3630 Restoration and Eighteenth-Century Prose (3) Defoe, Addison, Steele, Swift, and others.

3670 Age of Johnson (3)

3710 Literature of the English Bible (3) Same as Religious Studies 3710.

3830 Expository Writing (3) Practice based upon analysis of modern essays. (Not offered for graduate credit. Sophomores admitted with instructor’s written permission.)

3910-20-30 Comparative Literature (3, 3, 3) 3910—Ancient. 3920—Medieval and Renaissance. 3930—Modern.

3940 Novel of the Contemporary Western World (3) Proust, Joyce, Mann, and others.

4010-20 Shakespeare (3, 3) 4010—Early plays, c. 1590-1601, including I Henry IV, Twelfth Night, and Hamlet. 4020—Later plays, 1601-1613, with emphasis upon tragedies and dramatic romances.

4050-60 American Novel (3, 3, 3) 4050—From earliest sentimental novels through Brown, Cooper, and Kennedy, and major figures to 1875. 4060—Henry James and Mark Twain through early works of Faulkner and Hemingway.
5210-20-30 Readings in American Literature from Colonial Period to Present (3, 3, 3)
5410-20-30 Readings in Middle English Literature (3, 3, 3)
5510-20-30 Readings in Literary Criticism from Plato and Aristotle to Present (3, 3, 3)
5610-20-30 Readings in English Literature of Nineteenth Century (3, 3, 3)
5710-20-30 Readings in English Literature of Eighteenth Century (3, 3, 3)
5810-20-30 Readings in English Literature of Renaissance (3, 3, 3)
5860 Introduction to Literary Research (3)
5910-20-30 Readings in English and American Literature of Twentieth Century (3, 3, 3)
6000 Doctoral Research and Dissertation
6110-20-30 Studies in Elizabethan Literature (3, 3, 3)
6150 Old English Poetry (3, 3)
6160 Beowulf (3)
6170 Studies in Middle English (3)
6181-82-83 Studies in the English Language (3, 3, 3)
6210-20-30 Studies in American Literature (3, 3, 3)
6241 Studies in Colonial American Literature (3)
6242 Studies in Colonial American Literature (3)
6270-80 Studies in American Fiction (3, 3)
6310-20-30 Studies in Victorian Literature (3, 3, 3)
6410-20-30 Studies in Chaucer (3, 3, 3)
6510-20-30 Studies in Spenser and Milton (3, 3, 3)
6610-20-30 Studies in English Romanticism (3, 3, 3)
6710-20-30 Studies in Eighteenth-Century Literature (3, 3, 3)
6810-20-30 Studies in Drama and Theatre (3, 3, 3)
6910-20-30 Studies in Twentieth-Century Literature (3, 3, 3)

French

See Romance Languages

Geography (415)

Professors: E.H. Hammond (Head) Ph.D. California (Berkeley); S.R. Jumper, Ph.D. Tennessee; R.G. Long, Ph.D. Northwestern; T.H. Schumude, Ph.D. Wisconsin.

Associate Professors: C.S. Allen, Ph.D. Georgia; L.W. Brinkman, Jr., Ph.D. Wisconsin; J.B. Rehder, Ph.D. Louisiana State.

Assistant Professors: T.L. Bell, Ph.D. Iowa; J.R. Carter, Ph.D. Georgia; W.N. Cherrry, M.S. Tennessee.

UNDERGRADUATE

Major: Eight hours in courses numbered at the 1000- or 2000-level are recommended as an introduction to a major which consists of Geography 4100, 4210, 4710 and 4990, and an additional 24 hours selected from courses at the 3000- and 4000-level. At least one course must be selected from each of groups A, B, C, and D below:

A. Physical Geography: 3520, 3530, 4550
B. Economic Geography: 3410, 3430, 3490, 4610, 4630
C. Cultural Geography: 3450, 3610, 3660, 4240
D. Regional Geography: 3790, 3800, 3810, 3840, 3870, 3880, 3910, 3920, 3930
Geological Sciences

Proфессоры:
G. Briggs (Head), Ph.D. Wisconsin; H.J. Klepser, Ph.D. Ohio State; O.C. Kopp, Ph.D. Columbia; H.E. McCullough, Ph.D. Tennessee; R.M. Perlis, Ph.D. Michigan; D.H. Roeder, Ph.D. Goethe University (Germany); J.G. Waits, Ph.D. North Carolina.

Ассоциированные профессоры:

Ассистенты профессоров:
D.W. Byerly, Ph.D. Tennessee; K.C. Misra, Ph.D. Western Ontario; J.H. Rule, Ph.D. Missouri; W.P. Stauble, Ph.D. Iowa State.

1On leave.

Департамент геологии предлагает подготовку для (1) тех, кто планирует карьеру как профессионал в геологию, индустрии, федеральном и штатном исследовании, образовании или других сфер, которые используются естественными науками; и (2) тех, кто ищет общий геологический и его отношения к другим наукам, инженерии, бизнесу, юристу, и другим областям.

Мажорные требования, представленные ниже, предназначены для подготовки геологов, с использованием общих курсов. В широком диапазоне изучаются основные геологические дисциплины.

1Mathematics 1400-50 has prerequisites of 1 or 2 of the following: Mathematics 1400; Mathematics 1400-50; or an appropriate placement test. Mathematics 1400-50 is recommended for students who plan to take Mathematics 1400 or Mathematics 1400-50 prior to enrollment in Mathematics 1400-50. Consult Mathematics section of catalog or the Department of Mathematics for details.

Geology (424)
1000 Frontiers in Earth and Planetary Sciences (4)
Recent developments in earth science of interest to the public. Designated as a non-major; treats popular topics such as discoveries on moon, exploration by Apollo missions, earthquake prediction, and drifting of continents.
1510 Geoscience I (4) Introduction to study of the earth with emphasis upon its materials and processes which change it. 3 hrs and 1 2-hr lab or field period. Prereq: 1510. 3 hrs and 1 2-hr lab or field period.

1520 Geoscience II (4) Continuation of Geoscience I emphasizing changes of the earth and its inhabitants throughout time. Prereq: 1510. 3 hrs and 1 2-hr lab or field period.

1810-20 Introductory Geology (4, 4) Introductory course emphasizing geologic principles and methods of study. 1810-18, its materials and processes that change it. 1820-Origin and development of land forms. Prereq: 1820. 3 hrs and 1 2-hr lab or field period.

2130 Geological History of the Earth (4) Origin and evolution of continents, atmosphere, oceans and earth's inhabitants with emphasis on physical history of North America. Prereq: 1520. 3 hrs and 1 2-hr lab or field period.

2210 History of Life on Earth (4) Chronological account of origin and evolution of life, environment, and societal patterns. Not intended for Geology majors. 3 hrs and 1 lab or field period.


2610 Introductory Geology for Engineers (3) Materials and structure of the earth. For College of Engineering students only. 2 lectures and 1 lab or field period.

2710 Introductory Oceanography (4) Introduction to study of oceans including origin and development of ocean basins and physical and biological processes within ocean basins and their contained water and sediment masses. 1510 or 1810 recommended.

3160 Introduction to Earth Materials (4) Introduction to the physical characteristics of soils. Includes hand specimen and analytical methods of identification of important rock-forming and economic minerals. Includes soil types. Prereq: 1510. 2 lectures and 2 labs.

3180 Mineralogy (4) Classification and identification of silicate and non-silicate minerals. Minerals as phases in natural systems. Laboratory includes hand specimen, chemical and x-ray methods of identification. Prereq: 3160; Chemistry 1110-20 or equivalent. 2 lectures and 2 labs.

3210-20 Invertebrate Paleontology (4, 4) Systematic review of important invertebrate fossil groups. 3210-10 Invertebrate Paleontology, 10:10 A and B (2 credits). 3220—Phylum Echinodermata, 3230—Phylum Chordata, 3240—Phylum Mollusca, 3250—Phylum Arthropoda. Preq: 3260; Biology 1210-20 or permission of instructor. 3 hrs and 1 lab or field period.

3250 Micropaleontology (4) Micropaleocharms of animals and plants with special emphasis on stratigraphically important groups. Preq: 3210 or permission of instructor. 3 hrs and 1 lab.

3260 Paleobiology (4) Introduction to principles and methods of paleontology as applied to interpretation of earth history. Prereq: 1520; Biology 1210-20, or permission of instructor. 3 lectures and 1 lab or field period.

3270 Geological History of Land Organisms (4) Geologic history and development of terrestrial biota and ecosystem with special emphasis on fossil record of land plants. Prereq: Biology 1210-20 or permission of instructor. 3 lectures and 1 lab or field period.

3290 Physical and Biological Quaternary Environment of Human Evolution (4) Exposition of physical and biological Quaternary environment with humanity, stressing important effects on landscapes and biota that influence humans today. 2 lectures and 2 hrs lab or field period.

3310 Lithology (4) Classification and properties of igneous, metamorphic and sedimentary rocks. Laboratory includes both hand specimen and microscope study of important rock types. Preq: 3180; 3180 strongly recommended. 2 lectures and 2 labs.

3330 Geology of East Tennessee (4) Lectures and field excursions. Prereq: 12 quarters of geology and permission of instructor.

3360 Stratigraphy-Sedimentation (4) Introductory study of stratigraphic principles and practices and of sedimentary processes and interpretation of depositional environments. Prereq: 1520 and 3160. 3 hrs and 1 lab or field period.

3370 Structural Geology (4) Introductory discussion of structures such as folds, faults, joints, cleavage, and primary structures. Laboratory work includes depth and thickness problems, interpretation of structure sections, structure contour maps, etc. Prereq: 1520; Mathematics 1840-50 or equivalent. 3 hrs and 1 lab.

3310 Principles of Ground Water Geology (3) Geologic materials and processes affecting the occurrence and behavior of water. Not open to geology majors. 2 lectures and 1 lab. (Same as WRD 3410.)

3510 Introductory Environmental Geology (4) Geologic problems involving earth environments and resources, and ecological geologic principles. Prereq: 1520 or permission of instructor. 2 lectures and 2 hrs lab or field periods.

3520 Our Changing Landscapes (4) Basic introduction to study of landscape-forming processes and their interactions with earth materials to produce landscapes. Laboratory experience includes slope- and streamplane experiments and field experience. Not intended for geology majors. 2 hrs and 2 lab or field periods.

3610 Quaternary Geology for Engineers (3) Erosional and depositional processes, landforms, groundwater. 2 lectures and 1 lab or field period. Prereq: 2610-20 or permission of instructor. 2 lectures and 1 lab or field period.

3710 Origin and Evolution of the Continents and Ocean Basins (4) Introductory study of origins and changes that have occurred in earth's crust with emphasis on modern concepts of continental drift and plate tectonics. Prereq: 1520.

4110 Principles of Economic Geology (4) Formation of mineral deposits. Prereq: 3160; 3370 or equivalent.

4155 Elementary Applied Geophysics (4) Basic principles of electrical, seismic, gravity and magnetic surveying. Recommended: 1520, Physics 2220 or 2320. 3 lectures and 1 lab.

4130 Sedimentology (4) Prereq: 3310. 2 hrs and 2 labs.

4210 Biostatigraphy (4) Fossil faunas and floras and their use in geochronology, stratigraphic correlation, and paleoecology. Preq: 3120-30. 3 hrs and 1 lab.

4230 Paleoecology (4) Principles of environmental analysis as applied to fossil assemblages and associated deposits. Preq: 3290 or permission of instructor. 3 hrs and 1 lab.

4240 Paleobotany (4) Survey of fossil record of plants with particular emphasis on (1) comparative morphology and evolutionary trends in major plant groups and (2) chronological succession and geographic distribution of past floras on earth.

4310 Geologic Mapping (3) Interpretation of maps and methods of geologic mapping. Prereq: 12 quarters of geology and permission of instructor.

4370 Tectonic Styles (4) Elements, habitats, and geotectonic causes of basic styles of tectonic deformation are presented on maps, sections, aerial photographs and fabric diagrams. 3 lectures and 1 seminar or lab. Prereq: 3370 or permission of instructor.

4440 Field Geology (8) Five weeks field course, first term summer quarter. Advanced undergraduates or first year graduates in geology. Employs entire time of students. A report is required, to be submitted no later than end of fall quarter. Preq: 12 quarters of geology and permission of instructor.

4460 Geologic Photography and Photogrammetry (4) Principles of terrestrial and aerial geologic photography, including photographic principles and practices, geometry of terrestrial and aerial photography, and image interpretation. Prereq: 3370 or permission of instructor. 3 lectures and 1 lab.

4510 Principles of Geomorphology (4) Gravitational processes acting at earth's surface and landforms produced. Prereq: 1110-20 or permission of instructor. 3 hours and 1 lab.

4610 Principles of Geomorphology (4) Application of chemical principles to geologic problems. Emphasis on crystal chemistry and relation between basic structural and chemical properties of elements in the earth's crust. Preq: Chemistry 1110-20 or equivalent required. Recommended 3160.

4650 Mineral Phase Equilibria (3) Principles of phase chemistry and application of phase equilibrium studies in rock-forming mineral systems as aid to understanding conditions of formation and modification of rocks. Preq: 3310 or permission of instructor.

4660 Electron Microprobe Analysis: Theory and Application (3) Techniques and applicability of electron probe in chemical analysis; emphasis on applications in the earth sciences. Prereq: 3310 or permission of instructor. 2 lectures and 1 lab.

4710 Petrophysics (3) Fluid, heat, electric current and ionic flow through rock masses in a potential field. Stress-strain behavior of rock as a function of temperature and pressure. 3 lectures per week. Preq: 3310; Mathematics 1830, Physics 1330. Recommended: Mathematics 2610 and 2820.

4760 Global Tectonics (3) Earth's gravity field, seismology and internal structure of earth; geologic field, paleomagnetism, radioactivity and age of earth; internal heat, creep and anisotropy of the earth's crust. Prereq: 4115 or permission of instructor.

4810 Special Problems in Geology (1-4) Prereq: Permission of instructor. May be repeated to a maximum of 4 hours credit.

GRADUATE
Master's Program
General requirements for Master's degree given in the Graduate Study Catalog.

Doctoral Program
General requirements for Doctor's degree given in the Graduate Study Catalog.

5000 Thesis
5050 Geochemistry of Ore Mineral Deposits (3)
5060 Experimental Geochemistry (3)
5068 Experimental Geochemistry Laboratory (1-3)
5120 Geophysics-Gravity and Magnetic Methods (4)
5130 Geophysics-Seismic Exploration Methods (4)
5210-20 Special Problems in Geology (1, 4, 1-4)
UNDERGRADUATE

Placement Examination: Students who have had previous work in German or Russian either in high school or in another college should register for the course in which they would normally be placed. During the first week of the quarter a placement test will be given, and students will be advised if a change in registration is indicated.

Proficiency Examinations: Students who have acquired a knowledge of German or Russian through private study, tutoring, residence in foreign countries, or the like should request a proficiency test. A student earning a grade of C or better on such a test will receive credit for a limited number of courses. Superior students are encouraged to proceed as rapidly as their achievement permits. Students who omit any course in a sequence may receive credit for it by passing a proficiency examination.

Foreign Study: Students are encouraged to study abroad. The department is prepared to recommend summer study programs and junior year abroad programs for students who are interested in foreign study. Credits from recognized foreign study programs can readily be transferred to The University of Tennessee. For qualified students, the department also offers German 4101 Foreign Study and Russian 4101 Foreign Study. See page 167. Students should consult the department before registering for the foreign study course.

German

Major: Majors or Minors in German should carefully prepare their programs in consultation with a departmental faculty adviser. German 2510-20 or 2530-40 or the equivalent is a prerequisite to the major and minor. The major concentration shall consist of at least 36 hours of German in courses numbered above 3000, usually including German 3110-20-30 (or 3410-20-30), 3810-20-30, 9 hours of German literature in courses numbered above 3000, excluding 3010-20-30 and courses in English translation.

It is recommended that German majors also take History 1510-20 or 3710-20-30 and 8 hours of Sophomore English. Majors are also strongly urged to have a minor in some other area of the humanities.

German 2510-20, 2530-40 or its equivalent is a prerequisite to the minor. The minor concentration shall consist of at least 24 hours of German courses numbered above 3000, which will normally include German 3110-20-30 (or 3410-20-30), and 15 additional hours of courses numbered above 3000, excluding 3010-20-30 and courses in English translation.

Russian

Major: Russian majors should carefully prepare their programs in consultation with the departmental faculty adviser. Russian 2510-20 or its equivalent is a prerequisite to the major. Russian 2640-50 is a corequisite to the major. The major itself consists of 36 hours of Russian courses, including Russian 3510-20, 3610-20-30, 9 hours from Russian 3120-20-21-30-40-50-60, and 9 hours of courses numbered above 4000. It is recommended that majors also take History 3470-80-90 and 9 hours of sophomore English. Majors are urged to consider a minor in some other area of the humanities.

German (433)

1510-20 Elementary German (4, 4) Must be taken in sequence.

1518-2518-28 Honors: Elementary and Intermediate German (5, 5, 5) Honors course for students of superior ability. Freshmen are admitted on the basis of high school average and performance on the American Language Qualifying Examination. Underclassmen must have a B average. A grade of C or above must be achieved in 1518 in order to continue with 2518. A student obtaining a grade of D or better in 1518 may continue with German 1520. This sequence is equivalent to 1510-20 and 2510-20 and its completion allows the student to enter all 3000-level German courses.

1530 Elementary German through Individualized Instruction (1-8) Same material as in German 1510-20, but student may proceed at his own pace, with a minimum of one credit hour per quarter. With completion of four hours student has option of transferring to 1520. May be repeated. Maximum credit 8 hours.

2510-20 Intermediate German (4, 4) Must be taken in sequence. Students who have had two units of German in high school or one year in college and who wish to continue Intermediate German after some lapse of time are given the opportunity of enrolling in a five-hour per week session of German 2510-20. In this class they will have the benefit of a controlled review of the basic essentials of Elementary German.

2530-40 Intermediate German (4, 4) For students in Science-Medical Curriculum or B.S. Curricula in natural science, must be taken in sequence.

3010-20-30 Elements of German for Upper Division and Graduate Students (3, 3, 3) For graduate students preparing for language examinations and Upper Division undergraduate foreign language majors requiring knowledge of second foreign language. Prereq: Two years of some foreign language in college or permission of department. No credit for students having completed 1510-20.

3040 Elementary Dutch (3) Prereq: reading knowledge of German. Primarily for graduate students in German. No graduate credit allowed.

3110-20-30 Introduction to German Literature (3, 3, 3) Prereq: 2130 or equivalent.

3340 Special Topics in German Literature in English Translation (1-4) Topics and credit hours vary and are announced in advance. Student suggestions for topics are welcome. No foreign language credit. May be repeated for credit.

3410-20 Readings in Modern and Contemporary German Literature (3, 3) Prereq: 2130 or equivalent.

3610-20-30 German Civilization (3, 3, 3) Prereq: 2130 or equivalent.

3810-20-30 Conversation and Composition (3, 3, 3) Prereq: 2130 or equivalent.

ADVANCED UNDERGRADUATE AND GRADUATE

4101 Foreign Study (1-16) See page 167.

4102 Off-Campus Study (1-13) See page 167.

4103 Independent Study (1-16) See page 167.

Germanic and Slavic Languages

Professors:
H. Kratz(Head), Ph.D. Ohio State; H.W. Fuller, Ph.D. Washington; E.T. Hanks and Emeritus, Ph.D. Bonn (Germany); R.L. Hiller, Ph.D. Cornell; R.L. Nordiske, Ph.D. Ohio State, J.C. Osborne, Ph.D. Northwestern.

Associate Professors:
J.E. Falen, Ph.D. Pennsylvania; D.E. Lee, Ph.D. Stanford; M.P. Rice, Ph.D. Vanderbilt.

Assistant Professors:
J.S. Elliott, Ph.D. Michigan; D.M. Fife, Ph.D. Indiana; N.A. Launer, Ph.D. Wisconsin; C.J. Mellor, Ph.D. Chicago.

Instructors:
D.F. Brandt, M.M. Syracuse; L.G. Elliott, M.A. Michigan; M.H. Harris, M.A. Illinois; J.M. Rasmussen, Diploma, City College, Tallinn, Estonia.
4110-20-30 Studies in Classical and Modern Writers
3 (3, 3, 3) Content varies. May be credited with requirement in the department. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, 3210-20-30, 3310) or equivalent.
4140-50 Selected Topics in German Literature from 1750 to the Present (3, 3) Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30 and 3210-20-30) or equivalent.
4160 Studies in German Authors (3) Life and works of a single outstanding German literary figure. Content varies. May be repeated for credit. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30 and 3210-20-30).
4170 Theatrical German (1-3) Performance in one or more German plays. May be repeated for credit with permission of department. Prereq: 2130 or equivalent or consent of instructor.
4210-20-30 Studies in German Literary Types (3, 3, 3) 4210—Lyric Poetry. 4220—Drama. 4230—Narrative Prose. Prereq: 9 hrs of 3000 courses (exclusive of 3010-20-30, 3210-20-30, 3310) or equivalent.
4250 Introduction to Descriptive Linguistics (3) (Same as Russian, French and Spanish 4250.)
4260 Introduction to Historical and Comparative Linguistics (3) Linguistic change, proto-languages. Phonalonic and morphological change. Cultural, historical, and sociolinguistic influences upon the development of language. Semantic change. Lexicography. All these topics copiously illustrated by selected examples from Indo-European languages. Prereq: 9 hrs of upper division English, or 9 hrs of upper division courses in a modern or ancient language (exclusive of German and French 3010-20-30; courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of these languages), or permission of department. (Same as Russian, French and Spanish 4260.)
4270 Introduction to Germanic Linguistics (3) Phonetics and phonemics of German. German grammar and German vocabulary from a descriptive point of view. Dialects of German. Introduction to study of other Germanic languages.
4310-20 History of German Language (3, 3)
4618-28-38 Honors: Senior German (3, 3, 3) Intended to give student of special aptitude greater opportunity to do independent study than is possible in ordinary courses. Prereq: Senior standing, with a record of "A" in half of German courses taken as prerequisite to the 4000 course average of "B" in remainder, and permission of department.
4810-20-30 Advanced Conversation and Composition (3, 3) Prereq: 3120-20-30-30 or equivalent or permission of department.

GENERAL COURSES
2640-50 Culture of German-Speaking Peoples (4, 4) Studies in culture and life-style of German-speaking peoples from their first contact with Romans to the present. Readings are in English language.
3210-20-30 German Literature in English Translation (3-3, 3-3, 3) No foreign language credit. No change in credit after add deadline. Students opting for 4 hours credit will be expected to present an appropriate amount of extra work above that required for 3 hours.
3240 Old Norse Literature in English Translation (3-4) Prose readings of sagas of Nors og viking kings, great Icelandic family sagas, and Vinland sagas, narrating discovery of North America around the year 1000. Mythological and heroic poems of the Edda.
3250 Modern Scandinavian Literature in English Translation (3) Introduction to modern literature of Sweden, Norway, Denmark, and Iceland. Represented are readings by such writers as Ibsen, Strindberg, Lagerlöf, Hamsun, Vesaas, Lagerkvist, Bang, Næss, Laxness.
3260 German Drama in English Translation (3) From Lessing to present. No foreign language credit.
3270 Modern German Novel in English Translation (3) From 1900 to present; Remarque, Hesse, Mann, Kafka, Frisch, Böll, Grass. No foreign language credit.
3280 Goethe's Faust in English Translation (3) Intensive study of Faust I and II and survey of criticism and interpretations of the work. No foreign language credit.
3310 Dramas of Bertolt Brecht (3-4) Chronological survey of Brecht's dramatic work and theoretical writings in English translation. No foreign language credit.
3320 Novels of Hermann Hesse (3-4) Study and analysis of Hesse's major novels in English translation. No foreign language credit.
3330 Dramas of Ibsen and Strindberg (3-4) Study of two principal forerunners of twentieth century drama. Works are read in English translation. No foreign language credit.
4050 The Faust Legend (3) Survey of development of legend from Faust chaukbook to present, excluding Goethe's Faust. No foreign language credit.

GRADUATE
The Department of Germanic and Slavic Languages offers three advanced degrees. They are: Master of Arts (M.A.) in German, Master of Arts in College Teaching (M.A.C.T.T.) in German, and Doctor of Philosophy (Ph.D.) in German Language and Literature. The requirements for these degrees are set forth in the Graduate School Catalog.
5000 Thesis
5100 German Phonetics and Advanced Grammar (3)
5101 Foreign Study (1-12)
5102 Off-Campus Study (1-12)
5103 Independent Study (1-12)
5160 Introduction to German Semantics (3)
5200 Proseminar (3)
5210-20-30 College Teaching of German (1, 1, 1)
5410-20-30 Medieval German Language and Literature (3, 3, 3)
5500 Studies in German Literature (3)
5510 German Humanism and Reformation (3)
5520 German Baroque Literature (3)
5530 The Enlightenment and the Rococo (3)
5540 German Classicism (3)
5550 Goethe's Faust (3)
5560 German Romanticism (3)
5570 German Realism and Naturalism (3)
5580 Modern German Literature (1889-1945) (3)
5590 Modern German Literature (1945-Present) (3)
5600 German Literary Theory and Criticism (3)
5610-20-30-40-50-60 Directed Readings in German Language and Literature (3, 3, 3, 3, 3, 3)
5710 Introduction to Old Norse (3)
5720 Readings in Old Norse Prose (3)
5730 Readings in Old Norse Poetry (3)
6000 Doctoral Research and Dissertation
6100 Gothic (3)
6120-30 Old High German (3, 3)
6140 Old Saxon (3)
6210-20-30-40-50-60 Seminar in German Literature (3, 3, 3, 3, 3, 3)
6310-20-30 Seminar in German and Germanic Philology (3, 3, 3)

Russian (888)

UNDERGRADUATE
1510-20 Elementary Russian (4, 4) Must be taken in sequence.
1610-20 Elementary Serbo-Croatian (4, 4) Must be taken in sequence.
1710-20 Elementary Czech (4, 4)
2510-20 Intermediate Russian (4, 4) Must be taken in sequence.
2670-80 Intermediate Serbo-Croatian (4, 4) Must be taken in sequence.
2710-20 Intermediate Czech (4, 4)
3010-20-30 Elements of Russian for Graduate Students and Seniors (3, 3, 3) For graduate students preparing for language examinations and seniors desiring reading knowledge of a second foreign language. Prereq: 2 yrs of some foreign language in college or permission of department. Undergraduate credit only. No credit for students having completed 3151-20 or equivalent.
3310 Russian Scientific and Technical Literature (3) Prereq: 2130 or equivalent.
3510-20 Russian Composition and Conversation (4, 4) Practice in written and speaking; grammar review and vocabulary building.
3610-20-30 Introduction to Russian Literature (3, 3, 3) 3610: Russian Poetry. 3620: Russian Short Stories. 3630: Russian Short Novels. Prereq: Completion of Russian 3510-20 or equivalent.
ADVANCED UNDERGRADUATE AND GRADUATE
4010 Selected Topics in Russian and East European Studies (3) Interdisciplinary seminar on selected topic using comparative approach.
4101 Foreign Study (1-16) See page 167.
4102 Off-Campus Study (1-16) See page 167.
4103 Independent Study (1-16) See page 167.
4110-20-30 Studies in Major Russian Writers (3, 3, 3) Content varies. Prereq: 3011-20-30, 3211-20-30-40-50-60-70, 3310 or equivalent. May be repeated for credit.
4270 Introduction to Slavic Linguistics (3)
4310-20-30 Advanced Studies in Russian Language (3, 3, 3) Intended primarily for students majoring or minoring in Russian who are interested in language and linguistics. Includes problems in morphology and syntax, stylistics and translation techniques, and history of Russian language as well as other special problems for advanced students of Russian.
4410-20-30 Directed Readings in Russian (3, 3, 3) Intended primarily for students participating in program in Russian and East European Area Studies, course will involve individual study relating to student's major field. Prereq: 9 hrs of 3000 level courses in Russian (exclusive of 3010-20-30, 3210-20-30-40-50-60-70, 3310 or equivalent).
in two of three of the following groups: (a) European; (b) United States; (c) Other Areas; e.g. Latin American, Asian, etc. Students may use only two of the three History Colloquia (4010, General; 4011, European; 4012, American) toward the 36 hours of the major. (Honors Major) Consists of 45 hours; 36 hours of courses including group requirement in Major statement and History 4018-28-38 plus History 3018-28-38.

(2) American: 3015-20-30; 3140-50-60; 3411-12-13; 4221-22-23; 4311-32-33; 4341-42-43; 4350-470-480; 3710-20-30; 3760-70; 3401; 4250-60-70; 4280; 4380; 4401-20-30; 4450-60; 4470; 4490; 4500; 4510-20-30; 4570; 4710-20-30; 4740; 4770-80.

(b) United States: 3310-20-30; 3610-20; 3630-40-50; 3670; 3890; 3910-20-30; 4012; 4290; 4311-21; 4370; 4610-20-30; 4640-50-60; 4670; 4910-20-30; 4950-60.

(c) Other: 3750; 3790-90; 3810-20-30; 3870-80-90; 4010; 4120-30; 4590; 4840; 4850; 4870-80-90.

Minor: History 1510-20 (or honors equivalent) is prerequisite to a minor which consists of 24 hours of courses numbered on the 2000-level of which at least 8 hours must be in U.S. History.

American Studies. See Cultural Studies.

Asian Studies. See Cultural Studies.

Latin American Studies. See Cultural Studies.

Russian and East European Studies. See Cultural Studies.

UNDERGRADUATE

1510-20 Development of Western Civilization (4, 4) 1510—Ancient World to 1715. 1520—1715 to present.

1518-28 Honors: Development of Western Civilization (4, 4) Permission of department required.

1850-20 A History of World Civilization Since 1450 (4, 4) Interaction of Western World and Non-Western peoples since the fifteenth century. 1610—ca. 1450-1800. 1820—1800 to present.

1950-60 Afro-American History: An Introduction (4, 4) 1850—African civilization to 1890. 1890—1960 to present.

2350 U.S. and World Crisis, 1899 to Present (4) An introductory course in history of 20th Century American Foreign Policy. May not satisfy major or minor requirements.

2510-20 History of the United States (4, 4) 2510—Settlement to 1865. 2520—1865 to present.

2518-28 Honors: History of the United States (4, 4) Consent of department required.

3018-28 Honors: Junior Seminar (3, 3) 3018—American. 3028—European. Required of students working for honors in history. Admission with permission of department.

3038 Honors: Philosophy and Method (3) Principles and techniques of research and study of critical and speculative philosophy of history. Required of students working for honors in history. Admission with permission of department.

3061-71 History of Western Religious Thought and Institutions (4, 4) Same as Religious Studies 3061-71.

3140-50-60 History of England (3, 3, 3) 3140—To 1668. 3150—To 1688, through Reform Bill of 1832. 3160—1832 to present.

3311-21 History of Tennessee (3, 3) 3311-18th century to Civil War Era. 3321-1865 to present.
not covered in an existing course. May be repeated for credit.
4018-28-38 Honors: Senior Paper (0, 0, 6) Required of students working for honors in history. Admission with permission of department.

4101 Foreign Study (1-16) See page 167.
4102 Off-Campus Study (1-16) See page 167.
4103 Independent Study (1-16) See page 167.

4120-30 History of Colonialism and Imperialism (3, 3) 4120—Background: Age of Discovery and Exploration to Nineteenth Century. 4130—Nineteenth Century to Present.

4250-60-70 European Intellectual and Cultural History (3, 3, 3) 4250—From Reformation to Scientific Revolution (1500-1700). 4260—From Enlightenment to Age of Realism (1700-1870). 4270—From Subjectivism to Relativism (1870-present).

4280 Women in European History (4) Comparative analysis of role and image of women in Medieval, Renaissance, and Victorian periods. Attention given to parallel changes in structure of family as well as relationship between Western culture and women’s protest movements.

4290 Women in American History (4) Approaches of 4280 applied to American society.

4311-21 History of American Foreign Relations I, II (4, 4) 4311—Revolution to 1912. 4321—1912 to present.

4370 U.S. Military History, 1754 to the Present (4) Examination of nation’s broad strategic aims and means used to attain them, shifting strategy, tactics, and weaponry involved in our wars, and relationship between American society and its armed forces.

4380 Civilian-Military Relationships in the Modern Western World (3) Civilian-military affairs from about 1900 to 1960 in Western Europe, Russia, and America; emphasis on Western Europe: e.g. Dreyfus Affair, Army in Nazi Germany, and Truman-MacArthur controversy.

4410-20-30 Europe Since 1914 (3, 3, 3) 4410—Prewar European Society and Politics to World Depression. 4420—World Depression to end of World War II. 4430—Postwar Europe, 1945-present.

4470 Poland and Its Neighbors (3) A survey of Polish history from its beginnings to present with some emphasis on the Polish question within context of modern international affairs.

4480 Russian Intellectual History (3)

4490 Soviet Foreign Policy (3)

4500 History of Medieval England (3)

4510-20 Tudor-Stuart England (3, 3) 4510—1485-1603. 4520—1603-1714.

4551 Great Britain from Burke to Bright (1780-1848) (3)

4570 Twentieth-Century Britain (3)

4580 Revolution and Reform: Ireland in the 19th and 20th Centuries (4)

4590 History of Canada, 1774-Present (3)

4610-20-30 The American Frontier and Westward Movement I, II, III (3, 3, 3) Settlement and development of the “West” throughout American history. 4610—From the Atlantic to the Mississippi. 4620-30—The Trans-Mississippi West.

4640-50-60 Social and Cultural History of the United States (3, 3, 3) 4640—Colonial Society and Early Nation to 1825. 4650—1825-ca. 1900. 4660—1900-present.

4670 Cities and Urbanization in American History (4) Origins, growth and influence of American cities in development of the Nation, from colonial era to present.

4710-20-30 Medieval History, 500-1400 (3, 3, 3) 4710—Early Medieval period to Revival of Empire in 962. 4720—962 to Renaissance of twelfth century. 4730—Renaissance of twelfth century to Italian Renaissance.

4740 The City in Europe, ca.1200, 1900 (3) Survey of European urban growth, with comparative analysis of major periods of urbanization of thirteenth and nineteenth centuries. Emphasis on relationship between demographic, economic and social foundations of cities and political and cultural development.

4770-80 Austria and Central Europe (3, 3) 4770—To 1867. 4780—Since 1867.

4811-21 History of Japan (4, 4)

4840 History of Mexico (3)

4850 History of the Caribbean (3) Caribbean region from discovery and colonization to contemporary times.

4870-80-90 China (3, 3, 3) 4870—Cultural History of China. 4880—History of Modern China. 4890—History of Contemporary China.


GRADUATE
A student who enrolls in the Graduate School with intention of obtaining an advanced degree in history shall have completed an undergraduate major in history or its equivalent.

The Master’s Program
General requirements for the Master of Arts and Master of Arts in College Teaching degrees are found in the Graduate School Catalog.

The Doctoral Program
General requirements for the Doctor’s degree are found in the Graduate School Catalog.

5000 Thesis

5101 Foreign Study (1-12)

5102 Off-Campus Study (1-12)

5103 Independent Study (1-12)

5211-12-13-14-15-16-17-18-19 M.A. Reading Courses (3, 3, 3, 3, 3, 3, 3, 3, 3, 3)

5221-22-23-24 M.A. Reading Courses (3, 3, 3, 3)

5225 M.A. Readings, Middle East (3)

5240 Introduction to Historical Research (3)

5250 European Historiography (3)

5260 American Historiography (3)

5271-72-73 Teaching of College History (0, 0, 3)

5280 Philosophy and Methodology (3)

5290 Quantitative Analysis of Historical Data (3)

5300 Topics in History (3)

5350 U.S. and the Far East (3)

5360 Topics in American Foreign Relations (3)

5410 Topics in Early Modern European History (3)

5440 Revolution and Restoration in Central Europe, 1780-1850 (3)

5444 Topics in French History (3)

5445 Topics in Nineteenth Century European History (3)

5450 Topics in Twentieth Century European History (3)

5480 Topics in Russian History (3)

5510 Topics in Tudor-Stuart England (3)

5520 Topics in Modern English History (3)

5550 Reaction and Reform in England, 1789-1848 (3)

5560 Anglo-Irish Relations (3)

5640 Topics in American Social and Cultural History (3)

5645 Topics in American Urban History (3)

5650 Topics in American Westward Movement (3)

5660 Topics in Negro History (3)

5670 Topics in American Colonial History (3)

5675 Topics in the Early National Period of American History (3)

5680 Topics in Nineteenth Century American History (3)

5690 Topics in Twentieth Century American History (3)

5710 History of Crusades (3)

5720 Topics in Medieval History (3)

5740 Topics in European History (4)

5750 Topics in Ancient History (3)

5780 Topics in German National Socialism (3)

5790 Topics in Middle Eastern History (3)

5810 Topics in Andean History (3)

5820 Topics in Mexican History (3)

5850 Topics in Chinese History (3)

5860 Topics in Japanese History (3)

5910-20 Topics in Southern History (3, 3)

6000 Doctoral Research and Dissertation

6210-20-30-40 Directed Readings (3, 3, 3, 3)

6300 Seminar in Special Studies (3)

6310 Seminar in Tennessee History (3)

6350 Seminar in American Diplomatic History (3)

6410-20 Seminar in Western Europe (3, 3)

6444 Seminar in French History (3)

6480 Seminar in Russian History (3)

6510 Seminar in English History (3)

6610 Seminar in American Colonial History (3)

6620 Seminar in Era of American Revolution (3)

6630 Seminar in Early National Period of American History (3)

6635 Seminar in Jacksonian Period (3)

6640 Seminar in Social and Cultural History of the United States (3)

6650 Seminar in American Westward Movement (3)

6710 Seminar in Medieval Institutions (3)

6740 Seminar in the Crusades (3)

6770 Seminar in Central European History (3)

6810 Seminar in Latin American History (3)

6910 Seminar in the Civil War Era (3)

6930 Seminar in Twentieth Century America (3)

6940 Seminar in History of the South (3)

6960 Seminar in Negro History (3)
Honors Program (509)
Director: Dr. Harry Jacobson
Non-Departmental
The following courses are restricted to students who have been selected to participate. Invitations to participate in Honors 1118 is based on high school averages, test scores, and applications. Participation in Honors 1128 or 1138 and in the upperclass courses is based upon college averages and interviews.

1118-28-38 Honors: Freshmen—Men and Ideas (2-4, 2-4, 2-4) 1116—The Nature of Man; the individual and his philosophical and aesthetic development. 1128—Cosmos and Micro-cosmos; the study of man's physical environment. 1138—Human Organization; man in society.

2118-28-38 Honors: Sophomore—Special Problems Seminar (2-4, 2-4, 2-4) 2118—The Humanities; 2128—The Natural Sciences; 2138—The Social Sciences. These seminars focus on selected problems in the respective disciplines. The specific topics will vary from year to year.

3118-39-38 Honors: Junior—Colloquium (2-4, 2-4, 2-4) Small group studies of selected topics.

4101 Honors: Foreign Study (1-16) See page 167, and Director of Special Programs. Primarily for College Scholar Students.

4102 Honors: Off-Campus Study (1-16) See page 167 and Director of Special Programs. Primarily for College Scholar Students.

4103 Honors: Independent Study (1-16) See page 167 and director of Special Programs. Primarily for College Scholar Students.

4118-28-38 Honors: Senior—Colloquium (2-4, 2-4, 2-4) Small group studies of selected topics.

4998 Honors: College Scholars Studies (2-16) Designed for College Scholars working on their senior thesis, projects, or performance. May be repeated for a total of 16 credit hours.

Human Services (532)
Associate Professor: R.F. Kronick (Director), Ph.D. Tennessee, J.D. McLean, Ph.D. Chicago.
Assistant Professor: F. J. Spicuzza, M.S.W. Tennessee.
Instructors: J.E. Everett, M.S.W. Michigan; N. Wright, M.S.W. Pittsburgh.

48-52 hours Requirements: Human Services 2690, 3100, 3300, 4220, 4229, 4400.

In addition, four courses from the following alternative areas (one course from each of the four areas):

I. Culture and Personality
American Studies 3010; Anthropology 3410, 3930, 4740; Audiology & Speech Pathology 4650; Child Development 3210, 3220, 4810; Educational Psychology 4110, 4800; Psychology 3120, 3550, 3650, 4510; Sociology 3130, 4820.

II. Complex Organizations
Political Science 3565, 3566, 4655, 4666; Religious Studies/Sociology 4940; Sociology 4650, 4610, 4620.

III Research and Statistics
Computer Science 3010; Psychology 4110, 4140, 4150, 4170, 4180.

IV. Community and Society
Economics 3220, 3410; Geography 3430; Human Services 4900; Political Science 3710, 3720, 3730, 4580, 4590; Public Health 3330; Religious Studies 3550, 3600, 3610; Rural Sociology 3420; Sociology 3160, 3330, 4320, 4330, 4530, 4540, 4550, 4830, 4930, 4950. Total Hours Credit ———— 48-52

Students enrolled in the College of Liberal Arts prior to Fall Quarter, 1972, who are under the previous B.A. or B.S. curricula will find requirements for a major in the 1972-73 or earlier general catalog.

2690 Introduction to Human Services (4) General field of human services with focus on related societal values; contemporary issues in human services.

3100 Social Welfare as a Social Institution (4) Specific social welfare institutions examined in depth in relation to human needs, structure, program, and service approaches. 2690 recommended.

3200 Peoples and Problems of Appalachia (4) Course designed to provide better understanding of Appalachian peoples, by exploring their life style and institutions from contemporary human services point of view. Special emphasis placed on political and economic structures of region. Recommended: Anthropology 4740.

3300 Human Needs and Services (4) Consideration of basic needs of people in urban-industrial society (e.g., income, housing, medical care) and societal response to those needs in the form of voluntary and governmental organization and agency services.

4101 Deviant Behavior as a Product of Labeling (4) Course is designed to show human services worker the role he plays in maintaining the deviance or deviant role of client or clients he is serving. Settings considered will include crime, delinquency, health, and blindness.

4101 Foreign Study (1-16) See page 167.

4102 Off-Campus Study (1-16) See page 167.

4103 Independent Study (1-16) See page 167.

4220 Human Services Methodologies (4) Introduction to some specific helping techniques essential to administration and delivery of human services.

4229 Special Topics in Human Services (4) Examination of specific issues, methods, values, and trends in the human services field. Applications for helping practitioners, e.g. art therapy, behavior modification, counseling skills, self-awareness training. Content varies, topic to be determined by instructor; may be repeated up to 12 credit hours.

4400 Human Services Field Work (8-16) Practical field experiences in appropriately organized and directed human services settings. Designed to offer the student the opportunity to learn and develop specific helping skills and to become exposed and involved in the roles and functions of social services; to provide some direct services in a supervised learning situation. For majors only: must be repeated to a maximum of 16 hours credit. Satisfactory/No Credit. Prereq: permission of instructor.

4900 Aspects of Urban Environment I (3) Interdisciplinary course in urban problems. Prereq: permission of one instructor. (Same as Architecture 4900, Political Science 4900, Real Estate 4900, Psychology 4900.

Italian
See Romance Languages.

Latin
See Classics.

Latin American Studies
See Cultural Studies.

Mathematics (641)

<table>
<thead>
<tr>
<th>Professor</th>
<th>Ph.D. Institution</th>
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<tbody>
<tr>
<td>L.K. Barrett</td>
<td>Cleveland State University</td>
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<tr>
<td>G.E. Albert</td>
<td>The Pennsylvania State University</td>
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<tr>
<td>J.S. Bradley</td>
<td>The Ohio State University</td>
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<td>D.J. Deshnord</td>
<td>The University of Texas at Austin</td>
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<td>E.M. Eaves</td>
<td>Emory University</td>
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<td>H. Frandsen</td>
<td>The Johns Hopkins University</td>
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<td>P.D. Illinois</td>
<td>The University of Illinois at Chicago</td>
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<td>A.D. Gardner</td>
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<td>P.D. North Carolina</td>
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<td>P.D. Tennessee</td>
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<td>W. Wisconsin</td>
<td>The University of Wisconsin at Madison</td>
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</tbody>
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Associate Professors:
- J.H. Carnahan, Ph.D. Pennsylvania State University
- D.J. Danko, Ph.D. Case Western Reserve University
- J.J. Plemmons, Ph.D. Auburn University
- K.C. Reddy, Ph.D. Indian Institute of Technology
- F.W. Stalnaker, Ph.D. Giessen (Germany)

Assistant Professors:
- W. Bronsdall, Ph.D. Northwestern University
- E.L. Evans, M.S. University of Illinois
- J.F. Hall, Ph.D. Rice University
- G.S. Jordan, Ph.D. Wisconsin
- D. Keigher, Ph.D. Illinois
- J.E. Lueck, Ph.D. California (Los Angeles)
- R.W. Leggett, Ph.D. Kentucky
- R. Lowey, Ph.D. California Institute of Technology
- D. Peterson, Ph.D. Michigan
- W.H. Row, Ph.D. Wisconsin
- R.J. Rowlett, Ph.D. Virginia
- S.M. Serbin, Ph.D. Cornell
- C.C. Travis, Ph.D. California (Los Angeles)
- A.T.M. Wang, Ph.D. Minnesota
- R.K. Weinberg, Ph.D. California (Berkeley)

Instructors:
- E.S. Carlson, M.A. Alabama
- C.G. Doss, M.A. Tennessee

UNDERGRADUATE
Placement Information for Freshmen
Courses: Students who need more than one year of mathematics should plan to take 1840-50-60 (or 1842-52-62 or 1848-58-68). The prerequisites for 2640 and 1840 (or 1842) are two years of high school algebra, one year of geometry and one semester of trigonometry or equivalent. Students who present an ACT score below 28 in mathematics are urged to complete 1500 with a grade of C or better before taking 1840 (or 1842). Students who have not had high school trigonometry should take 0150 before (or concurrently with) 1840 (or 1842). Students who present an ACT score of at least 32 in mathematics and a high school average of at least 3.0 are eligible for the honors course 1846.

Prospective mathematics majors who meet these requirements are particularly encouraged to enroll in 1846. (Exceptions to the eligibility criteria for 1848 are possible. Interested students should see the Department Head in Ayres Hall, Room 124.)

The prerequisites for 1840 are two years of high school algebra or one year of algebra and one year of geometry. Students who present an ACT score below 18 in Mathematics may take 1540 but are advised to take Algebra Refresher, Part I and II, in the Workshops and Non-Credit Programs, or equivalent. Students who present an ACT score of at least 26 in mathematics and 3.0 average or better may take 1840. Students who have not had high school trigonometry should take 0150 before (or concurrently with) 1840 (or 1842). Students who present an ACT score of at least 32 in mathematics and a high school average of at least 3.0 are eligible for the honors course 1846.

Prospective mathematics majors who meet these requirements are particularly encouraged to enroll in 1846. (Exceptions to the eligibility criteria for 1848 are possible. Interested students should see the Department Head in Ayres Hall, Room 124.)
school algebra and 1 year of high school geometry, and who present an ACT score in Mathematics of at least 26 (or those who earned at least a grade of B in high school algebra and geometry, and present an ACT score in Mathematics of at least 24) will be considered for the major. In order to offer some guidance in program planning, the Mathematics Department has designed several sample programs which majors may use as a basis for their program. The description of these programs appears below; more detailed information about these or any additional programs which the department may design in the future is available in Ayres 121. Complete fulfillment of the prerequisites in any of the following programs will meet (and, in some cases exceed) the Advanced Requirements for a major in mathematics.

All students who intend to pursue graduate studies in the mathematical sciences are strongly urged to study French, German, or Russian for at least two years.

Program 1. This program is designed for students who have a general interest in mathematics and do not plan to become professional mathematicians. Supplemented by appropriate non-mathematical electives, such a program can be very rewarding. For example, by pre-medical or pre-law students, by students planning to teach secondary school mathematics, or by those who plan to enter business after graduation. Suggested courses: Mathematics 3150, 3050-60, 3780-90, 3330, 4510-20, 4120, senior seminar, 6 hours of math electives.

Program 2. This program emphasizes pure mathematics and is designed to prepare students for graduate work in any of the mathematical sciences. Suggested courses: Mathematics 3150, 3920-30, 4510-20-30, 4120; 4510-60; 4250, senior seminar, 3 hours of math electives. The honors courses 4518-28-38 and 4518-68 are especially recommended. Since 4518-68 begins only in the fall quarter, students who wish to enroll in this sequence should take 4120 during their sophomore or junior years.

Program 3-A. This program emphasizes numerical mathematics, and is designed to prepare the student for work in computing in industry. Suggested courses: Mathematics 3150, 4220-30, 4610, 4060-70, 4250, Computer Science 4410, Mathematics 4990 or Computer Science 4330, senior seminar, 6 hours of math electives selected from 4540, 4550, 4620, 4640, 4710.

Program 3-B. This program emphasizes numerical mathematics and is designed to prepare the student for graduate work in numerical mathematics or computer science. Suggested courses: Mathematics 3150, 4220-30, 4610, 4060-70, 4510-20-30, 4250, Computer Science 4410, Mathematics 4990 or Computer Science 4330, senior seminar.

Program 4-A. This program emphasizes operations research, probability, and mathematical statistics and is designed to prepare the student for work in industry or business or industry. Suggested courses: Mathematics 3150, 4540, 4060-70, 4560-60-70, 4750-60-70, Statistics 3450, Industrial Engineering 3510-20-30, senior seminar, 3 hours of math electives.

Program 4-B. This program emphasizes operations research, probability, and mathematical statistics, and is designed to prepare the student for graduate work in one or more of these areas. Suggested courses: Mathematics 3150, 4060-70, 4650-60-70, 4510-20-30, 4750-60-70, Industrial Engineering 3510-20-30, senior seminar.

0150 Trigonometry (0) Plane trigonometry with emphasis on identities and other analytic aspects useful in calculating. Prerequisites: Calculus 2400 and deficiency in high school trigonometry, 3 hrs per week. No college credit.

1020 Mathematics: A Philosophical Approach (4) Mathematics as a language, art, creativity, nature of mathematical truth; strengths and limitations of the axiomatic method; the infinite and the infinitesimal. Prerequisites: 1010 and 4000.

1500 Precalculus Mathematics (4) Function concept and use of functional notation. Properties of functions and their graphs. Polynomial, exponential, logarithmic, and trigonometric functions. Prereq: 2 yrs of high school algebra; and equivalent of one-half yr of trigonometry or taking Mathematics 0150 concurrently.

1540 College Algebra (4) Sets, real and complex number systems, exponents and radicals, fundamental algebraic operations, theory of equations, polynomial interpolation, functions, graphs. Prereq: Two years of high school algebra or one year algebra and one year geometry.

1550-60 Introductory Calculus-General Mathematics (4, 4) Equations of straight lines, conics, derivatives of algebraic functions, applications of derivatives, maxima and minima, related rates, antiderivatives, integration of algebraic functions, applications of integration. Prereq: 1540 or equivalent, 1560-matrices, systems of linear equations and inequalities, trigonometric function applications, analytic geometry, sequences and series, simple and compound interest, annuities, exponential and logarithmic functions, law of growth, applications, Prereq: 1550 or equivalent.

Note: Students with an adequate high school background in Algebra are advised to begin the 1540-50-60 sequence with 1550.

1630 Analytic Geometry (5) Straight line; plane curves, polar coordinates; parametric equations, line and plane in three dimensions; review of trigonometry. This course will prepare students for 2710-20-30 and cannot be taken for credit in addition to 1810-20. Prereq: Two years of high school algebra and one semester of trigonometry or equivalent.

1840-50-60 Single Variable Calculus (4, 4, 4) Functions, graphs, slope of a curve, definition of derivative, differentials, limits, derivatives of algebraic functions, implicit differentiation, chain rule, differentials, continuity, applications of derivatives, maxima and minima. Indefinite and definite integrals, definition of definite integral. Fundamental Theorems of calculus, applications of the definite integral, logarithmic, exponential, and trigonometric functions and their derivatives. Techniques of integration, plane analytic geometry, polar coordinates. Must be taken in sequence. Prereq: Two years of high school algebra, one year geometry, and one semester of trigonometry or equivalent.

1842-52-62 Single Variable Calculus with Computer Support (5, 5, 5) Same coverage of calculus as 1840-50-60 supplemented with computer. Elementary FORTRAN is introduced and applied to problems following the evaluation of functions; limit operation; application of limits to definition of derivative; approximation via differences; approximation of solutions of equations; major and minor bisection, secant methods and Newton's method; rectangular, trapezoidal, and Simpson's rules for numerical integration, an introduction to error in value problems. Prereq: Two years high school algebra, one year geometry, and one semester of trigonometry or equivalent.

1848-58-68 Honors: Single Variable Calculus (4, 4, 4) Honors course for students who have had trigonometry, selected on basis of placement test scores and high school grades. Students receiving grade below B in 1848 will complete the year's work in calculus by taking 1850-60. Special sections of
1858 will be made available for students who perform well in 1840. Must be taken in sequence.

1900 Selected Topics (4) Applications of definite integration; approximate integration; simultaneous linear equations; matrix inversion; elementary linear programming; infinite series; descriptive statistics and finite probability. This course is especially recommended for Architecture majors. Prereq: 1810-20. If a student wishes to continue his study of calculus after taking 1900, he should consult the mathematics department.

2012 Basic Concepts of Elementary Mathematics (4) Sets, theory of arithmetical operations, elementary probability and statistics. Basic geometrical concepts, elementary analytic geometry. Applications. May not be taken for credit after or concurrently with 1110-1500, 1540, 1550, 1630, 1810, 1816, 1840, 1848, 2110, 2410, 2412, 2540, 2710. Primarily for secondary education students.

2020 Great Ideas in Mathematics (4) Course for nonmajors designed to expose the student to ideas which have had a significant impact on direction of mathematical thought in particular and on civilization in general. Selected topics may include: The Greeks and mathematics as logical reasoning; Irrational numbers; Descartes and analytic geometry; Newton and Leibniz and the mathematics of motion; Non-Euclidean Geometry; the infinity. Prereq: High school algebra and geometry and an interest in cultural mathematics.

2110-20-30 Structure of the Number System (3, 3, 3) 2110—Set theory, whole numbers, integers. 2120—Inverses, order properties, rational numbers. 2130—Elementary number theory, rational and irrational numbers. Euclidean geometry. Must be taken in sequence. Prereq: 1 yr high school algebra and at least sophomore standing in Elementary Education. College of Education, or consent of instructor.

2412-22 Finite Mathematics (4, 4) Logic and sets, combinators and probability, vectors and matrices, elementary optimization and game theory, applications to simple problems in the behavioral and/or managerial sciences. Prereq: two years of high school algebra or one year of algebra and one year geometry.

2512 Calculus Refresher (4) Functions, graphs, limits, derivatives, mean value theorem, integration and properties of the integral. For students who had some previous exposure to Differential and Integral Calculus. Prereq: 1130 or 1560 or equivalent and permission of instructor.

2540-50-60 Calculus (4, 4, 4) Calculus sequence for students who have completed 1560 or students who have a significant introduction to calculus in high school. Definition of a derivative; derivatives of algebraic functions, the chain rule, differentials, continuity; applications of derivatives; Rolle's Theorem, the Mean Value Theorem, maxima and minima; indefinite integrals and applications, the definite integral and applications, Fundamental Theorem of Calculus, definite integrals and integrals of transcendental functions, methods of integration, parametric equations, vectors, differential equations, vectors, scalar and vector products, equations of lines and planes, surfaces Partial differentiation, directional derivatives, the chain rule, the total differential, maxima and minima, line integrals, exact differentials, multiple integrals with applications, cylindrical and spherical coordinates, series, tests for convergence, power series, Taylor's series. Must be taken in sequence. Prereq: Math 1560 or at least one semester of high school calculus.

2610 Introduction to Differential Equations (2) Variables separable, homogeneous, exact, and linear first order equations, integrating factors. Second order linear equations with constant coefficients. Prereq: 1830.

2710-20-30 Calculus (5, 5, 5) For students who have had a separate course in analytic geometry. 2710—Functions, graphs, limits, derivatives of algebraic functions, applications, antiderivatives. 2720—Definite integrals, applications, polar coordinates, transcendental functions, methods of integration, hyperbolic functions. Vectors in 2-space. 2730—Elementary linear algebra, vectors in 3-space, applications, partial differentiation, multiple integrals, Taylor's series. Must be taken in sequence. Prereq: 1630 or equivalent.

2840-50-60 Multivariable Calculus and Matrix Algebra (4, 4, 4) 2840-50—Differential equations, vectors, linear algebra, and analytic geometry, dot and cross product of vectors, space curves. Functions of several variables, directional derivatives, partial derivatives, gradient, curves and surfaces, multiple integrals, cylindrical and spherical coordinates, series, convergence tests, power series, Taylor's series, absolute convergence. Prereq: Math 1860. Must be taken in sequence. 2860—Vectors, matrices, systems of equations, determinants, inverses of matrices, eigenvalues and eigenvectors. A student cannot receive credit for both 2860 and 4050. Prereq: 2850 or 2560 or permission of instructor.


Prerequisites. If specific courses are listed below as prerequisites, equivalent preparation satisfactory to the instructor will be an acceptable substitute. Junior standing is prerequisite to enrollment in courses numbered above 6000.

Undergraduates working towards a major in mathematics with a view to taking advanced work are strongly recommended to include 4510-20-30 and 4510-60-70 during the junior or senior year.

3000 Elementary Quantitative Methods (4) Elementary course designed to prepare students in social and life sciences for quantitative courses in their field. Treats topics in probability and statistics without calculus. Course cannot be used to meet requirements for majors or minors in mathematics, statistics, or economics. Prereq: consent for credit to students in College of Business Administration.

3040 The Ideas of Calculus (4) Study of basic ideas and theory behind differential and integral calculus designed for students whose course of studies does not involve the use of calculus. Emphasis is on the historical framework in which calculus was discovered and on the nature of mathematical thought and scientific thought. Prereq: One year of high school algebra. May not be taken for credit by any student who has previously received credit for any college level calculus course.

3050 Elementary Probability and Statistical Analysis (3) Combinatorial problems; sample spaces, sets, and events; statistical independence; axiomatic probability theory; random variables and their distributions; simple random processes. Prereq: 1550-60 or equivalent.

3060 Elementary Statistical Analysis (3) Elementary probability distributions, confidence intervals and statistical tests of hypotheses; least squares and linear regression. Prereq: 3050 or permission of instructor.

3090 Polynomials and Rings (3) Elementary introduction to modern abstract algebra. Axiomatic approach is used to study divisibility and factorization in rings of integers, polynomial rings, and coefficients from various fields. Prereq: 2860 or permission of instructor.

3100 Logic and Sets (3) Elements of mathematical logic; elementary algebra of sets. Primarily for students in the College of Education. Prereq: 1 year of college mathematics.

3110 Real Number System (3) Laws of arithmetic; rational and irrational numbers; fields. Primarily for students in the College of Education. Prereq: 1 year of college mathematics.

3150 Introduction to Numerical Algorithms and Programming (3) (Same as Computer Science 3150.)

3155 Introduction to Numerical Algorithms (3) (Same as Computer Science 3155.)

3320 History of Mathematics (3) Survey of development of various branches of mathematics, from ancient to modern times. Prereq: Math 1860 or 2550 or equivalent.

3310 Advanced Euclidean Geometry (3) Triangles and circles, constructions, modern concepts. Prereq: 1 year of college mathematics.

3320 Non-Euclidean Geometry (3) Foundations of geometry. Elliptic and hyperbolic plane geometry. Prereq: 1 year of college mathematics.


3510 Intermediate Analysis (3) Primarily for students in secondary mathematics education. Course covers elementary calculus from advanced viewpoint with emphasis on proofs of basic theorems. Topics covered include limits of sequences and functions, continuous functions, derivatives, definite integrals, and fundamental theorem of integral calculus. Prereq: 1550-60 or 1860.


3780-90 Introduction to Combinatorial Theory (3, 3) Introduction to problems of arrangement and selection within discrete systems. Enumeration by recurrence relations and generating functions; graph theory, finite geometries and finite fields, partitions, block designs. Prereq: Math 2860 or permission of instructor.

3810 How to Prove It (3) Course is designed to improve understanding of nature and methods of mathematical proof by means of practice and participation in seminar setting. Variable content but will include certain standard topics such as elementary set theory, solutions and theories, and mathematical induction. Coreqs: 2850 or 2660.

3920-30 Topology of Euclidean Spaces (4, 4) Topics will include topology of line and plane, separation properties, compactness, connectedness, completeness, continuous functions, homeomorphisms, continua, and topological invariants. Must be taken in sequence. Prereq: 2860 and 3810, or 2688.

1Not accepted toward satisfying requirements for major or minor in mathematics.
Any courses from Group D plus additional courses from groups A, B, or C. Any 5 hours of courses listed in Natural Science and Mathematics in the College of Liberal Arts or the College of Agriculture.

Total Hours Required: 54

Microbiology (684)

2010 Microbiology (4) Fundamental concepts and applications of microbiology with laboratory demonstration. Course meets needs of programs that require only a single course in Microbiology. Not open to students who have taken other Microbiology courses.

2110 Microbiology for Student Nurses (4) Introductory course offered only to student nurses in diploma program of hospitals affiliated with the University of Tennessee. Microbiological principles as they apply to nursing care of the patient, epidemiology of infection, and principles of immunity and allergy. 3 hrs and 1 lab.

2610 General Microbiology (5) Introductory course designed for students involved in School of Nursing and pre-veterinary medicine. Survey of general properties of bacteria, viruses, and fungi including study of pathogenic, immune, and applied bacteriology. Laboratory exercises designed to parallel lecture course. 3 hrs and 2 labs.

3000 Introduction to Microbiology (3) Eucaryotic and procaryotic protists, viruses, microbial growth, bacterial structure, bacterial and viral genetics, pathogenesis, immunity, and applied microbiology. Prereq: Chemistry 1100-20-30, Biology 3120. Prereq or coreq: Biology 3110.

3009 Introductory Microbiology Laboratory (2) Laboratory exercises designed to accompany 3000.

3061 Pathogenic Microbiology (3) Disease producing microorganisms including bacteria, rickettsia, chlamydia, and fungi. Prereq: 3000 and 3009.

3069 Pathogenic Microbiology Laboratory (2) Techniques for isolation, cultivation, and identification of pathogenic microorganisms. Prereq or coreq: 3061.

3071 Immunology (3) Basic principles and mechanisms involved in resistance to infectious disease; allergy and anaphylaxis. Open to graduate students in other biological sciences without prereq. Prereq: 3000 and 3009 or permission of instructor.

3079 Immunology Laboratory (2) Laboratory procedures involving several species of animals, and techniques used in immunology research. Prereq or coreq: 3071.

3089 Serological Methods (3) Practical procedures in serology and Clinical Immunology. Prereq. or Coreq.: 3071.

3810 Food Bacteriology (4) Standard methods for examination, cultivation, and identification of bacteria associated with food spoilage and food contamination. Prereq: 2010 and Chemistry 2230 or 3211. 2 hrs and 2 labs.

3820 Yeasts and Molds (4) Morphology, taxonomy, and physiology of yeasts, actinomycetes, and fungi of industrial importance. Prereq: 2010 and Chemistry 2230 or 3211, or permission of instructor. 2 hrs and 2 labs.

4010 Biology of Soil Microorganisms (4) (Same as Agricultural Biology 4010.)

4101 Foreign Study (1-16) See page 167. No more than 3 hours may be applied toward a major or minor in Microbiology. May be repeated to a total of 16 hours.

4102 Off-Campus Study (1-16) See page 167. No more than 3 hours may be applied toward a major or minor in Microbiology. May be repeated to a total of 16 hours.

4103 Independent Study (1-16) See page 167. No more than 3 hours may be applied toward a major or minor in Microbiology. May be repeated to a total of 16 hours.

4111 Physiology of Bacteria (3) Cell chemistry and structure; growth, nutrition, and metabolism of microorganisms. Prereq: 3000, 3009, and 12 hrs of organic chemistry.

4112 Bacterial Physiology Laboratory (2) Prereq or coreq: 4111.

4130 Taxonomy of Bacteria (3) Bacterial classification. Prereq: 3000 and 3009. 3 hrs.

4200 Special Problems in Microbiology (2-6) Individual study. Involves research program of a faculty member, independent study projects. Project is undertaken under direction of faculty member with approval of department. Not more than 3 credit hours in this sequence may be used towards a major in Microbiology.

4444 Seminar in Microbiology (1) May not be applied towards a major in Microbiology. Prereq: senior standing, permission of instructor. Satisfactory/No Credit.

4521 Virology (3) Spectrum of bacterial, animal and plant viruses is presented with special emphasis on a comparison of infectious cycles and molecular concepts of replication. Prereq: 3000 and 3009 and Biochemistry 4110-20 or permission of instructor.

4529 Virology Laboratory (2) Laboratory procedures for isolation, handling and culturing of both animal and bacterial viruses. Methodology for conduct of molecular studies of virus replication is presented. Prereq or coreq: 4521.


4819 Bacterial and Viral Genetics Laboratory (2) Laboratory exercises designed to accompany 4811. Coreq: 4811, or prereq: General Genetics.

4820 Medical Mycology (2) Disease causing fungi; cytology, physiology, pathogenesis and immunity; emphasis on methodology of isolation and identification. Prereq: 3000, 3009, and 3620 or permission of instructor.

4829 Medical Mycology Laboratory (2) Prereq or Coreq: 4820.

GRADUATE

5000 Thesis

5011-12-13-14-15-16 Mini-course in Microbiology (1, 1, 1, 1, 1, 1)

5130 Topics in Taxonomy (3)

5310 Selected Topics in Microbiological Research (3)

5360 Topics in Immunology and Immunochemistry (4)

5400 Seminar in Microbial Physiology (1)

5410 Seminar in Immunology (1)

5441-42-43-44-45-46 Clinical Microbiology (6, 6, 6, 6, 6, 6)

5510-20-30 Research Problems (3, 3, 3)

5720 Microbial Physiology (3)

5730 Pathogenesis of Infectious Disease (3)

5750 The Oncogenic Viruses (3)

5760 The Bacterial Viruses (3)

5819 Molecular Genetics Laboratory (3)

5820 Microbiology of Fruits (3)

5830 Seminar in History of Microbiology (1)
5850 Seminar in History of Microbiology (1)
5910-20-30 General Seminar (1, 1, 1)
5940 Seminar in Microbial Genetics (1)
5970 Seminar in Virology (1)
6000 Doctoral Research and Dissertation
6410 Concepts of Immunity (3)
6720 Advanced Topics in Microbial Physiology (3)
6730 Advanced Topics in Microbial Pathogenesis (3)
6740 Advances in Virology (3)
6760 Advanced Topics in Microbial Genetics (3)
6810-20-30 Problem Seminar (1, 1, 1)

Medical Technology (669)

Courses listed below are open only to qualified students who have completed the first three years of the Science-Medical Technology Curriculum, described on page 162, and who have been approved by the Pre-Medical Advisory Committee.

4011-12 Microbiology (6, 6) Laboratory work in bacteriology, virology, mycology, and parasitology. Emphasis on pathogenic bacteria and fungi, their sources, methods of culture, techniques of identification, and evaluation of antibiotic sensitivity. Gross and qualitative chemical examination of feces and methods of identification of protozoans and helminths of parasites of man.

4011-22 Clinical Chemistry (6, 6) Clinical aspects of biochemistry, including overview of principles and instrumentation with emphasis on practical laboratory applications of analytical procedures, specimen collection and handling, significance of results, and quality assurance. Includes blood gas analysis, including radioimmunoassay, and analysis of blood and other body fluids for enzymes, hormones, and other constituents of clinical interest, utilizing both automated and manual techniques.

4031-32 Hematology and Clinical Microscopy (6, 6) Principles, theories, techniques, and instrumentation related to the qualitative and quantitative evaluation of cellular elements of blood and other body fluids; factors of hemostasis, quantitative chemical analysis of urine and renal function studies. Emphasis placed on microscopic identification of cells and the significance and correlation of laboratory data.

4041-42 Immunohematology (4, 4) Theory and practice in the bank operation. Enzyme-hemagglutination antigens and their normal and abnormal immunology. Standard technical practices used in evaluating blood typing, cross-matching, and antibody detection, and preparation of blood components for transfusion. Safety control methods standard to an efficient blood bank are important part of course material.

4043 Clinical Serology and Immunology (2) Performance and interpretation of broad range of clinical serological and immunological procedures with emphasis on principles and clinical correlation. Formal lecture series included.

4050 Nuclear Medicine (1) Physical characteristics, detection and use of short half-life radioactive materials. Emphasis placed on in vivo diagnostic medical uses and radiation safety.

4060 Histology (1) Overview of techniques of preparation of tissue for microscopic evaluation and role of histopathology in clinical diagnosis.

4071 Orientation and Basic Techniques (1) Designed to facilitate transfer of students from campus to hospital community and clinical laboratory. Introduction to medical terminology, ethics, and health team concept. Orientation to basic techniques. Methods of study include procedures for collection and handling of specimens, principles of operation of major laboratory instruments, review of laboratory math and introduction of quality control procedures. Portions of course extend over entire clinical year.

4072 Principles of Supervision and Education in Medical Technology (1) Consists of seminars in basic principles of management, supervision, and education theory. There will be comprehensive examination covering the entire course.

Music (698)


On leave.

The Department of Music offers curricula leading to the Bachelor of Music degree which is designed to prepare students for graduate study and for professional positions, and the Bachelor of Arts degree with a major and minor in Music, designed for those students whose interests are strong but essentially non-professional. Information regarding requirements for the B.M. degree may be found on page 164. Information regarding requirements for the majors and minors under the revised B.A. curriculum may be obtained in the departmental office.

Major:

(a) Concentration in Applied Music - consists of Music 2000, 2111-21-31, 2113-23-33, 2310-20-30-40, 27 hours in Applied Music at the 2000-3000-4000 level (9 hours each), and Junior and Senior recitals. Prerequisites are Music 1111-21-31, 1113-23-33, and 3 quarters of study in Applied Music at the 1000-level.

(b) Concentration in Music History and Literature - consists of Music 2111-21-31, 2113-23-33, 2310-20-30-40, and 27 upper division hours in Music History and Literature. Prerequisites are Music 1111-21-31, 1113-23-33, and 1340.

Minor:

A) Concentration in Applied Music - consists of Music 2000, 2111-21-31, 2113-23-33, 2310-20-30-40 and 18 hours in Applied music at the 2000-3000-4000 levels (6 hours each). Prerequisites are the same as those for the major.

(b) Concentration in Music History and Literature - consists of Music 2111-21-31, 2113-23-33, 2310-20-30-40 and 18 upper division hours in Music History and Literature. Prerequisites are the same as those for the major.

The Bachelor of Science in Music Education, designed for preparation for institutional teaching, is administered by the Department of Music Education. See page 90 for requirements.

UNDERGRADUATE General

1000 Fundamentals of Music Theory (2) Theory and practice of basic elements of music. 3 hrs.

1010-20-30-40-50-60 Class Piano (1, 1, 1, 1, 1, 1) For music and music education majors only. Must be taken in sequence. Course may be waived by successful completion of Piano Competency Examination. Waived courses must be substituted with an equivalent number of quarters of study in Music 1500 or above.

1015 Class Voice (1) For music and music education majors only. May be repeated for credit.

2000 Solo Class (0)

2055-65-75 Diction for Singers (2, 2, 2) Sounds by phonetic symbols. Opera and art songs used for examples. Performance practice.

3000 Junior Recital (0)

3010-20-30 Elementary and Intermediate Piano Literature (1, 1, 1) Piano music from elementary grades through intermediate. Prereq: permission of instructor.

3011-21-31 Organ Literature (1, 1, 1) Organ music from preclassical period to present. Prereq: permission of instructor.

3012-22-32 Song Literature (2, 2, 2) Study of literature from 1750 to present with emphasis on performance practices. 3012—Classical and Romantic German Art Song; 3022—French and Russian Songs; 3032—Late German and contempor. songs. Prereq: 2075 and permission of instructor.

3014-24 Woodwind Literature (2, 2) Prereq: permission of instructor.

3015 Percussion Literature (1) Prereq: permission of instructor.

3040-50-60 Advanced Piano Literature (2, 2, 2) Piano music from preclassical period to present. Prereq: permission of instructor.

3041 Keyboard Harmony (2) Melody harmonization, figured bass realization, and improvisation. Prereq: 1131-33, and keyboard proficiency at the 2000 level.

3051 Organ Improvisation (2) Prereq: 3041 and organ proficiency at the 2000 level.

3044-54 Brass Literature (2, 2) Prereq: permission of instructor.

3061 Church Service Playing (2) Accompanying on the organ, conducting from the organ, general church service playing. Prereq: permission of instructor.

3199 Electronic Music Techniques (3) Introduction to taped and live electronic music. Historical background, theoretical concepts, tape and synthesizer usage. Prereq: permission of instructor.

3597-4597-5597 Composition with Electronic Media (1-3, 1, 1-3) May be repeated for credit. Prereq: 3199 and permission of instructor.

4000 Senior Recital (0)
4001 Organ Design (3) Historical, tonal and mechanical principles of organ design.

4010-20 Piano Techniques (1, 1, 1) Problems of piano playing: development of piano technique; style and interpretation; program building. Prereq: permission of instructor.

4011-21-31 Organ Techniques (1, 1, 1) Problems of organ playing; development of technique; problems in organ literature; registration; program building. Prereq: permission of instructor.

4012-22-32 Principles of Vocal Pedagogy (1, 1, 1) Examination and evaluation of concepts and approaches to teaching singing (past and present) and related teaching materials. Collaborative laboratory experiences accompany the study. Prereq: permission of instructor.

4050 Advanced Instrumental Conducting (3) Development of knowledge and skills in instrumental conducting; study of various periods and composers and of different styles to the conductor's art; musical analysis and practice in conducting. Prereq: Music Ed 4430 or equivalent.

4060 Choral Conducting (3) Development of knowledge and skills in choral conducting; study of various periods and composers and of different styles to the conductor's art; musical analysis and practice in conducting. Prereq: Music Ed 4420 or equivalent.

4070-80-90 Opera Production (1, 1, 1) Problems of lyric opera; casting, selection, production procedures, opera dramatics. Emphasis on acting techniques and student participation in practical direction of opera and other works for lyric stage.

4074-84 Church Music Seminar (3, 3) History and philosophy of church music; liturgies and liturgical music; church music administration. Prereq: permission of instructor.

MUSIC THEORY AND COMPOSITION

1111-21-31 Theory I (3, 3, 3) Materials of music with emphasis on literature of Baroque, Classical, and Romantic periods. Exercises in writing and analysis. Must be taken in sequence.

1112-23-33 Sight Singing and Ear Training (1, 1, 1) Should be taken concurrently with 1111-21-31 or 1118-28-38. Must be taken in sequence. 2 hrs per week.

1118-28-38 Honors: Theory I (4, 4, 4) Materials of music with emphasis on literature of Baroque, Classical style. Prereq: eligibility. May be advisor subject to placement examination. Grade of C or better must be achieved to continue the course sequence.

2111-21-31 Theory II (3, 3, 3) Materials of music with emphasis on literature of Romantic and Contemporary periods. Exercises in writing and analysis. Must be taken in sequence. Prereq: 1131 or 1138 or permission of instructor.

2113-23-33 Advanced Ear Training (1, 1, 1) Should be taken concurrently with 2111-21-31 or 2118-28-38. Must be taken in sequence. 2 hrs per week.

2118-28-38 Honors: Theory II (4, 4, 4) Materials of music with emphasis on literature of Romantic and Contemporary periods. Exercises and projects in writing and analysis. Prereq: 1138 or placement examination.

3111-21-31 Tonal Counterpoint (3, 3, 3) Counterpoint techniques of eighteenth century, with emphasis on works of J.S. Bach. Must be taken in sequence. Prereq: 2131.

3112 Instrumentation (3) Basic techniques in scoring for the orchestra, woodwind, brass, and string choir; and percussion. Prereq: 2131.

3113 Analysis I (3) Study and practice in analysis of structures of music from smallest structural units to large compound forms. Emphasis on macro-analytic techniques. Prereq: 2131 or equivalent.

3114-24 Choral Arranging (3, 3) Analysis of scores and writing of arrangements for choruses. 3114—male and female chorus; 3112—mixed chorus. Prereq: 3112 or permission of instructor.

3122 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. Prereq: 3112 or permission of instructor.

3123 Analysis II (3) Continuation of Analysis I with emphasis on micro and linear analytic techniques. Prereq: 3113.

4100 Independent Study in Music Theory (1-3) May be repeated for credit. Prereq: permission of department head.

4101 Foreign Study (1-16) See page 167.

4111-21-31-41 Analysis of Music Literature (3, 3, 3, 3) Detailed examination of musical compositions by historical period with emphasis on harmony, thematic material, form and structure. Traditional and contemporary analytical techniques. 4111—1600-1750. 4121—1750-1825. 4131—1825-1900. 4141—1900 to present. Prereq: 3123.

4112 Twentieth-Century Compositional Techniques (3) Styles and compositional devices from Debussy to present. Analysis of scores; idiomatic writing. Prereq: 2131 or equivalent.

4113 Pedagogy of Music Theory (3) Techniques, methods and materials involved in college-level theory programs. Prereq: permission of instructor.

4114 Stage Band Arranging (3) Analysis of scores and scoring for the stage band. Prereq: 3112 and permission of instructor.

4115 Variation (3) Study and application of variation procedures. Prereq: 3123 or equivalent.

4116 Set Structure in Musical Composition (3) Theory of sets and its application to analysis of music. Prereq: permission of instructor.

4124 Band Arranging (3) Study and application of techniques employed in scoring for the marching and concert bands. Prereq: 3112 or equivalent.

4134 Band Transcription (3) Technique and application of transcribing keyboard and orchestra music for concert band, editing and rescoring. Prereq: 3112 or equivalent.

MUSIC HISTORY AND LITERATURE

1210-20 Orientation in Music—Appreciation (4, 4) 1210—Study of styles, history, techniques, and aesthetic principles of music; 4th Century into 20th Century. 1220—In-depth study of music literature and representation in Film. 16th Century into 20th Century. Prereq: 1210 or 1220.

1340 Introduction to Music Literature (3) Acquaintance with basic terms of music and accepted masterworks through chronological approach. For music majors.

2310-20-30-40 History of Music (3, 3, 3, 3) 2310—To 1600. 2320—1600-1800. 2330—1800-1900. 2340—1900 to present. Requires musical background. Prereq: permission of instructor.

2320 The Concerto (3) Survey of literature from seventeenth century to present.

2340-50 The Symphony (3, 3) Survey of symphonic literature from 1727 to 1890. 2360-70 Chamber Music (3, 3) Survey of chamber music from 1750 to present.

2371-81 History of Opera (3, 3) Dramatic, vocal and orchestral elements in opera of Italian, French, and German School. 3271—1600-1800. 3281—1800-present.

3340 Oratorios (3) Choral works by those composers who are most significant to church music. 3350 Introduction to Afro-American Music (4) History of African music, blues, gospel, music and Jazz with emphasis on Black artists and their contributions.

4200 Independent Study in Music History and Literature (1-3) May be repeated for credit. Prereq: permission of department head.

4210-20 Nineteenth-Century Music (3, 3) Music from 1800 to 1914. 4210—musical trends from Beethoven through Wagner, 4220—musical nationalism and post-Romantic instrumental and vocal style.

4230-40 Contemporary European Music (3, 3) 4230—music from 1900 to World War II. Debussy, Stravinsky, Schoenberg, Hindemith, Bartok, and others. 4240—serialism and other 20th Century music (Berio, Boulez, Stockhausen and others).

4251-41 American Music (3, 3) From Colonial times through the music of Ives; 4251—from 1900 to present (Copland to Cage). Prereq: 1210-20 or equivalent.

4260 Introduction to Ethnomusicology (3) Basic attitudes and techniques of ethnomusicology. Survey of music cultures of the Pacific, Near East, Asia and Africa. Prereq: 1210-20 or equivalent.

4270 Evolution of Jazz (3) Study of origin, development and styles of jazz music and its exponents. Prereq: 1210-20 or equivalent.


4290 Gregorian Chant (3) Chants of Latin rite. Masses and Offices examined as functional music as well as by type.

4310 History of Art Song (3) Survey of art song from Fiftteenth Century to 19th Century. Prereq: 1210-20 or equivalent.

4315 Wind Chamber Music (3) Study of wind chamber music from 18th through 20th Century. Emphasis placed on style interpretation, rehearsal techniques, programing and musical significance, both historical and theoretical.

4340-50 Works of Bach (3, 3) Detailed examination of sonatas, chamber, keyboard, and orchestral works; cantatas, motets, Passions and oratorios; instrumental works; vocal works.

APPLIED MUSIC

Applied study is classified as Principal or Secondary.

Students studying their principal [major] instrument register for credit applicable to their program, 2240-50, 4240-50, 4250-50, studying a secondary instrument register for 1 hour credit. Study at the principal level receives one hour of private instruction per week or a one-hour class lesson plus a half-hour private lesson. Determination of the mode of instruction rests with the Department. Study at the secondary level receives one-half hour private instruction per week or its equivalent in class instruction. Applied music courses do not permit non-credit registration nor may students elect non-conventional grading.

Non-music students will be accepted at the secondary level only at the discretion of the Department Head and only if the student meets the academic requirements established by area faculty (piano, voice, violin, etc.) and instruction time is available.

Undergraduate students seeking entrance to applied music courses must be concurrently registered for no less than nine credit hours in academic courses. Graduate students must be concurrently registered for no less than six credit hours in academic courses. Exceptions to these requirements may be made with the approval of the Department Head if applied music registration is necessary to completion of degree requirements.
ENSEMBLES

All students studying applied music are required to perform in a major musical organization each quarter. String, woodwind, brass, and percussion students must be enrolled in an instrumental organization; voice students in a choral organization, opera workshop or opera theatre.

A student's preference for musical organization will be honored whenever possible, but factors considered in making the assignment will include playing ability, specific needs of various organizations, and previous performance experience at the University.

3600-5600 Small Ensemble (1, 1) May be repeated for credit.
3602-5602 Brass Choir (1, 1) May be repeated for credit.
3604-5604 Jazz Ensemble (1, 1) May be repeated for credit.
3606-5606 Trombone Choir (1, 1) May be repeated for credit.
3607-5607 Tuba Ensemble (1, 1) May be repeated for credit.
3610-5610 Percussion Ensemble (1, 1) May be repeated for credit.
3612-5612 Baroque Ensemble (1, 1) May be repeated for credit.
3620-5620 U.T. Singers (1, 1) May be repeated for credit.
3630-5630 Chamber Singers (1, 1) May be repeated for credit.
3632-5632 Collegium (1, 1) May be repeated for credit.
3634-5634 Saxophone Choir (1, 1) May be repeated for credit.
3640-5640 Opera Theatre (1, 1) May be repeated for credit.
3642-5642 Opera Workshop (1, 1) May be repeated for credit.
3650-5650 Concert Band (1, 1) May be repeated for credit.
3652-5652 Campus Band (1, 1) May be repeated for credit.
3654-5654 Varsity Band (1, 1) May be repeated for credit.
3656-5656 Laboratory Band (1, 1) May be repeated for credit.
3657-5657 Marching Band (1, 1) May be repeated for credit.
3670-5670 Symphony Orchestra (1, 1) May be repeated for credit.
3680-5680 Concert Choir (1, 1) May be repeated for credit.
3682-5682 University Chorus (1, 1) May be repeated for credit.
3684-5684 Campus Chorus (1, 1) May be repeated for credit.
3686-5686 Men's Glee Club (1, 1) May be repeated for credit.
3687-5687 Women's Glee Club (1, 1) May be repeated for credit.
3699-5699 Accompanying (1, 1) May be repeated for credit.

GRADUATE

The Department of Music offers the Master of Music degree in performance, composition, music theory, choral conducting, and Suzuki string techniques, and the Master of Arts degree in musicology and music theory. See the Graduate School Catalog for admission and degree requirements.

5000 Thesis
5001 Choral Conducting Document (3)
5010 Organ Literature Seminar (3)
5020 Piano Literature Seminar (3)
5030 Choral Literature Seminar (3)
5040 Vocal Literature Seminar (3)
5050 Graduate Recital (3)
5051 Opera Performance (3)
5052 Vocal Chamber Music Performance (3)
5053 Choral Conducting Performance (3)
5060 Seminar in Choral Performance (3)
5100 Independent Study in Music Theory (1-3)
5111 Advanced Harmony (3)
5112 Prosencinar in Music Theory (1)
5114 History of Music Theory (3)
5115 Theory of Computers and Music Research (3)
5116 Musical Styles (3)
5119 Music Theory for the Secondary School Teacher (3)
5121 Analytical Techniques (3)
5125 Practicum in Computers and Music Research (3)
5150 Seminar in Music Theory (3)
5200 Independent Study in Music History and Literature (1-3)
5210 Introduction to Music Research (3)
5220-30 Prosencinar (3, 3)
5270 Seminar in Musicology (3)
5315 Band Literature (3)
5350-60 Medieval Music (3, 3)
5352-62 Renaissance Music (3, 3)
5353-63 Baroque Music (3, 3)
5355 Music in the Classic Period (30)
5597 Composition with Electronic Media (1-3)

Organizational Psychology Programs

See Graduate School.
Philosophy (745)

Professors:
J.W. Davis (Head), Ph.D. Emory; R.B. Edwards, Ph.D. Emory; R.D. Herrmann, Ph.D. Mainz (Germany); M.H. Moore (Emeritus), Ph.D. Chicago; D. Van de Vate, Ph.D. Yale.

Associate Professors:
R.E. Aquila, Ph.D. Northwestern; L.B. Cebik, Ph.D. Nebraska; B.K. Dumas, Ph.D. Arkansas.

Assistant Professors:

Instructor:
M.L. Osborne, M.A. Bryn Mawr.

Philosophy seeks to understand man, his world, their relations. It involves (1) use of logical and scientific methods, (2) appreciation of all values, (3) history of ideas, (4) philosophical systems. Philosophy is an appropriate major for students wishing a broad education, and those preparing for careers as writers (whether journalistic or literary), lawyers, ministers, teachers, in various types of political and government service, and in non-technical positions in business and industry. A major in philosophy implies a balanced program in the humanities, natural and social sciences. Graduate students should read French or German, preferably both; other ancient or modern languages are useful and for some advanced work necessary.

UNDERGRADUATE

Major: 36 hours in courses numbered 2000 and above. Majors should discuss their program with a member of the philosophy faculty.

Minor: 24 hours in courses numbered 2000 and above. It is suggested that minors discuss their programs with a member of the philosophy faculty.

American Studies. See Cultural Studies.

Russian and East European Studies. See Cultural Studies.

1510-20 Introduction to Philosophy (4, 4) 1510 — Philosophical problems of human nature and values. 1520 — Problems of language, knowledge and reality.

1600 Topics in Philosophy (4) May be repeated once for credit.

2310 Elementary Ethics (4) Theories of ethical values.

2410 Art and Experience (4) Introduction to various understandings of art.

2510-20 Elementary Logic (4, 4) 2510—Traditional or modern deductive logic, informal fallacies, uses of language, definitions. (3810 is recommended as introductory for students with mathematical aptitude.) 2520—Inductive reasoning, elements of scientific method and statistical inference.

3111 History of Ancient Philosophy (4) Pre-Socratic through Aristotle.

3121 History of Hellenistic, Roman, and Medieval Philosophy (4)

3131 History of Seventeenth and Eighteenth Century Philosophy (4)

3141 History of Nineteenth and Early Twentieth Century Philosophy (4)

3270 Russian Philosophical and Theological Thought (4) (Same as Russian 3270 and Religious Studies 3270.)

3311-12 American Philosophy (4, 4) 3311—Colonial to late nineteenth century; 3312—Late nineteenth century to present.

3315 American Ideals (4) Ideological variants in American scene.

3320 Philosophy of Law (4) Nature, sources, function of law.

3330 Philosophy of History (4) Speculative and critical aspects of philosophy of history.

3410 Philosophical Ideas in Literature (4) Philosophical assumptions and implications in major literary works.

3420 Philosophy of Literature (4) Study of the nature, functions, value and epistemological principles of literary arts.

3430 Concepts of Woman (4) Examination of some of theoretical foundations of feminism and anti-feminism.

3440 Social Ethics (4) Ethical theory as related to politics, economics, education, law, religion and the family.

3510 Existentialism (4)

3550 Marxism as Philosophy (4)

3611 Religious and Philosophical Issues in Medical Ethics (4) (Same as Religious Studies 3611.)

3630 World Religions (4) (Same as Religious Studies 3630.)

3650 Philosophy and Religion in India (4) (Same as Religious Studies 3650.)

3660 Buddhist Philosophy and Religion (4) (Same as Religious Studies 3660.)

3670 Religion and Philosophy in China and Japan (4) (Same as Religious Studies 3670.)

3690 Philosophy of Religion (4) Analysis of basic issues of religion. (Same as Religious Studies 3690.)


3740-50 Conceptual History of Science (4, 4) 3740—The Scientific Revolution: historical evolution of thought in astronomy, mechanics, and philosophy of nature up to Newton: 3750—The Development and Decline of Newtonian Science: historical evolution of thought on the nature of matter and of light, and on that of life. Prereq: Eight hours of physical science or permission of instructor.

3770 Introduction to Philosophy of Science (4) Standard topics in philosophy of science; scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

3810 Introductory Symbolic Logic (4) Techniques for formal analysis of deductive reasoning (propositional logic and quantification theory).

3910 Contemporary Aesthetics (4) Philosophical discussion of contemporary art.

4000 Special Topics (4) (A student- or instructor-initiated course to be offered at convenience of Department. Subject matter to be determined by mutual consent of students and instructor with approval of Department. Prerequisites to be determined by Department. May be repeated for credit.

4101 Foreign Study (1-16) See page 167.

4102 Off-Campus Study (4-12) See page 167.

4103 Independent Study (4-12) See page 167.

4111-21 Modern Religious Philosophies (4, 4) (Same as Religious Studies 4111-21.)

4310 Intermediate Ethics (4) Topics in meta-ethics or ethics.

4370-71 Theoretical Issues in Medical Ethics (4, 4) 4370—Prereq: 3210 or 3611 or permission of the instructor. 4371—Prereq: 4370 or permission of the instructor. (Same as Religious Studies 4370-71.)

4410 Plato (4) Prereq: Eight hours of philosophy or permission of instructor.

4420 Aristotle (4) Prereq: Eight hours of philosophy or permission of instructor.

4430 Medieval Philosophy (4) Prereq: Eight hours of philosophy or permission of instructor.

4450 Continental Rationalism (4) Prereq: Eight hours of philosophy or permission of instructor.

4460 British Empiricism (4) Prereq: Eight hours of philosophy or permission of instructor.

4470 Kant (4) Prereq: Eight hours of philosophy or permission of instructor.

4480 Advanced Topics in Existentialism and Phenomenology (4) Prereq: Eight hours of philosophy or permission of instructor.

4490 Process Philosophy (4) Prereq: Eight hours of philosophy or permission of instructor.


4511 Advanced Topics in Logic (4) Prereq: Permission of instructor. May be repeated for credit.

4610 Philosophical Analysis (4) Eight hours of philosophy or permission of instructor.

4630 Philosophy of Language (4) Prereq: Eight hours of philosophy or permission of instructor.

4710 Philosophy of Natural Science (4) Consideration of standard topics pertinent to natural science including reduction of theories and teleological explanation. Familiarity with symbolic logic is recommended. Prereq: 3770 or two years of natural science.

4720 Philosophy of Social Science (4) Examination of methods of inquiry and modes of explanation in social sciences. Prereq: 3770 or two years of social science.

GRADUATE

5000 Thesis

5050 Symbolic Logic (4)

5080 Philosophy of Logic (4)

5110-20-30-40-50-60 Studies in History of European Philosophy (4 per course)

5250 Studies in the History of American Philosophy (4)

5310-20-30 Studies in Value and Normative Theories (4, 4, 4)

5410 Philosophy of History (4)

5430 Philosophy and Literature (4)

5450 Problems of the Self (4)

5460 Philosophy of the Mind (4)

5510-20-30 Studies in Epistemology (4, 4, 4)

5550-60 Philosophy of Science (4, 4)

5610 Recent Developments in Philosophy of Religion (4)

5710 Studies in Metaphysics (4)

5910-20-30 Research (4, 4, 4)

6000 Doctoral Research and Dissertation

6110-20-30 Seminars in History of European Philosophy (4, 4, 4)

6150-60 Seminars in History of American Philosophy (4, 4)
Astronomy (150)

UNDERGRADUATE

2110-20-30 Introductory Astronomy (4, 4, 4) Surveys astronomical data and theories. 2110-20 concentrate on the solar system. 2110 introduces stellar astronomy including binary stars and variable stars clustered in clusters and galaxies. It is recommended that the courses be taken in sequence. 4 hrs including demonstration lab.

2118-28-38 Honors: Introductory Astronomy (4, 4, 4) Observation of planetary nebulae and quasars, etc. in the universe. Planets, stars, and the interstellar medium. Must be taken in sequence. 3 hrs lecture-discussion; 2 hrs lab per week. Coreq: Math 1810-20-30 or equivalent.

4110-20-30 Astrophysics (3, 3, 3) Physics of stars and interstellar matter, planets and interplanetary matter, atmospheres, interiors, and evolution; nebulae, quasars, pulsars, etc. Observational data and their determination. Current developments. Approach will be interdisciplinary. Appropriate for majors in Physics. Prereq: Physics 2330 and permission of instructor.

Physics (773)

UNDERGRADUATE

The undergraduate program in physics is designed to give the student a wide background which will permit him readily to specialize in various areas such as nuclear physics, solid state physics, high energy physics, astrophysics, and nebular physics, etc.

Students planning to major in physics are urged to consult supervisors in the Department of Physics prior to registration in freshman year with regard to selection of proper first course in physics.

Major: Physics 1318-28-38 and Mathematics 1840-50-60 are prerequisites to a major in Physics which includes the following courses: Physics 2318-28-38, Mathematics 2840-50-60; Physics 3210-20; either Physics 3710-20-30 or 4110-20-30; 4210-20; and at least six hours from 3510-20-30, 3610-20; 4230-40, 4510-20-30, 4540-50. Physics 310-20-30 or Basic Engineering 1310-20-30 may be substituted for Physics 1318-28-38 and Physics 2310-20-30 by a graduation requirement. Transfer students from other school or from other departments may substitute 2510 and one quarter of an upper division physics course for 1318-28-38.

A major in Physics with a concentration in Health Physics must take 2310-20 or 2318-28, 3210-20, 3710-20-30, 4210-20, 4710-20-30, and Mathematics 2840-50-60. It is suggested that students also take Chemistry 1110-20-30, 3211-21-31, 3219-29-39, and 12 hours of an approved biological science.

Minor: A minor in Physics consists of 24 hours of courses including 2318-28-38 and the remainder from physics courses numbered 3000 or above. Substitution provisions in the major statement apply also to the minor.

An Engineering Physics Curriculum is also offered. The program is described on page 133 and listed in tabular form on page 113.

1210-20-30 Introductory Physics (4, 4, 4) General course for students whose major falls outside the physical sciences. Concepts of physics developed by observation of phenomena and logic rather than mathematics analysis. Specific areas covered in the first quarter are mechanics, heat and energy. In the second quarter, electricity, magnetism, and light are discussed. In the third quarter the main emphasis is on modern physics. It is recommended that the courses be taken in sequence. 1210-20 represent a survey of Classical Physics and are recommended as an introduction to the disciplines for Liberal Arts non-science majors.

1310-20-30 Fundamentals of Physics: Mechanics and Heat (4, 4, 4) 1311-20-30 is equivalent for graduation purposes. Must be taken as a sequence. Coreq: Math 1810-20-30. 3 hrs lecture, 2 hrs lab per week.


1410-20-30 Nature of the Physical World (4, 4, 4) Introductory course in concepts and principles of physical sciences which enables a student to establish a unified picture of the physical universe. In the first two terms the principles of mechanics, electricity, and wave motion are developed and applied to such varied fields as solar systems, atomic and molecular behavior, radiation, dynamic changes in the atmosphere and in the earth's crust and to stellar and galactic phenomena. In the third term these principles are applied in more detail to such topics as nuclear energy, cosmology, atmospheric and oceanic phenomena, drifting continents and science and society. May be taken out of sequence only with permission of instructor. 4 hrs including demonstration lab.

1450 Physics of Athletic Activity (4) Principles of physics, particularly mechanics and heat, are introduced. These principles will emphasize their role in physical activities, particularly sports-related. Course topics include statics, equilibrium, potential energy, momentum, force, work, and energy. 4 hrs lecture-demonstration.

1810 Physics of Music (4) Production, transmission, and reception of sound waves. Frequency, intensity, timbre. Basic acoustics of instruments and voice. 4 hrs lecture and demonstration.

2210-20-30 Elements of Physics (4, 4, 4, 4) 2210-30 Mechanics, Properties of Fluids, Heat. 2220- Electricity and Magnetism, Sound Waves. 2230- Optics, Atomic and Nuclear Physics, Radiation Protection. Basic physical principles and applications required in pre-medical, pre-dental, pre-pharmacy, and pre-veterinary programs. Should be taken in sequence. Prereq: Math 1550-60 or Math 1840-50 (or equivalent honors courses). 3 hrs lecture and 3 hrs lab.


2318-28-38 Honors: Fundamental Physics: Electricity, Waves and Optics, Modern Physics (3, 3, 4) Honors course designed for selected students admitted on the basis of performance in 1318-28-38, 1310-20-30, and Engineering 1310-20-30. 2318- Electricity, 2328-Waves and Optics, 2338-Modern Physics. Coreq: Math 2610. Prereq: These ideas for these 20, 3 hrs lecture-discussion, 2 hrs lab per week.


3210-20-30 Mechanics (3, 3, 3) 3210-Statics, kinematics, and dynamics of a particle; 3220-