ASTRONOMY (150)

151-152 Introductory Astronomy (4,4) Survey of the composition, structure, and dynamics of the universe which introduces the basic vocabulary of astronomy and scientific method. Components of the solar system including results from interplanetary exploration; hypotheses and laws governing motion of the solar system in light of current knowledge and scientific reasoning; stellar birth, evolution and death as a chain of events; characteristics of galaxies and the universe examined in light of modern astrophysics and particle physics. A minimum of mathematical analysis. Must be taken in sequence. 4 hours lecture-demonstration and 2 hours laboratory. Only one of the three sequences 151-152, 161-162, or 217-218 may be taken for credit.

161-162 Introductory Astronomy with Laboratory (4,4) Survey course, with accompanying laboratory, treating the composition, structure and dynamics of the universe and introducing the basic vocabulary of astronomy and principles of scientific method. Components of the solar system including results from planetary exploration spacecraft; hypotheses and theories of the origin and evolution of the solar system in light of current knowledge and scientific reasoning; stellar birth, evolution and death as a chain of events; characteristics of galaxies and of the beginning of the universe in light of modern astrophysics and particle physics. Prerequisites for interpretation of raw data; observations are reinforced in laboratory. Must be taken in sequence, 3 hours lecture, 2 hour laboratory. Only one of the three sequences 151-152, 161-162 or 217-218 may be taken for credit.

217-218 Honors: Introductory Astronomy (4,4) Introduction to astronomy. Historical perspectives in understanding the celestial universe, with emphasis on the laws of physics as they apply to the changing conceptions of the universe; structure of the solar system and celestial motions; evolution and properties of stars; galactic structure and models of the universe; observational technique and interpretation of underlying physical laws in accompanying laboratory. 3 hours lecture, 2 hours laboratory. Coreq: Mathematics 140 or 130 or equivalent. Credit given for only one sequence of lower division astronomy, subject to approval of the departmental chairman. Limited to 32 students and only one of the three sequences 151-152, 161-162 or 217-218 may be taken for credit.

411 Astrophysics (3) Development of analytical physics. Historical perspectives in understanding the celestial universe, with emphasis on the laws of physics as they apply to the changing conceptions of the universe; structure of the solar system and celestial motions; evolution and properties of stars; galactic structure and models of the universe; observational technique and interpretation of underlying physical laws in accompanying laboratory. 3 hours lecture, 2 hours laboratory. Coreq: Mathematics 141 or 130 or equivalent. Credit given for only one sequence of lower division astronomy, subject to approval of the departmental chairman. Limited to 32 students and only one of the three sequences 151-152, 161-162 or 217-218 may be taken for credit.

420 Speech and Language of the Culturally Different Child (3) Speech and language differences of children of various minority groups, of different ethnic and class membership and from different geographic regions.

473 Audiology II (3) Basic principles of clinical audiology. Therapeutic care, speech, masking and overview of special audiological tests. Prereq: 371. (Same as Special Education 473.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Aural Habilitation/Rehabilitation of the Hearing Impaired (3) Introduction to psychoacoustic, amplification components, characteristics, assistive devices, speech and sound acquisition, speech perception, speechreading, parent-infant; preschool school years of children, communication impairments/ handicaps/remediation of adults, effects of aging, remediation on the elderly and care studies. Prereq: 395 and 473, or equivalents of consent of instructor. (Same as Special Education 454.)

499 Senior Seminar in Communication Sciences and Disorders (3) Capstone Experience: A writing emphasis course exploring the forces shaping the profession of communication disorders in the past, present and future. Prereq: Consent of instructor and senior standing.

401 Cellular and Comparative Biochemistry (4) Electrolyte behavior; chemistry and structure of proteins; enzyme behavior; and biochemical function: catabolism and energy capture; synthetic metabolism; nucleic acid functions; biochemistry of nitrogenous substances; genetic regulation of biochemical processes. Prereq: Chemistry 350-369 and Biology 120 or Zoology 230. Not available for credit if credit has been previously received for Biochemistry 410 or 420. F. (Same as Nutrition 310.)


420 Advanced Topics in Biochemistry (3) Selected Topics of current research interest, e.g., allosteric theory and control of protein function, immunology, regulation of gene expression, bioenergetics, etc. Emphasis on original literature and the demonstration of principles of current knowledge. Historical background, societal impact, ethical and moral implications, and future development of technologies. Written reports required. Prereq: 410. Sp. Writing-emphasis course.

420 Independent Research in Biochemistry (1-3) Supervised research experience for a staff member. Limited to undergraduates and by consent of instructor. May be repeated. Maximum 12 hours. Prereq or Coreq: 410, 419.

422 Junior/Senior Seminar (1) Lecture/discussion on the implications of biochemical principles and techniques in the research, clinical, diagnostic or therapeutic environment. May not be used toward requirements for major in biochemistry.

471-481 Introduction to Physical Biochemistry (3,3) Physicochemical principles with applications to biological systems. Must be taken in sequence. 471. Thermodynamics; chemical equilibrium; solution chemistry; transport phenomena; kinetics; enzymes and catalysis. 481. Elementary quantum chemistry; interactions of light with molecular and magnetic spectrosopies; light scattering; case studies of selected macromolecules. Prereq: Mathematics 142. Chemistry 360-369 and Biology 120 or consent of instructor. 471-F, 481-S. (Same as Chemistry 471-481.)

BIOLGY (190)

110-120 General Biology (4,4) Biology 110 - Biology of cells; cellular basis of life, cell structure and function; energy metabolism; cell division; Mendelism and modern genetics; kingdoms of monera, protozoa, and fungi. Biology 120 - Plant and animal anatomy (tissues, organs, and organ systems), physiology, growth, and reproduction; ecology, population genetics; behavior; and evolution. Recommended for students who are not required to take Botany 110-120. May not receive credit for both Biology 110-120 or Honors Zoology 117-118.

210 Cell Biology (4) Organization and function of the cell. Prereq: 110-120 or 150, or Botany 110-120 or Honors Zoology 117-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores; Chemistry 120-130. 3 hours lecture, 1 additional class meeting. May be taken in any sequence or combination with 210 and 220.

220 General Genetics (4) Classical and modern principles of heredity. Prereq: 110-120, or Botany 110-120, or Honors Zoology 117-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores; Chemistry 120-130, 3 hours lecture, 1 hour discussion each week. May be taken in any sequence or combination with 210 and 230.

230 General Ecology (4) Relations between organisms and their environment, including human environmental problems. Prereq: 110-120, or Botany 110-120, or Honors Zoology 117-118 or the equivalent of 2 years of high school biology and satisfactory ACT scores; Chemistry 120-130, 3 hours lecture, 1 hour discussion each week. May be taken in any sequence or combination with 210 and 220.

BOTANY (198)

110-120 General Botany (4,4) 110 - Introduction to taxonomy through free identification; basic organization and function of cells; respiration; photosynthesis; genetics (including meiosis, mitosis, Mendelian inheritance); survey of plant kingdoms (bacteria, algae, fungi, mosses, ferns, conifers, and flowering plants); 120-Plant growth, anatomy, growth regulation, uptake and transport, origin of life and the mechanism of evolution under direction of student's interest and objectives. May not be used toward requirements for major in botany or environmental science.

305 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. Sp. Su., Mini-Term

306 Genetics and Society (3) Introduction to genetics, anthropology and evolution with emphasis on their implications for human society. (Same as Anthropology 306.)

309 Biology of Human Affairs (3) Basic biological principles involved in deterioration and preservation of an environment in which humans and their cultures may survive.
310-320 Plants: An Evolutionary Survey I, II (3, 3) Morphology, development, natural history, and evolution. 310 - Surveys non-vascular plants (monera, algae, fungi, and bryophytes). 320 - Surveys vascular plants (ferns, fern allies, gymnosperms, and flowering plants). Need not be taken in sequence. Prereq: 8 hours biological sciences. F, Sp

313 Introductory Plant Pathology (3) (Same as Entomology and Plant Pathology 313.)

321 Introductory Plant Physiology (4) Organisms physiology of water relations, mineral nutrition, morphogenesis, elements of metabolic processes, effects of age, light, natural rhythms, temperature, and other environmental factors. Lecture and lab. Prereq: One year general chemistry and one year biological sciences. F, Sp, Su

330 Field Botany (4) Principles of taxonomy, basic ecological concepts and the identification, recognition, collection and preservation of local, native and naturalized plants. Prereq: 8 hours in biological sciences. F, Sp, Su

346 Introduction to Oceanography (4) Physical, chemical, biological, and geological processes of the oceans, including tides, waves, ocean circulation, ocean basin processes, marine sedimentation, biogeochemical cycles, and food webs.

371 Undergraduate Seminar (1) At least one hour is required for a Botany major or minor. Junior or senior standing recommended. May be repeated. Maximum 2 hours.

400 Tutorial in Botany (1-2) Individual, independent study under guidance of selected staff. By application only. May be repeated with consent of department. Maximum 4 hours.
coordination compounds; nuclear chemistry; transition elements; advanced chromatographic theory. Prerequisites: PHYS 251 or 252, and Mathematics 241 or 247. 479-489 Physical Chemistry Laboratory (2,2) Experiments in topics of 471-488. Prerequisites Coreq: Corresponding courses 471 for 479 and 481 for 489. 1 lab. 1 E

484 Advanced Physical Chemistry (3) Topics from chemical dynamics, statistical thermodynamics, quantum mechanics of chemical systems, and molecular structure and solid state. Prerequisites: 481 or 483. 

490 Introductory Polymer Chemistry (3) Fundamental principles stressing the role of chemistry in the interdisciplinary field of polymer science. Relation of molecular structure to bulk properties of polymers. Prerequisites: 360. Coreq: 481 or 483. F

CHILD AND FAMILY STUDIES (245)

110 Introduction to Early Childhood Education (3) History, philosophy, current trends, issues, programs and program models. Includes observation.

205 Introduction to Family Life Programs (1) Community and school-based programs that focus on enhancing individual and family life. Includes observational experience.

210 Human Development (3) Conception through adulthood in various social/ecological contexts; interpersonal relationships among various cognitive, emotional, social; normative, nonnormative development. Includes observation. 

211 Development in Infancy and Early Childhood (3) Development from conception through early childhood; relationships of interaction, family, and environment; social, physical aspects of ontogeny; normative, nonnormative development. Includes observation.

213 Development in Middle Childhood and Adolescence (3) Development during middle childhood and adolescence; interrelationships among cognitive, emotional, social, physical aspects of ontogeny; normative, nonnormative development. Includes observation. Prerequisites: 211.

220 Marriage and Family: Roles and Relationships (3) Emerging, declining role, changing relationships among family members across life cycle from various theoretical approaches; impact of gender roles on marital relationships, marital quality, power, decision-making, communications, conflict management, combining work-family roles. (Same as Women's Studies 230.)

240 Human Sexuality (3) Sexuality through cultural, social, familial, and psychological factors.

300 Family Systems (3) Family systems as a component of human ecology; factors impacting on the nature of interpersonal families, and environments. Prerequisites: NTR 100, RCS 350, CFS 210, and 6 hours in major.

312 Adulthood and Aging (3) Adult life in society from youth through elderly; adjustment to internal, environmental changes through adulthood; interrelationships among various aspects of development: physical, cognitive, emotional, social. Includes observation.

320 Parent Education (3) Factors in contemporary American families impacting on parent-child relations; review of programs for strengthening parenting skills. Prerequisites: 220 or consent of instructor.

345 Family Resource Management (3) Theory and application of managerial functioning in family settings; analysis of goals, resource use, information systems, constraints and contingencies. Observation and analysis of diverse family practices. Prerequisites: 220 or consent of instructor.

350 Early Childhood Education I: Environments for Children (3) Classroom management, behavior guidance, organization of day care environments, programming, interpersonal skills, interaction with children, child stress reduction and management in classroom. Laboratory participation required. Prerequisites: 110 and admission to the Child Development major or consent of instructor.

351 Early Childhood Education II: Curriculum and Program Development for Young Children (4) Planning effective early learning programs for young children relating knowledge of children's growth and development to appropriate experiences in art, music, number, language, science, physical education, planning, implementing, evaluating curriculum activities. Laboratory participation included. Prerequisites: 350 and admission to the Child Development major or admission to the Early Childhood Education licensure program.

352 Family, School, and Community Relationships (3) Techniques for developing community relationships and advocating for children and families, including handicapped individuals. Includes observation and program experiences. Prerequisite: Coreqs: 351 or 360 and consent of instructor.

353 Reading, Language, and Literacy (3) Theory and methods for creating learning environments for the development of language, literacy, and writing skills. Prerequisites: 350 and admission to the Early Childhood Education licensure program or consent of instructor.

360 Family Stress (3) Family's response to stressful circumstances; skills for intervention into family systems; violence, abuse, divorce, illness, death. Prerequisite: 220 or consent of instructor.

405 Development of Interpersonal Skills (2) Development of basic interpersonal skills needed to work with families and other professionals. Includes active listening, self-disclosure, relationship-building, and negotiation. Prerequisites: Progression into Family Studies licensure program.

420 Families: Ethnicity, Race, Class and Culture (3) Cultural, socioeconomic, and political influences on the needs and programs. Prerequisites: 220, 320, Junior standing or consent of instructor. (Same as African-American Studies 420.)

430 Family Communication (3) Dynamics of interactions among family members, facilitation of effective teaching strategies for facilitating development. Includes participation. Prerequisites: 350 and admission to the Child Development major or admission to the Early Childhood Education licensure program. Prerequisites: 351 or Coreq: 351.

451 Early Childhood Education II: Mainstreaming Exceptional Children (3) Individualized curriculum planning based on knowledge of normative, nonnormative development, assessment, and strategies for facilitating development. Includes participation. Prerequisites: 350 and admission to the Child Development major or admission to the Early Childhood Education licensure program.

460 Directed Study in Child and Family Studies (1-3) Individualized learning experience arranged for students under supervision of faculty. May be repeated. Prerequisites: 9 hours in Child and Family Studies and consent of instructor.

470 Student Teaching (15) Responsibility for planning and guiding groups of infants, toddlers, or preschoolers under supervision of classroom teacher and coordinator. Includes weekly seminar. Prerequisites: 350 and 351 and admission to the Child Development major or admission to the Early Childhood Education licensure program and completion of all progression requirements. Satisfactory/No Credit only. 

471 Advanced Practicum in Child Development Specialization (3) Supervised experiences working with children and families in community settings related to each student's child development specialization: child life, early childhood education, language and literacy, and administration, early childhood special education, and research. Prerequisites: Consent of the instructor. May be repeated. Maximum 6 hours. Satisfactory/No Credit only.
Two foci are the latter halfof the fifth century B.C. and the Roman period (ca.300-700 B.C.). Rise and fall of the Minoan and Mycenaean civilizations and their effect on the Aegean World and Cyprus. Evidence for daily life is obtained from forensic facts. Architecture, wall paintings, and artifacts. Prereq: 323, 261, ancient history (Ancient Near East and Ancient Greece), or consent of instructor. Writing-emphasis course.

381 Greek Civilization (3) Major aspects of ancient Greek civilization: religion, fine arts, political life, pan-Mediterranean relations, the prominence of Athens; the role of modern archaeology in interpretation; emphasis on the sixth and fifth centuries B.C. Writing-emphasis course.

382 Roman Civilization (3) Major aspects of ancient Roman civilization: political institutions, art and architecture, history, culture, and foreign relations, especially those involving the Republic and early Empire. Writing-emphasis course.

383 Women in the Greek and Roman World (3) The condition of women in the apparently male-dominated world of Classical Greece and Classical Rome. Evidence is derived from literature, vase paintings, and other art forms. Prereq: 323, 261, ancient history (Ancient Near East and Ancient Greece), or consent of instructor. Writing-emphasis course.

344 Cities and Sanctuaries of the Ancient Greek World (3) Archaeological survey of the development of the Greek city and sanctuary from prehistoric times through the Roman period (ca.3000-100 B.C.). Rise and fall of the Minoan and Mycenaean civilizations and their effect on the Aegean World and Cyprus. Architecture, wall paintings, and artifacts. Prereq: 323, 261, ancient history (Ancient Near East and Ancient Greece), or consent of instructor. Writing-emphasis course.

221 Early Greek Mythology (3) Archaic Greek religion through comprehensive study of Greek myths with emphasis on how they reflect the early Greek vision of the universe and humanity's place in it. Origins and development of Greek myths and the rise of organized religion, from Bronze Age to about 450 B.C. Includes Homeric epics and mythology, writing-emphasis course.

222 Classical Greek and Roman Mythology (3) Use of myth in literature, drama, and philosophy of Greece and Rome from about 450 to about 350 A.D. Two foci are the latter half of the fifth century B.C. and the last quarter of the first century B.C. Includes Horatian intuitions into Greece and Rome, including early Christianity. Readings include Sophocles, Euripides, Roman poetry, and modern scholarship. Writing-emphasis course.

232 Archaeology and Art of Ancient Greece (3) Survey of Greek prehistoric and archaic time to the Roman period (ca.3000-100 B.C.). For prerestoration emphasis on architecture and artifacts and their use in the culture of the Minoan and Mycenaean civilizations and that of the following Dark Age. For Archaic, Classical, and Hellenistic periods emphasis on development of architecture, sculpture, and vase painting. Includes minor arts and the relationship between archaeology and art. Writing-emphasis course.

233 Archaeology and Art of Etruria and Rome (3) Survey of the archaeology of the Italian peninsula and the Roman World from prehistoric times to the fall of the Roman Empire (1000 B.C.-500 A.D.) Reconstruction of the Etruscan culture from tombs, paintings, and artifacts, development of Roman architecture, and urban planning in Rome and the provinces, Prereq: 323 or consent of instructor. Writing-emphasis course.

253-254 Greek and Roman Literature in English Translation (3,3) Greek Literature. Major literature of ancient Greece from Homer to Menander, with emphasis on the sixth and fifth centuries B.C. 254-Roman Literature. Major works of the Romans from Plautes to Tacitus. How the Romans borrowed from the Greeks and then achieved their own artistic identity by the time of Vergil's Aeneid. Writing-emphasis course.

273 Medical and Scientific Terminology (3) Greek literature and Latin roots from which medical and scientific terminology is derived. Extensive practice in analysis of terms. Practice in use of Latin nomenclature.
on developing good programming habits. Building abstractions with data and data. Programming in a modern computing language.

111 Computer Organization (3) Number systems, internal representation of numbers in computers, hardware components, hardware organization, introduction to assembly language, microprogramming general purpose computing. Computing with register machines, introduction to digital circuits. Prereq: 102. 3 hour lab required.

112 Data Structures (3) Structured programming, data structures and applications, I/O techniques, lists, queus, trees, tables, streams, algorithms, files. 3 hour lab required. Prereq: 102.


291 Lower-Division Special Topics (1-3) Topics vary. Programming language structure, computer software packages. May be repeated. Maximum 9 hours.


320 Problem Solving (3) General approaches to problem solving, with emphasis on formulating intuitive heuristics. Structure of problems and goals, generation of alternatives, and dealing with incomplete information. Prereq: 111 and 311. 3 hour lab required.

340 Introduction to Information Systems Design (3) Principles of analysis and design of information systems (e.g. data processing, management information and decision support systems). Advanced data structures, concepts and techniques. Format is 2 lecture hours and 3 lab hours. Prereq: 111 and 112.

350 Systems Programming (3) Linkers, loaders, multitasking, I/O facilities, interrupt handling, monitors, editors. Prereq: 111 and 112. 3 hour lab required.

371 Numerical Algorithms (3) (Same as Mathematics 371).


411 Senior Thesis I (3) Frontiers of computer science and technology and research. Students begin writing a senior thesis. Prereq: Senior standing. Writing emphasis course.

412 Senior Thesis II (3) Continuation of 411. Writing emphasis course.

420 Advanced Topics in Machine Intelligence (3) Topics such as search, learning, expert systems, neural networks, pattern recognition, and natural language processing. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

430 Advanced Topics in Hardware Systems (3) Topics such as architecture, parallel processors, microprogramming, networks and communications. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

460 Advanced Topics in Software Systems (3) Topics such as operating systems, compilers, parallel computation, software engineering, database systems and programming languages. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

470 Advanced Topics in Scientific Computation (3) Topics such as numerical methods, supercomputers and computer modeling and simulation of physical systems. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

471 Numerical Analysis (3) (Same as Mathematics 471).

472 Numerical Algebra (3) (Same as Mathematics 472).

480 Advanced Topics in Theoretical Computer Science (3) Topics such as theory of computation, complexity theory, formal languages and graph theory and its applications. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: Completion of core curriculum or consent of instructor.

483 Independent Study (1-15) Special project in area of student's primary interest. Directed by Computer Science faculty, perhaps joint with student's faculty advisor. Intended for students with a specific project to pursue in conjunction with a faculty member. Project may be from a department other than Computer Science in which case a faculty member from the appropriate department will be a part of the project. May be repeated. Maximum of 6 hours may be applied to the major. Prereq: consent of instructor.

494 Special Topics in Computer Science (1-3) May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

DANCE (274)

101 Practicum: Dance Production (1) Supervised technical and production aspects of university dance company. May be repeated. Maximum 2 hours.

201 Practicum: Dance Performance (1-2) Preparation and presentation of university dance company performances. Participation through audition only. May be repeated. Maximum 16 hours.

210 Ballet: Level I (3) Instruction and practice in elementary classical ballet techniques. May be repeated. Maximum 4 hours.

220 Jazz: Level I (2) Instruction and practice in elementary jazz dance styles and techniques. May be repeated. Maximum 4 hours.

230 Modern: Level I (2) Instruction and practice in elementary modern dance techniques. May be repeated. Maximum 4 hours.

240 Tap: Level I (2) Instruction and practice in elementary tap dance techniques.

310 Ballet: Level II (2) Instruction and practice in intermediate classical ballet techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.

320 Jazz: Level II (2) Instruction and practice in intermediate jazz dance styles and techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.

330 Modern: Level II (2) Instruction and practice in intermediate modern dance techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 12 hours.

340 Tap: Level II (2) Instruction and practice in intermediate tap dance techniques.

410 Ballet: Level III (2) Instruction and practice in advanced classical ballet techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 16 hours.

415 Teaching Creative Dance for Children (2) Theory, methods, materials and practical experience in the presentation and integration of creative dance in grades K-6. A mini-teaching experience is involved in this class.

420 Jazz: Level III (2) Instruction and practice in advanced jazz and modern dance styles and techniques. Available to dance majors and minors with consent of instructor. May be repeated. Maximum 16 hours.

430 Modern: Level III (2) Instruction and practice in advanced modern dance techniques. Available to majors and minors or with consent of instructor. May be repeated. Maximum 16 hours.

440 Composition I (2) Choreographic skills emphasizing form, content and music. Prereq: 4 hours credit in upper level modern dance technique (330 or 430) or approval of instructor.

445 Composition II (2) Choreographic skills emphasizing design, use of costumes and props. Prereq: 440 or approval of instructor.

450 Composition III (3) Application of choreographic and production skills culminating in the presentation of two works. Prereq: 440 or 445 or approval of instructor.

460 Rhythmic Analysis (3) Basic nature and principles of music and rhythmic notation with emphasis on their correlation with dance movement and composition. Prereq: Consent of instructor. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

465 Dance Notation (3) Fundamentals of movement notation with emphasis on notation and reading of movement studies. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

480 Dance History through the 19th Century (3) Survey of the dance of various societies and cultures from pre-history through the nineteenth century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

481 History of Dance II (3) Survey of the development of dance in theater, recreation and education during the 20th century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

490 Dance in the 20th Century (3) Survey of history and philosophy of dance in the 20th century. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

493 Directed Independent Studies (1-3) Independent study in a specialized area with dance. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

495 Dance Pedagogy (3) Principles and methods of the teaching of dance with practical application in a minor or major sequence. Senior standing or graduate status required for graduate credit. Different level of performance is expected of those registered for graduate credit.

ECOLOGY (278)

370 Environment and Conservation (2) Introduction to natural and artificial environments and natural resource conservation. Limited to students in the College of Education.

ECONOMICS (283)

100 Survey of Economic Ideas (3) Ideas of major economists in context of socioeconomic conditions of their time. Emphasis on nontechnical treatment. May not be substituted for Economics 201.

201 Introductory Economics: A Survey course (4) Theory of consumer behavior, supply and demand, costs of production, market models, national income and employment theory, money and banking, monetary and fiscal policy, debt, and international economics.

207 Honors: Introductory Economics (4) Honors course for students of superior ability and interest. Students accepted on the basis of their records.

311 Intermediate Macroeconomics (3) Theories of consumer behavior, production and costs, price and behavior of firms in perfectly competitive, monopolistic and imperfectly competitive markets, input prices, income distribution, welfare and general equilibrium. Prereq: 201.


321 International Economics (3) Balance of payments, exchange rate determination, monetary and fiscal policies, monetary arrangements, comparative advantage, tariffs and non tariff trade distortions, protection arguments, regional integration. Prereq: 201.

323 Economic Development (3) Theories of economic development, policies and strategies used to promote economic improvement in less developed countries. Prereq: 201. Writing-emphasis course.

324 Comparative Economic Systems (3) Economic processes under alternative strategies and allocations in different countries. Prereq: 201. Writing-emphasis course.


341 Survey of Labor Economics (3) Extension of economic principles to labor markets, public policy questions, demand and supply, wage policy differentials, unemployment, unions in the private sector, investment in individuals, education and training, mobility. Prereq: 201.

343 Labor Relations and Collective Bargaining (3) Sea Management 311.


361 Regional and Urban Economics (3) Overview of regional differences, Theory of industrial and agricultural location and human migration, economic basis for land use patterns, central places, and urban form, regional and urban structure, growth, and methods of analysis, examples, problems. Prereq: 201.

368 Econometrics (3) Methods of specification, estimation, testing and forecasting of economic relationships, includes specification of models, estimation methods, statistical inferences of empirical results, forecasting procedures. Emphasizes econometric problem-solving, such as multi-collinearity, heteroscedasticity, and autocorrelation. Prereq: 201, Statistics 201, Mathematics 121-122 or 141-142.

400 Special Topics (3) Topics vary. Prerequisites determined by department each time course is offered. Numerical grade is given to law students. Prereq: 201.

413 Macroeconomic Fluctuations (3) Analysis of historical data, methods of analyzing macroeconomic fluctuations, theoretical explanations of cycles, and the role of monetary and fiscal policies in the aggregate economy. Prereq: 313 or consent of instructor. Writing-emphasis course.


424 Political Economy of World Development (3) Topics vary. Latin America, Asia, Soviet Union and Eastern Europe. Analysis of major economic strategies, policies, and problems. Major writing requirement. Prereq: 201. Writing-emphasis course may be repeated when topic varies. Maximum 9 hours.


452 Economics of Resources and Environmental Policy (3) Economic analysis of environmental policy and allocation of resources. Benefits and costs of development of natural resources and impacts on growth on environment. Prereq: 201. Writing-emphasis course.

471 Public Finance: Optimal Government Functions and Expenditure Analysis (3) Problems of collective consumption, external effects, public investment, social decision making. Prereq: 201. Writing-emphasis course.

472 Public Finance: Taxation and Intergovernmental Relations (3) Federal, state, and local taxes and tax system, non-tax sources of revenue, fiscal federalism. Prereq: 201.

482 Introduction to Mathematical Economics (3) Application of basic mathematical tools (e.g., calculus, matrix algebra) to economic theory. Prereq: Economics 311 with a grade of B or better, Mathematics 141-142 or 147-148.

490 Honors Seminar (1-3) Topics vary. Senior lying required. Prereq: Senior standing, 3.0 or higher GPA in economics and consent of instructor.

493 Independent Study (1-3) Opportunity for qualified students to pursue topics of special interest. Prereq: Senior standing, 3.0 GPA in economics courses, and consent of instructor. Maximum total credit: 3 hours.

EDUCATION (289)

100 Special Topics (1-3) Study in selected disciplinary or professional areas represented in the College of Education. Topics to be determined as needs/issues are identified and as resources are available to support the course.

102 Teaching and Helping Professions in Education (3) Study in selected interdisciplinary/professional areas in the College of Education. The course is designed for students considering a major in the College of Education or who are entry level students in the College. The course provides an opportunity to pursue the many and varied programs of study in the College.

302 School and American Society (3) (Same as Educational Curriculum and Instruction 302.)

400 Professional Studies: Teachers, School, and Society (3) Focus on roles and responsibilities of teachers, on how schools are organized and the relationship between the schools and the broader society. Prereq: or Coreq: Educational and Counseling Psychology 210; Prereq: Admission to Teacher Education.

401 Professional Studies: The Learner (3) Understanding of students from diverse cultures; study of learning principles; special needs of learners; behavior management techniques; field experiences. Prereq: or Coreq: Educational and Counseling Psychology 210 and Education 400; Prereq: Admission to Teacher Education.

403 Professional Studies: Teaching and Curriculum (2) Organizational patterns of curricula and classroom development, effective teaching strategies for diverse learners, evaluation of instructional strategies, selection of appropriate instructional strategies and resources, Prereq: or Coreq: Educational and Counseling Psychology 210 and Education 400; Prereq: Admission to Teacher Education.

405 Special Topics in Educational Psychology (1-3) Topics vary. Prerequisites determined by department each time course is offered. Prereq: Coreq: Educational and Counseling Psychology 210 and Education 400; Prereq: Admission to Teacher Education.

EDUCATIONAL AND COUNSELING PSYCHOLOGY (311)

210 Psychoeducational Issues in Human Development (3) Understanding and application of the psychology of human development to teaching/learning processes in educational settings. Primarily for students entering teaching or Human Services.

212 Career and Personal Development (3) Systematic approaches to facilitating career development and life planning. Prf: Sp.

215 Learning Skills and Study Systems (3) Approaches to enhancing academic performance through study skills, efficient reading and understanding of personal factors.

308 Laboratory in Educational and Counseling Psychology (1-3) Prerequisites in acquiring knowledge and skill in areas such as interpersonal relations, career decision-making, communication and self-awareness, individual and group format. May be repeated. Maximum 9 semester hours. Satisfactory/No Credit or letter grade.

404 Special Topics (1-3) Instructor initiated course offered at convenience of the department on various topics of current interest. Contact department for listing of topics to be covered. May be repeated. Maximum 15 hours.

410 Sex Role Development: Implications for Education and Counseling (3) Theories and research concerning the development of sexual role and its relevance in educational and counseling settings. (Same as Women's Studies 410) Prf: Sp.

431 Personality and Mental Health (3) Perspectives of mental health with applications to education and other social institutions.

432 The Disadvantaged Student: Psychoeducational Perspectives (3) Socio-cultural, historical, and psychological factors influencing the behavior and educational performance of disadvantaged students. Prereq: Consent of instructor. Prf: Sp.

460 Self-Management in the Helping Professions (3) Applications of self-management strategies to career, social, emotional and health domains for helping professionals and their clientele. Prereq: Introductory course in psychology or permission of instructor. Prf: Sp.

483 Independent Study (1-15) Independent investigation of problems in educational and counseling psychology. May be repeated. Maximum credit 15 hours.

EDUCATIONAL CURRICULUM AND INSTRUCTION (301)

141 Efficient Reading and Study Skills (2) Improvement of reading comprehension and rate. Development of extensive vocabulary enrichment, study skills as they relate to content area subjects. Satisfactory/No Credit only. Prf: Sp.

203 Field Study in Education (1-3) Problems of personal and active service in the field. Development of methods of teaching, curriculum materials, school-community relationships and school organizations. May be repeated. Maximum 6 hours.

302 School and American Society (3) (Same as Educational Curriculum and Instruction 302.) Prf: Sp.

303 Microcomputers and Instructional Design (3) Introduction to basic operations and application of the microcomputer as related to curriculum development and instructional design. Prereq: Admission to the Teacher Education Program. Prf: Sp.

324 Applications of Instructional Technology in Elementary and Middle School Teaching (1-3) Applications of instructional technology in the elementary and middle schools with an emphasis on the use of educational software. Prereq: Admission to the Teacher Education Program. Prf: Sp.

325 Teaching Science and Social Studies in Elementary and Middle Schools (3) Emphasis on teaching science and social studies in elementary and middle schools. Prereq: Admission to the Teacher Education Program. Prf: Sp.

335 Teaching Elementary and Middle School Mathematics (3) Methods and background on how to teach word recognition skills, comprehension, study skills and how to use materials. Prereq: Admission to the Teacher Education Program. Prf: Sp.


355 Introduction to Secondary Schools (3) Topics vary. Prerequisites determined by department each time course is offered. Prereq: Admission to the Teacher Education Program. Prf: Sp.

356 Elementary and Middle School Teaching Laboratory Experience (1) Field experiences in tasks related to teaching of elementary and middle school teachers. Prereq: Admission to the Teacher Education Program. Prf: Sp.
ENGINEERING CHEMICAL (226)


240 Fluid Flow and Heat Transfer (4) Force, energy and mechanical energy balances; flow in tubes; piping systems; packed and fluidized beds; pumping and metering; steady and unsteady state heat conduction; heat transfer in tubes and heat exchangers; radiation. Prereq: Math 252, 351.


340 Mass Transfer and Separation Processes (3) Stagnation of wet cake, static and dynamic analysis of chemical and computer methods to design of stage separation systems. Differential equations-application of analytical and computer methods to the design of complex systems, applications include gas absorption, distillation, extraction, humidification, ion exchange and membrane separations. Prereq: Math 331.


380 Seminar (2) Presentation and discussion of topics in the practice of chemical engineering. Satisfactory/No credit.

401 Chemical Engineering Data Analysis (3) Analysis of experimental data; identification of system; statistical properties; computer modeling of processes; statistical process control; optimization techniques.

403 Introduction to Optimization (3) Principles and applications of optimization techniques to chemical process design; unconstrained and equality constrained optimizations, linear programming, dynamic programming, and geometric programming. Prereq: Math 241.

410 Chemical Engineering Laboratory II (3) Laboratory investigations of mass transfer and chemical reaction phenomena in chemical engineering. Prereq: 340, 360, 450.

415 Computer Applications in Chemical Engineering (3) Introduction to computer solution of chemical engineering problems. Primary focus on the application of personal computer programs. Includes flow sheet simulators, statistics, spreadsheets, graphics and process modeling.


440 Transport Phenomena (3) Overview of momentum, heat and mass transfer processes, the analogies, differential and macroscopic balances, applications involving molecular diffusion, including simultaneous mass transport and chemical reactions. Prereq: 340.

449 Separation Process Technology (3) Multicomponent distillation, theory and computer simulations; humidification; specific separation technologies, including membrane separation, crystallization, adsorption, ion exchange, etc. Prereq: 340.

450 Chemical Reactor Fundamentals (3) Homogeneous and heterogeneous reaction kinetics; idealized homogeneous reactor models, both for closed and flow systems; corrections for non-ideal residence time distributions; identification of scaling parameters; catalyst effectiveness factors for both bed catalytic reactors. Prereq: 340. Chemistry 350.

461 Advanced Process Dynamics and Control (3) Process and control system simulation and advanced industrial system design. Cascade, feedback, multi- variate, feedback, and model predictive control system design. Includes computer and laboratory work. Lab. Prereq: 360.

490 Engineering Internship in Process Control (4) Students work in small groups on industrial problems in process dynamics and control. Directed by faculty and engineers from host company. Prereq: 360 and consent of instructor.


485 Hydrocarbon Processing (3) Chemical and physical properties of selected petroleum and processes utilized in conversion of raw material into various fuels and selected chemical feedstocks. Prereq: 340, Chem 350.

489 Design Internship in Industrial Pollution Prevention (3) Students work in small groups to address the prevention of industrial pollution through improved process design. Directed by faculty and engineers from host company. May be substituted for 490 with departmental approval. Prereq: 490 and consent of instructor.


494 Special Problems in Chemical Engineering (3) Chemical engineering problems related to recent developments in industrial practice or engineering research. Prereq: Consent of instructor. May be repeated. Maximum credit 6 hours.

ENGINEERING CIVIL AND ENVIRONMENTAL (254)

210 Engineering Surveys (3) Measurement through application of surveying techniques; theory of errors and their analysis; concepts of horizontal, vertical and angular measurements and control; construction surveys; and route surveys through vertical and horizontal curves. Prereq: Sophomore standing.

251 Transportation Engineering I (3) Transportation problems and perspectives, rural and urban; use of a systematic planning process; analysis of existing travel patterns, modeling of travel and demand, development and evaluation of the negotiation of civil engineering projects. Civil engineering decision making and applications of economic analyses. Prereq: 252. Coreq: Math 121.

261 Structural Analysis I (3) Reaction, shear and moment diagrams; forces in trusses; unsual stress and strain areas of incertitude; torsion. Prereq: Basic Engr. 121.

305 Seminar (2) Selected topics including historical and modern civil engineering achievements, professional and ethical responsibilities. Prereq: Junior standing.


330 Introduction to Soil Behavior (4) Physical and mechanical properties of soils, theory of compaction, settlement, and effective stress. Consolidation theory, time rate and settlement, shear strength of sands and clays, and analysis of homogeneous slopes. 3 hours, 1 lab. Prereq: or Coreq: 351.

352 Transportation Engineering II (3) Introduction to design of construction: intersection design, and operation of various transportation modes, their guidelines and terminals. Two lectures and 1 lab. Prereq: Junior standing and 210.

361 Structural Analysis II (3) Stress and strain in beams and columns; Mohr's circle; influence lines; deflections and beams and trusses; analysis of indeterminate structures; moment distribution. Prereq: 251.

380 Water and Waste Treatment (3) Principles of unit operations employed in physical, chemical, and biological treatment of water, wastewaters, and solid wastes. Prereq: Junior standing and 390.

390 Hydraulics (4) Basic laws and principles of incompressible fluids. Units and dimensional analysis; drag forces, continuity, energy, and momentum equations; pipe flow; flow measurements and distribution; pump characteristics. 3 hours, 1 lab. Prereq: Chemical Engineering 331, ESM 231. Basic Engineering 210.

395 Hydrology (3) Concept of hydrologic cycle, weather patterns, precipitation measurement and distribution, abstractions, and runoff; storm hydrograph and peak flow analyses, including design floods; reservoir and channel design; rainfall and runoff; flow frequency analyses; groundwater flow. Prereq: 390.

400 Senior Project Design (3) Open-ended design projects including problem formulation, specifications, feasibility and various design components. Topics vary but include problems typical of those designed by Civil Engineering consulting firms. Prereq: Completion of all technical courses through junior year.

406 Legal and Ethical Aspects of Engineering (2) Legal principles underlying engineering work; laws of contracts, torts, real property; professional registration and ethics. Prereq: Senior standing.

409 Special Topics (1-3) Recent developments and current practice in civil and environmental engineering through field internship and/or self-study. Prereq: Consent of instructor and department head. May be repeated.

410 Portland Cement and Asphalitic Concrete (3) Aggregate properties and tests, tests of Portland cement, mix design methods for concrete and asphalt, concrete admixtures, tests of asphalt and asphalt mixes, and nondestructive testing. Two lectures and 1 lab. Prereq: 321.

435 Foundation Engineering (3) Fundamentals of geotechnics applied to design and analysis of soilstructure systems; subsurface investigation; design of shallow and deep foundations on rock, Lateral earth pressure and retaining structures. Prereq: 330.

440 Civil Engineering Systems Design and Management (3) Methods of data analysis and modeling of civil engineering systems to develop new and enhance existing systems. Prereq: Consent of instructor and department head. May be repeated.

490 Construction Methods and Equipment (3) Fundamental operations in construction and equipment selection and productivity; concrete and steel construction; and construction contracts and economics. Prereq: 330.

451 Highway Engineering (3) Design, construction, operation, and maintenance of highway facilities; includes application of various engineering principles and techniques to process of planning, location and design of highway facilities; covers both geometric and pavement design. Prereq: 210, 251, 351.
452 Traffic Engineering (3) Characteristics of driver, vehicle, and roadway and their interaction; traffic studies; basic considerations of traffic circulation and control, lighting, capacity analysis, roadway safety analysis and design. Prereq: 210, 251, 352.

453 Airport/Railroad Planning and Design (3) Airport master planning and railroad engineering. Runway configuration, airflow, capacity, geometrics and terminal layout and design. Prereq: 210, 251, 352.

461 Analysis of Framed Structures (3) Maximum stresses due to moving loads; use of influence lines; lateral forces due to earthquake and wind; analysis of portals, buildings, frames, and space frames including connections. Prereq: 210, 251, 352.

461 Introduction to Structural Design (3) Selection of rolled structural steel beams, design of structural steel members for axial tension and compression loads, reinforced concrete beams; use of standard specifications. Prereq: 251.

471 Steel Design (3) Design of plate girders and composite beams; consideration of members subjected to combined stresses; design of a typical framed building including connections. Prereq: 471.

472 Reinforced Concrete Design (3) Reinforced concrete columns and floor slabs, columns with combined axial loads and bending, footings and retaining walls. Prereq: 471.


485 Principles of Geohydrology (3) Same as Geology 485.

489 Water Resources Project Design (3) Development of multi-purpose reservoir and dam project, including data acquisition; spill-way and outlet works design; design of water and sediment transport; drainage and dam safety analyses; and dam safety analyses, including dam break analyses. Prereq: 390, 395.

494 Urban Drainage Engineering (3) Design and management of urban runoffwater and contamination controls. Application of hydrologic and hydraulic principles to design of drainage systems for urban, strip mining, and highway development; design of inlet structures, ditch, culverts, and detention/retention basins; application of computerized models to evaluate land use changes of streamflow quantity and quality. Prereq: 390, 395.

495 Water Resources Development and Management (3) Institutional framework including: water law, evaluation procedures for comparing and selecting among water resources, and operating policies (i.e. objective plans); principles of engineering economics, benefit-cost analysis, and cost allocation methods; environmental impact assessment procedures; design using standard methods; case studies. Prereq: Senior standing.

ENGINEERING ELECTRICAL AND COMPUTER (320)


202 Circuits II (4) Average complex, imaginary and real power; effective values of voltage and currents. Three-phase circuits; delta and wye connections. Complex frequency domain analysis. Mutual inductance, transformers as circuit elements. Linear and ideal transformers; admittance, impedance and hybrid parameters; trigonometric and complex Fourier series, includes laboratory experiments. Prereq: 201, Coreq: Physics 232 and Mathematics 241.

205 Electrical and Computer Engineering Computations (3) Complex analysis and phasor calculus; linear algebra; algorithms for roots of equations; numerical integration and solution of ordinary differential equations. Programming in C and use of the application language MATLAB. Coreq: or Prereq: 201.

251 Small Computer Systems (3) Structured assembly language programming; data collection under the control of the computer, interfacing the system to the real world. D/A converter output to CRT displays; on-line, real time analysis using elementary filters; communications between computers; spreadsheet and graphics; word processing and data base management; includes laboratory exercises and projects. Design content: 2 hours. Prereq: 201, 205. Coreq: 202.

301 Circuits and Electro Mechanical Components (3) DC and AC Circuits, Transistors, Transformers, Motors, Generators. For non-majors only. Prereq: Mathematics 231, Physics 231.


331 Electronic Devices (3) Fundamentals of energy bands, theory of p-n junctions, diodes, field effect transistors, and bipolar transistors; device applications, simple power supplies, and amplifiers. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 202.

332 Electronic Circuits (3) Multistage transistor amplifier biasing, gain stages, and output stages; frequency and transient response of open loop linear amplifiers; fundamentals of integrated circuits, operational amplifier applications in basic feedback configurations; basic transistor switching circuits. Includes laboratory experiments and design projects. Design content: 1 hour. Prereq: 202.

341 Fields (3) Coulomb’s law, Gauss’s law, Ampere’s law, Maxwell’s equations for electrostatic and magnetostatic cases; Maxwell’s equations for dynamic case, dynamic potentials, uniform planewave propagation. Prereq: 321.

341 Introduction to Logic Design of Digital Systems (3) Boolean algebra, a logic design of combinational and sequential circuits, Gate and Flip-flop characteristics for TTL and CMOS technologies. Implementation of circuits using SSI, MSI, and LSI parts. Basic microcomputer architecture and interfacing. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 321.

351 Introduction to Plasma Engineering (3) Particle motion in electric and magnetic fields; collective motions of charged particles in a magnetic field; the Langmuir probe; plasma light sources and lasers; radio waves in plasmas and the ionosphere; MHD generators and thrusters; and detectors for plasma diagnostics. Includes laboratory experiments and projects. Prereq: 202 for ECE majors; or Physics 232 or 238 for all others.

355 Junior Seminar (1) Presentations and discussions related to professional development, and current topics in electrical engineering. Prereq: 202. Satisfactory/No Credit.

405 Digital Signal Processing and Filter Design (3) Discrete-time signals and systems, z-transforms, digital Fourier transforms, analog filter characteristics, non-recursive and recursive filter design, and CAD tools for filter design. Includes experiments and projects. Design content: 1 hour.


412 Linear Control System Design (3) Classical and modern techniques for design of linear feedback control systems. Design content: 2 hours. Prereq: 312.

413 Passive and Active Network Synthesis (3) Network analysis techniques, passive network driving point synthesis, transfer function synthesis, approximation theory, topics in active network synthesis. Design content: 3 hours. Prereq: 312.

421 Electric Energy Systems (3) Structure and operation of the electrical energy grid; load flow; economic loading; planning; control; reliability. Balanced and unbalanced faults; system protection; system stability. Design content: 1 hour. Prereq: 321.

422 Machines (4) Dynamic behavior of rotating machines and machine foundations, types of operation of d.c. machines; response to different wave forms in supply; describing equations for a.c. machines and their numerical solutions. Includes laboratory experiments and design projects. Design content: 3 hours. Prereq: 321.

423 Power Electronics (4) Principles and characteristics of power semiconductor devices, single-phase and polyphase phase-controlled converters, converter control, ac phase controller, voltage-fed inverter and dc-dc converter principles, industry applications. Includes laboratory experiments and design projects. Design content: 1 hour. Prereq: 321.

424 Power Electronics Circuits (3) Voltage-fed inverter circuits, thyristor and diode converters, ac machines, drives, resonant converters, step motor drives, brushless d.c machine principles. Design content: 2 hours. Prereq: 423.

425 Direct Electrical Energy Conversion (3) Principles and practices of energy conversion devices and interfacing them to loads. Includes photovoltaics, MHD, and fuel cells. Design content: 2 hours. Prereq: 321, 331.

431 Digital and Analog Integrated Electronics (4) Basic processing and fabrication of active and passive components for monolithic integrated circuits; characteristics of bipolar, MOS and JFET transistors in typical analog and digital integrated circuit designs; standard digital gates, such as NAND and NOR, NMOS, CMOS, and GaAs gates and arrays; design concepts for op-amps, comparators, references, regulators, and other linear functions. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 332.

432 Analog Signal Processing Electronics (4) Transducer signal and interfacing characteristics; analog integrated circuits including operational, instrumentation, and isolation amplifiers, rms and logarithmic converters, analog multiplexers, demultiplexers, and sequential circuits. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 332.

433 Electronic Amplifiers (4) Feedback amplifier principles; wideband linear amplifier design; radio frequency circuits; balanced amplifier and feedback concepts for amplifiers, power supply design; switching regulator principles; oscillator principles. Includes laboratory experiments and design projects. Design content: 2 hours. Prereq: 332.

441 Communication Systems II (3) Probability, random variables, random processes and their applications to communication systems. Analog modulation in the presence of noise. Digital communication concepts including: channel capacity, band limiting, multiplexing, equalization, modulation and demodulation, synchronization, and error correction. Projects. Design content: 2 hours. Prereq: 331.

443 Microwave Circuits and Electronics (3) Scattered wave description of circuits to include isolators and circulators, frequency dividers, circulators, phase shifters, power generation and amplification by vacuum and solid-state (bipolar, FET) devices. Design content: 1 hour. Prereq: 341.


451 Microprocessors in Computer Engineering (4) Project oriented using a microcomputer kit having a monitor program and development system with cross-assemblers, file management, and emulation capability. Interfaceing and hardware/software trade-offs in interrupt device applications. Design content: 1 hour. Prereq: four courses completed, or consent of instructor. (Same as Nuclear Engineering 464.)


491 Introduction to Digital Signal Processing (3) Design of digital filters. Design content: 1 hour. Prereq: Senior standing or consent of instructor.


500 Fundamental Computer Applications in Industrial Engineering (3) Application of modern computers and computer-aided design (CAD) software and numerical analysis to the design of industrial processes and production systems. Design content: 3 hours. Prereq: 200, Statistics 251.

506 Motion and Time Study (3) Design of work methods including analysis, improvement, and timing of work and determining standards. For non-industrial engineering students. Prereq: Junior standing.


532 Production Facilities Design and Material Handling (3) Design of production facilities including plant layout and analysis and planning for overall moving, material handling, and storage of product. Design content: 1 hour. Prereq: 351.


541 Introduction to Production System Planning and Control (3) Theory and application of forecasting and control techniques including decision making, quality control, and inventory control. Design content: 2 hours. Prereq: 351.

542 Production Management (3) Production planning and control of production systems. Design content: 1 hour. Prereq: 351.

414 Laboratory and Methodology in Human Factors Engineering (3) Project and laboratory-oriented investigation of human factors problems. Instrumentation and measurement of capabilities and limitations and interaction with environmental factors that affect work such as temperature, humidity, lighting and noise. Measurement of task loading effects and effects of interface design on human performance. Student-selected group project. Prereq: 304 and senior standing.

421 Informational Systems I (3) Systems engineering approach to design, development, implementation, and evaluation of systems of information. Emphasizes informational aspects of IE systems. Study of data structures and database management systems. Prereq: 200 and senior standing.

422 Senior Industrial Engineering Problems Analysis (3) Application of Industrial Engineering to field assignments in local organizations, including problem definitions, analysis and presentation. Prereq: 402, 403 and 405.


440 Total Quality Management (3) The philosophy of continuous improvement through analysis of systems; product management and implementation issues; definition, identification, and analysis of systems as compared to costs. Quality planning and improvement; product, process, and equipment design. Quality management, implementation, and improvement; capability analysis; quality of design; components; measurement; and control; relevant to continuous improvement processes; managing quality in short-run environments; the use of classical statistical tools such as correlation and regression analysis. Course contains a lab component to provide hands-on experience. Prereq: IE 300 and senior standing or consent of instructor.

494-495 Special Topics in Industrial Engineering (3) Recent developments in Industrial Engineering including new areas of application, new research techniques and new methodologies. May be repeated once. Prereq: Senior Standing and consent of instructor.

ENGINEERING MATERIALS SCIENCE (638)

201 Introduction to Materials Science and Engineering (3) Correlation of atomic structure, crystal structure and microstructure of solids with mechanical, physical and chemical properties of engineering significance. Prereq: Chemistry 130. E

300 Materials Laboratory Procedures (1) Thermometry, sample preparation for microscopic examination; word problems in materials science usage; data analysis, report writing. Prereq: 201.

302 Mechanical Behavior of Materials I (3) Tensile testing of metals, ceramics and polymers; deformation mechanisms in the various materials; indentation; crystallography and microstructures; non-destructive testing; solidification/crystallization; surface characteristics of metallic materials; failure mechanisms. Prereq: 201. F, Sp, Su


322 Principles of Metallic Materials (3) Properties of metals and alloys; thermal expansion; mechanical properties; fatigue, deformation and fracture; welding, heat treatments; casting, hot and cold forming; material removal and welding methods. Prereq: 201, F

330 Principles of Polymeric Materials (3) Synthesis and molecular structure of polymers; polymerization kinetics; molecular weight; crystallography and polymers; phase transformations. Prereq: 201, F

340 Principles of Ceramic Materials (3) Characterization of ceramic materials as to their crystal structure, their mechanical, electrical, and optical properties. Ceramic fabrication processes from the initial green body fabrication through the firing state. Prereq: 201.

390 Materials Seminar (1) Professional and ethical considerations, safety, patents, product liability. Safety and materials science. Prereq: Credit granting only.

401 Diffusion and Phase Transformations (3) Diffusion in solids, the diffusion equations, point defects and atomic mechanisms of diffusion. Thermodynamics of phase equilibrium. Kinetics and morphology of phase transformations. Prereq: 201, 303. F

405 Structural Characterization of Materials (4) X-ray diffraction and fluorescence; scanning and transmission electron microscopy; microanalytical techniques. Prereq: 302. F

421 Mechanical Behavior of Materials II (3) Descriptions of stress and strain; linear elastic constatutive equation; stress and strain invariants; compatibility of stress and strain; constitutive equations for various materials; yield criteria; brittle fracture; crazing; plastic strain constitutive equations, forming operations and limiting forms. Prereq: 302, ES&M 321, sophomore mathematics.

422 Chemical Process Metallurgy (3) Application of chemical thermodynamics to metallurgical processing of Ferrous and nonferrous pyro metallurgical refining, slag, metal equilibria, solidification, gas-metal processing. Prereq: 303. F

426 Materials Joining (3) Processes for joining metals, polymers and ceramics; mechanical, adhesive, fusion, solidification/crystallization; surface characteristics necessary for joining and chemical bonding; thermal effects on structure and properties of joints; design of joints. Prereq: 201.

431 Mechanical Behavior of Materials III (3) The quantum theory of electrons in solids; the free electron model; metals, semiconductors, insulators; atomic mechanisms of diffusion. Thermodynamics of phase equilibrium. Kinetics and morphology of phase transformation; Prereq: 201, 303. F

451 Systems and Controls (3) Analytical models of dynamic systems. Statistical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurements. Prereq: Coreq 363, 341, ECE 301. F, Sp, Su


475 Fracture-Safe Design (3) (Same as Engineering Science and Engineering 475) Prereq: Materials Science 201, ES&M 231, 321. F, Sp

484 Manufacturing Processes (3) Processes related to design and production of mechanical parts. Casting, forming, cutting, hot and cold forming, metal removal and welding methods. Manufacturing tolerances and surface finishes. Prereq: Materials Science 201, F, Sp

491 Materials Design I (3) Analysis of materials requirements and performance in engineering structures and components; design aspects of materials selection and design considerations. Prereq: 201. Recommended for chemical, mechanical engineering, civil engineering and engineering science and mechanical sciences majors. F

492 Materials Design II (3) Design projects involving materials selection and performance. Prereq: 491, Sp

494 Special Project Laboratory (1-3) Group or individual investigation of problems related to materials science and engineering. May be repeated to a maximum of 6 credits. Prereq: 201 and consent of instructor.

495 Thesis (3) Research problems in materials science and engineering with prior approval of a professor. May be repeated once. Prereq: Senior standing or consent of professor.

ENGINEERING MECHANICAL (650)

331 Thermodynamics I (3) Energy and laws governing energy transformations; thermodynamic properties; thermal cycles; applications to engineering problems. Prereq: Chemistry 130, Coreq: Mathematics 241. F, Sp, Su

332 Thermodynamics II (3) Properties of gases and mixtures; chemical reactions; equilibrium; compressible flow, applications to engineering problems. Prereq: 331, F, Sp, Su

341 Fluid Flow (3) Development of mass, momentum, and energy principles for fluid systems; dimensional analysis, internal and external viscous flows. Prereq: ES&M 231, Mathematics 241. F

344 Heat Transfer (3) Heat transfer by conduction, convection, and radiation. Prereq: 341, F, Sp, Su

345 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems; standards; dynamic characteristics of instruments; statistical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurements. Prereq: Coreq: 363, Prereq: 341, ECE 301. F, Sp, Su


386 Manufacturing Processes II (3) Processes related to design and manufacture of mechanical products. Casting, forming, cutting, hot and cold forming, metal removal and welding methods. Manufacturing tolerances and surface finishes. Prereq: Materials Science 201, F, Sp


401 Thesis (3) Problem investigation and report. Prereq: Senior standing. F, Sp, Su

415 Energy Conversion Systems (3) Fossil fuel energy conversion systems with emphasis on coal technology. Coreq: 475.

422 Environmental Noise (3) Acoustics - measurements and control of noise in industrial and community environments. Prereq: Senior standing in engineering or consent of instructor.

431 Seminar (1) Topics related to engineering including electrical, mechanical, and chemical. Oral presentation by students on engineering topics. Prereq: Senior standing. F, Sp

449 Mechanical Engineering Laboratory (3) Designing, conducting and reporting results of experimental exercises. Test standards and specifications. Analysis of data and formation of conclusions. 4 hours per week. Prereq: 332, 344, 345, Coreq. 475. Sp, Su

451 Systems and Controls (3) Analytical models of physical systems; comprised of combinations of mechanical, electrical, electronic, and thermal systems; feedback control systems, transient and frequency response stability analysis; non-linear control of linear systems;
400 Nuclear Engineering Laboratory (3) Cross-section measurement, diffusion properties of neutrons, critical loading experiment, control rod calibration, statistical weight, statistical analysis, control rod feedback experiments. Prereq: 304 or equivalent. Coreq: 471, 405.

404 Nuclear Fuel Management (3) Topics relative to nuclear fuel cycle including mining and milling, fuel fabrication, fuel handling, nuclear waste disposal, economic and regulatory issues. Prereq: 470.


406 Radiation Shielding (3) Types of radiation sources, fundamentals of gamma ray and neutron attenuation, biological effects, approximate methods of shield design, discrete ordinates. Prereq: 405 or equivalent. Coreq: 471. (3 hours or 2 hours and laboratory.) Prereq: 231 and Materials Science 201. (Same as Materials Science 475.)

421 Introduction to Nuclear Criticality Safety (3) Fundamentals of nuclear criticality safety; criticality accidents; safety standards; overview of experiments, computational methods, and applications. Prereq: 301.

431 Radiation Protection (3) External and internal malignancy, biological effects of radiation, radiation detection, radiation risk assessment. Prereq: 301.

432 Introduction to Fusion Energy I (3) (Same as Electrical and Computer Engineering 453.)

434 Introduction to Fusion Energy II (3) (Same as Electrical and Computer Engineering 444.)

470 Nuclear Reactor Theory I (3) Fundamentals of reactor physics relative to cross sections, kinematics of elastic scattering, resonance, gamma and nuclear data. Analytical and numerical methods applicable to general criticality problems, eigenvalue searches, perturbation theory, and the multipole diffusion equations. Prereq: 301.

471 Nuclear Reactor Theory II (3) Nuclear spectrum computational methods; heterogeneous effects in fast and thermal spectra; considerations in reactor core design; equations that relate thermal and neutronic variables; power distribution calculations and reactivity control methods. Prereq: 470.

472 Nuclear System Design (4) First order design and analysis of a nuclear system, interface with non-nuclear aspects of system design including system reliability and economics, class project. Prereq: 472.

473 Special Topics in Nuclear Engineering (3) Problems related to recent developments and practice. Prereq: Senior standing, consent of instructor. May be repeated.

ENGINEERING SCIENCE AND MECHANICS (335)

231 Dynamics (3) Kinematics of rigid bodies; center of mass; kinetics of systems of interacting rigid bodies; moments of inertia; kinetics of rigid bodies; Newton's laws, work-energy, impulse-momentum. Prereq: Basic Engr. 131, Mathematics 142.

271 Introduction to Biomedical Engineering (3) Overview of biomedical engineering: importance, methodology, biocompatibility, biofluids, bioinstrumentation, and biomechanics. Coreq: Mathematics 241 or consent of instructor.

301 Seminar (1) Engineering professionalism and career planning; seminars on current topics. Satisfactory/No credit. Prereq: Junior standing in ES&M.


322 Mechanics of Materials II (3) Analysis and design of beams, singularities functions, energy methods, thick-walled pressure vessels, realistic bending and torsion, theories of failure and fatigue. Prereq: 321.

323 Mechanical Behavior of Materials (3) (Same as Materials Science 302)

341 Fluid Mechanics I (3) Basic conservation laws of fluids; hydrostatics; integral forms, energy, work, similarity; viscous/turbulent flow through pipes; open channel flow; turbomachinery, performance similarity; Dem- onstration labs. Prereq: 231, Mathematics 241.

400 Materials of Engineering (3) Mechanical properties of engineering materials; data collection and processing; time and cyclic dependent properties. 3 hours or 2 hours and laboratory. Prereq: 311, Materials Science 201.

402 Materials Science of Nuclear Materials (3) Critical view of variables controlling fracture toughness; part and flaw geometry, temperature, loading rate, construction size, material, character- ization of fracture toughness; by stress intensity factors, strain energy release rates, J integral, COD data, transition temperature tests; use of fracture toughness in design. 3 hours or 2 hours and laboratory. Prereq: and Materials Science 201. (Same as Materials Science 475.)

403 Fundamental Principles of Composite Materials (3) (Same as Materials Science 472)

411 Fundamentals of Vibrations (3) Free and forced vibrations of linear and nonlinear systems; parameters; energy methods; free vibration of continuous bodies. Prereq: 231, Mathematics 231.

423 Dynamic Systems (3) Three dimensional dynamical systems of particles and rigid bodies; gyroscopic; variable mass systems; central force systems; Lagrange's equations; stability; transfer functions. Prereq: 223.

431 Engineering Acoustics (3) Concepts of acoustics, measurement, and transmission of sound and their units. Measurability and transmission, noise generation and transmission, noise control and prevention, and applications and procedures for noise abatement. Prereq: 431.


452 Computational Mechanics (3) Integration of fundamental physical laws, mathematical and computational techniques necessary to develop engineering analysis and design capabilities. Finite element method. Prereq: 321; BE 201; Coreq: 341.

453 Projects in Design (3) Conceptualization, analysis, design, and presentation of engineering projects. Prereq: Senior standing in ES&M. 3 hours or 2 hours and laboratory. Prereq: 321, ECE 301.

454 Computational Mechanics in Design (3) Computational techniques applied to engineering design problems. Prereq: 431, 452, 453.

461 Experimental Stress Analysis (3) Theory, techniques, instrumentation, and application of experimental techniques; theory and techniques of brittle fracture analysis; introduction to other strain measuring devices. 2 hours and laboratory. Prereq: 321, ECE 301.

463 Photograph (3) Photoelasticity, photelastic testing method, two-dimensional bend, three-dimensional bend and twist, sub-surface stresses, fracture, failures, and fatigue. 2 hours and laboratory. Prereq: 321, Physics 232.

465 Dynamic Data Acquisition (3) Use and calibration of instrumentation for measuring and recording dynamic events; Fourier analysis, transfer function analysis, digital signal processing, transduction, experimental parameter estimation with applications to modal vibration analysis; 2 hours and laboratory. Prereq: 431, ECE 301.

461 Clinical Engineering and Bioinstrumentation (3) Principles and characteristics of health care delivery systems including hospital equipment and systems; clinical applications to care economics; development and management principles for a hospital-based clinical engineering program. Bi- omedical instrumentation and control system characteristics; performance of transducers, signal conditioning, data readout and storage devices; evaluation of commercial programmable systems, selection and procurement methods, custom-designed systems, equipment maintenance and control programs for hospitals. Prereq: 431, ECE 301.

471 Principles of Artificial Organs (3) Design, development and evaluation of artificial internal organs;
3) Problems related to recent developments and practices for artificial organs; application to blood rheology, cardiovascular systems (3) Application of mass, momentum and transport phenomena in living and life support systems for design optimization; review of currently available analysis of transport processes in therapeutic devices. To receive credit, a student must participate at least in mechanics, paragraph development and essay structure to receive credit. A, B, C, NC grading.

101 English Composition I (3) Strategies for written argumentation, critical reading, and discussion; emphasis on audience analysis, the invention and arrangement of ideas, and revision for style and mechanics; typical assignments include formal essays, in-class essay exams, journal writing, collaborative projects; two individual conferences required. Students wishing additional help with writing should also register for English 104. PreReq: 101. A, B, C, NC grading.

102 English Composition II (3) Critical strategies for reading and writing about literature; emphasis on the documented essay, library skills, and continued development of style and voice. Typical assignments include analytical reading responses, journal writing, quizzes, and collaborative projects; two individual conferences required. Students wishing additional help with writing should also register for English 104. PreReq: 101. A, B, C, NC grading.

103 Writing Workshop I (1) Self-paced Writing Center tutorial for students wanting additional instruction while enrolled in English 101 or having ACT English score below 19 (or SAT verbal composite score of 350/700). Individual instruction in mechanics, paragraph development and essay structure. To receive credit, a student must participate at least two hours per week and must also pass the 101 class in which he or she is currently enrolled. S/N C grading.

104 Writing Workshop II (1) Self-paced Writing Center tutorial for students wanting additional instruction while enrolled in English 102 or students advised by their 102 instructors. Individual instruction in critical reading and in developing and documenting the research paper. To receive credit, students must participate at least two hours per week and must also pass the 102 class in which they are currently enrolled. PreReq: English 101. S/N C only.

118 Honors English Composition (3) For students whose ACT composite scores are above 28 (or SAT verbal composite score of 550 or above) and who have successfully completed the English Placement Exam only. A, B, C, NC grading. PreReq: PreReq: ENGLISH 101. S/N C only.


201 British Literature I: Beowulf through Johnson (3) Major literary works from three periods: Middle Ages, Renaissance, and Restoration and Eighteenth Century. Writing-emphasis course.


207 Honors British Literature I (3) Enriched section of 201 designed for students with a 3.25 or higher GPA.

208 Honors British Literature II (3) Enriched section of 202 designed for students with a 3.25 or higher GPA.

211 Literature of the Western World I: Ancient, Medieval, and Renaissance (3) Writing-emphasis course.

222 Literature of the Western World II: Enlightenment, Romantic, and Modern (3) Writing-emphasis course.

231 American Literature I: Colonial Era to the Civil War (3) Development of American literature from its beginnings to the end of the nineteenth century. Writing-emphasis course.

232 American Literature II: Civil War to the Present (3) Development of American literature from Civil War to the present. Writing-emphasis course.

233 Major Black Writers (3) Black American literature as a literary tradition. Writing-emphasis course.

237 Honors American Literature I: Colonial Era to the Civil War (3) Enriched section of 231 designed for students with a 3.25 or higher GPA.

238 Honors American Literature II: Civil War to the Present (3) Enriched section of 232 designed for students with a 3.25 or higher GPA.

251 Introduction to Poetry (3) Poetry as a distinct mode of artistic expression. Critical tools for perception reading of poems. Writing-emphasis course.

252 Introduction to Drama (3) Critical tools for perceptive reading of plays. Writing-emphasis course.

253 Introduction to Fiction (3) Fiction from the eighteenth through the twentieth centuries, emphasis on the novel. Critical tools necessary for judging varieties of fiction. Writing-emphasis course.

258 Honors Introduction to Drama (3) Enriched section of 252 designed for students with a 3.25 or higher GPA.

263 Introduction to Creative Writing (3) Practice in writing poetry and fiction, combined with study of models and techniques. Writing-emphasis course.

268 Honors Introduction to Fiction (3) Enriched section of 253 designed for students with a 3.25 or higher GPA.

281 Introduction to Film Studies (3) Selected world cinema feature films. Critical techniques necessary for understanding and analysis of narrative cinema. Basic elements of film expression and contours of film theory. Writing assignments. (Same as Cinema Studies 281.)

285 Business and Technical Writing (3) Principles of written communication in science and business.

301 British Culture to 1660 (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course.

302 British Culture: 1660 to the Present (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course.

303 Literature of the English Bible (3) Types of literature in the Bible: legend, folklore, history, biography, poetry, prophecy, apocalyptic. (Same as Religious Studies 306.)

308 Literature of the English Bible (3) Types of literature in the Bible: legend, folklore, history, biography, poetry, prophecy, apocalyptic. (Same as Religious Studies 306.)

310 British Culture: 1660 to the Present (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course.

311 Renaissance Drama (3) English theatre between 1550 and 1640. Representative plays by Shakespeare's contemporaries (e.g., Marlowe, Webster, Jonson).

334 Film and American Culture (3) American films as both works of art and social documents. Relationship between the medium of film and American culture in the twentieth century. (Same as American Studies 334 and Cinema Studies 334.) Writing-emphasis course.


355 Advanced Expository Writing (3) Strategies of writing on personal and academic subjects. Discussion of student and professional writing. Open to sophomores with instructor's consent.

363 Writing Poetry (3) Introduction to writing poetry.

364 Writing Fiction (3) Introduction to writing novels and short stories.

365 Writing Drama and the Screenplay (3) Introduction to writing one-act and full-length plays, as well as screenplays.

371 Foundations of the English Language (3) Phonology, morphology, and syntax of English. History of the English language to 1800. (Same as Linguistics 371.)

372 The Structure of Modern English (3) Survey of approaches to traditional, descriptive, and generative transformation— to the structure of modern English. (Same as Linguistics 372.)

376 Colloquium in Literature (3) Methods and objectives of literary study; conferences to plan student's program of study.

381 Introduction to Folklore (3) Essential terms and concepts in modern folklore-folk-life studies. Emphasis on North American materials: folklore, folksong, myth, epic, fairy tale, song, dance, riddles, riddles, games, and architecture. (Same as American Studies 381.)

388 Literature of the English Bible (3) Types of literature in the Bible: legend, folklore, history, biography, poetry, prophecy, apocalyptic. (Same as Religious Studies 389.)

396 Junior-Senior Honors Seminar (3) Designed for (but not limited to) students with a 3.2 or better GPA, this course examines social and intellectual forces and concepts that have shaped literature in English from medieval to recent times.

401 Medieval Literature (3) Reading and analysis of selected medieval literature and masterpieces in modern English. Writing-emphasis course.

402 Chaucer (3) Reading and analysis of the Canterbury Tales and Troilus and Criseyde in Middle English.

404 Shakespeare I: Early Plays (3) Shakespeare's dramatic achievement before 1601. Selected plays from the romances and comedies (e.g., Twelfth Night), the English histories (e.g., 1 Henry IV) and early tragedy (e.g., Hamlet).

405 Shakespeare II: Later Plays (3) Shakespeare's dramatic achievement between 1601 and 1613. Selected plays from the great tragedies (e.g., Othello), the problem plays (e.g., Measure for Measure), and the dramatic romances (e.g., The Tempest).

406 Renaissance Drama (3) English theatre between 1550 and 1640. Representative plays by Shakespeare's contemporaries (e.g., Marlowe, Webster, Jonson).

409 Spenser and his Contemporaries (3) Principal achievements in prose and poetry of sixteenth-century authors such as Spenser, Wyatt, Marlowe, More, Sidney and Bacon.

410 Milton, Donne and their Contemporaries (3) Principal achievements in prose and poetry of the two first-thirds of the seventeenth century (such as the poetry of Milton, Donne, Marvell; and the prose of Browne, Bacon, Walton).

411 Literature of the Restoration and Early Eighteenth Century: Dryden to Pope (3) Survey of English literature and culture from 1660 to 1745.

412 Literature of the Later Eighteenth Century: Johnson to Burns (3) Survey of English literature and culture from 1745 to 1800.
associations: sylvial characteristics of trees and stands as the basis for the practice of silviculture. Prereq: 1 year of Botany or Biology, 2 hours and 1 lab. F

312 Principles of Silviculture (2) Principles for treating forest stands to achieve selected objectives. Coreq: 311 and (for Forestry majors) 313.1 hour and 1 lab. F

313 Measurements and Sampling (2) Measurement techniques and sampling methods for vegetation; estimation of amount and condition of vegetation based on the use of photo time. Prereq: Statistics 201. Coreq: (for Forestry majors) PSS 210 and 312. 1 hour and 1 lab. F

315 Forest Soils and Watershed Management (3) Soil information, properties, water relations and the basis for forest management. Nutrient cycling, classification and management of forest soils. Hydrology and management of water in the forest ecosystem. Overnight-weekend field trips may be required. Coreq: 312, 313. 2 hours and 1 lab. F

316 Managing Natural Resource Organizations (3) Evolution of natural resource professions and organizations. Culture and structure of natural resource organizations. Organizational and managerial functions. Operations and strategic issues including case studies. Prereq: 211, 2 hours and 1 lab. Sp

317 Principles of Wildlife and Fisheries Management (3) Ecological relationships of wild animals with other animal and plant species, forest habitats. Biological, social and economic aspects of their management. Prereq: 211 or 250, or consent of instructor. F

410 Wildlife Habitat Evaluation and Management (3) Ecological relationships between wildlife and their habitat. Evaluation and management of wildlife habitat. Effects of land-use practices on wildlife habitat. Weekend field trips required. Prereq: 317 or Biology 230. 2 hours and 1 lab. F

416 Planning and Management of Forest, Wildlife and Fisheries Resources (3) Integrated forest and wildlife management through developing land management plans and analyzing case studies including conflict resolution. Prereq: Senior standing, 1 hour and 2 labs. Sp

FRENCH (405)

111-112 Elementary French (3,3) Language Laboratory required. Must be taken in sequence. Not available to students eligible for French 150. E

150 Intermediate French Transition (3) Prereq: Two years of high school French and a placement score below the level required for admission to French 211. This class will not count toward the College of Liberal Arts intermediate-level foreign language requirement. For elective credit only.

199 French Language and World Business (2) The course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team of faculty from the colleges of Business and Liberal Arts will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in the Language and World Business major concentration. See the Director for further information. F

211-212 Intermediate French (3,3) Prereq: 150 or 112 or Departmental Placement Exam. Must be taken in sequence. Students who place in 200 level courses from high school will receive six hours of elementary French credit. E

217-218 Honors: Intermediate French (3,3) For students of superior ability in French. Incoming freshmen admitted on basis of diagnostic test, high school average, and personal interview. Students who place in 211 may enter 218 with permission of instructor. Credit for 200 given to students receiving a grade of A or B in the course. F, Sp

291-292 French Literature in English Translation (3,3) 291-France from the 18th to the 19th Centuries. The Age of Voltaire, Song of Roland, Rabelais, Montaigne, the classical period, and Voltaire. 292-Diderot, 19th and 20th centuries; Flaubert, Bontemp, Sartre, Camus. May not be counted toward the major or minor. Writing emphasis course.

300 French Transition (2) Development of linguistic skills necessary for satisfactory work in courses above 300. Recommended for students who would benefit from additional training beyond 212 in basic skills of reading, speaking and writing French. May not be counted toward the major or minor.

301-302 Elements of French for Upper Division and Grade of French Students (3,3) Elements of language, elementary and advanced readings. Open to graduate students preparing for language examinations, and upper division students desiring reading knowledge of the language. Undergraduate credit only. Not for credit for those having 111-112 or equivalent. No auditors.

311-312 History of French Literature (3,3) Chronological view of French literature in relation to the specific historical developments that have influenced it. Prereq: 212, 216 or equivalent.

313 Aspects of French Literature (3) Study of masterpieces from the great literary movements and counter-movements. Prereq: 212 or equivalent.

324 Women in French Culture (3) Role of women in shaping French history and culture. Feminists (George Sand), royal mistresses (Mme de Maintenon), intellectuals (Marie Curie). Taught in English. May not be counted toward the major or minor. (Same as Women's Studies 324.)

341-342 Intermediate Composition and Conversation (3,3) Grammatical analysis of modern French prose; review of grammatical principles and their application in translation from English into French, both written and oral exercises in free composition, Prereq: 212, 218 or equivalent. Either 342 or 345 may be applied toward the major, but not both.

345 French Business (3) Contemporary French language as it applies to business transactions. Understanding and composing business letters; oral communication and elements of French culture related to good business practice. Either 342 or 345 may be applied toward the major but not both. Prereq: 341 or consent of instructor.

400-401 Consecutive and Simultaneous French-English and English-French Translation (3,3) 400-Consecutive Translation to and from English. Introduction to simultaneous translation to and from English, training of students with good knowledge of French for consecutive and simultaneous translation from French into English, and vice versa, on a variety of subjects such as business, politics, science. Prereq: 342, 345 or equivalent. Preferably taken in sequence.

410 Medieval French Literature (3) Major representative works of Medieval French literature. Texts in modern French. Prereq: 212, 218 or equivalent. (Same as Medieval Studies 410.)

411 French Literature of the 16th Century (3) Highlights of 16th century literature. Beginnings of the novel, Rabelais and Montaigne, readings of poems from the writers from Lyon and members of the Pleiades. Prereq: 212, 218 or equivalent.


413 French Literature of the 18th Century (3) Major works of the Enlightenment. Prereq: 212, 218 or equivalent.


416 Survey of Francophone Literature (3) Introduction to writing in French outside of France. Prereq: 212, 218 or equivalent.

419 Readings in French Literature (3)

420 French Cinema (3) The French cinema from its earliest days through the New Wave directors. Prereq: 212, 218 or equivalent. Can be applied to major. Writing emphasis course. (Same as Cinema Studies 420.)

421 Phonetics (3) Foundation in the science of phonetics. Practical exercises and individual performance. Laboratory training highly recommended. Students from departments outside the Romance Languages may take this course for graduate credit. Graduate credit is not offered to students majoring in the Department of Romance Languages. Prereq: 212, 218 or equivalent.

422 Advanced Grammar (3) Improving one's own style studying basic and more refined structures of the French language. Writing creative free-style compositions. Prereq: 342 or 345.

423-424 Advanced Conversation (1,1) Informal conversation with native or near-native speakers on contemporary topics. Stresses in class contact rather than out of class preparation. Meets two hours a week for one semester credit. Prereq: 342 or 345.

425 Introduction to Descriptive Linguistics (3) Phonetics and phononetics, morphology, syntax, morphology, and syntax. Types of languages, linguistic groups, dialects, and dialect geography. Application of descriptive linguistics—field linguistics, dialect study: its practical use in learning languages and in language teaching. Introduction to transformational grammar. Prereq: six hours of upper division English or six hours of upper division courses in a modern or ancient language (exclusive of German and French 301-302, courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of ancient languages), or consent of department. (Same as German 425, Russian 425, Spanish 425 and Linguistics 425.)

426 Methods of Historical Linguistics (3) (Same as Russian 426, German 426, Spanish 426 and Linguistics 426.)

429 Romance Linguistics (3) Development of Classical Latin through Vulgar Latin into major Romance languages. (Same as Spanish 428 and Linguistics 429.)

430 Theatrical French (2-3) Performance in one or more French plays. Prereq: 212, 218 or equivalent and consent of instructor. Can be applied to major.

431 Highlights of French Civilization (3) Survey of French Civilization from the Gauls to World War II. Historical events, daily life, all forms of arts. Prereq: 212, 218 or equivalent. Writing emphasis course.

432 Contemporary French Culture (3) French contemporary civilization and culture since World War II. Problems, trends and organization of French society today. Prereq: 212, 218 or equivalent.

433 Literary Portraits of French Women (3) This course is designed to acquaint students with a variety of French women, focusing in particular on women of different social backgrounds and of complex personalities. Not for major or minor credit in French. (Same as Women's Studies 433.)

434 Literature of Quebec (3) Survey of literature of Quebec as well as French literature connected with North America. Reading include explorer and missionary works, such as the Voyages of Champlain and the Journeys of the Jesuits, as well as contemporary works written by Quebecers. Prereq: 212, 218 or equivalent.

435 Capstone Experience in French (4) Synthesizing senior colloquium and tutorial in which students reflect on the raison d'etre of the discipline from a multidimensional point of view. Writing emphasis course.

490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language & World Business Director. For Language & World Business majors only. Satisfactory/No Credit only.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

GEOGRAPHY (415)

101-102 World Geography (3,3) Selected topics and world regions, especially those with problems or situations of contemporary interest, to illustrate geographic principles of view, concepts, and techniques. Must be taken in sequence.

107 Honors: World Geography (3) Designed for freshman and sophomore students of superior ability who are
interested in exploring geographical interpretations of various world problems and issues. Enrollment limited. 3 hours lecture and 2 hours lab per week. Prereq: Open to freshmen with a cumulative GPA of 3.2 or better on the ACT or a verbal score of 540 or better on the SAT; and to sophomores with a cumulative GPA of 3.2 or higher. Geographical interpretation to produce a world pattern of distinctive environments significant to human activity. Must be taken in sequence. 3 hours lecture and 2 hours lab per week. Not open to students who have taken 330. Prereq: 131 is prerequisite to 132.

310 Introduction to Maps, Aerial Photographs, and Cartography (3) Properties, sources, uses, design and production of maps, aerial photographs, and other graphic representations of the natural and cultural landscape. 2 hours lecture and 2 hours lab per week.

320 Cultural Geography: Core Concepts (3) Background and method of cultural geography; basic concepts and theories focusing on cultural landscape, culture regions, cultural ecology, innovation and diffusion, cultural integration, and world patterns of cultural phenomena.

323 Behavioral Geography (3) Types of human behavior, such as shopping, territoriality, commuting, residential mobility, and leisure. Conceptual frameworks to analyze human movement by region to distance, natural environment, and culture. (Same as Urban Studies 323.)

334 Meteorology (3) Dynamic atmosphere and resulting weather events. Nature of individual weather elements, their measurement and analysis over time and space.


361 Regional Geography of the United States and Canada (3) Physical, economic, and social distributions as they interrelate to give distinctive character to regions of the United States and Canada. Writing-emphasis course.

363 Geography of the American South (3) Geographical appraisal of the southeastern United States, including physical environment and human resources. Origin and development of contemporary economic and cultural traits of the area. Writing-emphasis course.

365 Geography of Appalachia (3) Interrelation of physical, economic, and social patterns that give distinctive character to the region and its parts, especially in southern Appalachia and its perspective in the current American scene. Writing-emphasis course.

371 Geography of Europe (3) Physical, cultural, and economic characteristics of Europe. Emphasis on the geographical dimensions of change in contemporary Europe. Writing-emphasis course.

372 Geography of Middle America (3) Physical, cultural, and economic characteristics of Mexico, Central America, and the West Indies. (Same as Latin American Studies 372.) Writing-emphasis course.

373 Geography of South America (3) Physical, cultural, and economic characteristics of the countries of South America. (Same as Latin American Studies 373.) Writing-emphasis course.

375 Geography of Russia and the Commonwealth of Independent States (3) Geographical appraisal of Russia and the other successor states to the Soviet Union. Focus on how physical environment, economic patterns, and human resources influence the region's future. Writing-emphasis course. (Same as Russian and East European Studies 375.)

379 Geography of Africa (3) Physical, cultural, and economic characteristics of Africa, with particular emphasis on the area to the south of the Sahara. (Same as African-American Studies 379.) Writing-emphasis course.

411 Computer Mapping and Geographic Information Systems (3) Computer-based representation of digital data for spatial analysis, with emphasis on cartographic data structures. 2 hours lecture and 2 hours lab per week. Prereq: 310 and knowledge of a computer language or consent of instructor.

412 Cartography (3) Cartographic techniques applied to the design, compilation, and reproduction of maps and other graphic and tabular materials. 2 hours lab per week. Prereq: 310 or consent of instructor.

413 Remote Sensing: Types and Applications (3) Principles and uses of remote sensing imagery, digital data, and spectral data, with particular emphasis on geographic interpretation and mapping techniques. Prereq: 310 or consent of instructor.

415 Quantitative Methods in Geography (3) Geographical application of statistical techniques, point pattern analysis, and analysis of areal units. Prereq: Mathematics 115 or 2 or semesters of calculus or consent of instructor.

419 Practicum in Cartography/Remote Sensing (2-6) Supervised practice in design and production of maps and other cartographic materials. Prereq: Cartographic Services Laboratory or a similar organization. Prereq: Written consent of department prior to registration. S/NC or letter grade.

421 Geography of Folk Societies (3) Geographical study of folk culture, emphasizing traditional materials, culture, and rural settlement, with examples drawn from eastern North America and selected foreign areas. Prereq: 101-102 or 320 or consent of instructor.

425 Historical Geography of the United States (3) Survey of the changing population patterns, development of agriculture, and development of patterns of urban-industrial interaction. Prereq: 361 or consent of instructor. Writing-emphasis course.

427 Cultural Geography: Core Concepts (3) Characteristics of surface form, water, vegetation, and surface materials, and their regional interrelationships. People as evaluators and agents of change. Prereq: 131-132 or consent of instructor.

433 The Land-Surface System: Economic processes and significance of system of major plant communities of the United States. 3 hours lecture and 2 hours lab. Prereq: 330 or consent of instructor.

434 Climatology (3) General circulation system leading to world pattern of climates. Climatic change and modification, and interrelations of climate and human activity. Prereq: 131-132 or 334 or consent of instructor.

435 Biogeography (3) Study of the changing distribution patterns of plants and animals on a variety of spatial and temporal scales. The effects of continental drift, Pleistocene climatic change, and human activity on world flora are emphasized. Prereq: 131-132 or 330 or consent of instructor.

436 Water Resources (3) Global water resources and hydrologic processes, including water availability, flooding, and water quality issues examined from physical and economic geographic perspectives. Prerequisite: 131-132 or 330 or consent of instructor.


441 Urban Geography (3) Concepts and theories concerning development and significance of systems of cities and internal morphology of cities. Prereq: 101-102 or 141 or 340 or consent of instructor. (Same as Urban Studies 441.)

443 Rural Geography (3) Geographical appraisal of rural areas of the United States, including small towns and urban fringes. Problems and potentials of rural America. Prereq: 101-102 or 141 or 340 or consent of instructor.

445 Geography of Resources (3) Factors related to variations in resource availability from time to time and place to place, with particular emphasis upon energy and metallic resources. Prereq: 101-102 or 141 or 340 or consent of instructor.

449 Geography of Transportation (3) Examination of transportation systems, emphasizing their effects on trade patterns, land use, location problems, and development. Prereq: 141 or 340 or consent of instructor.

450 Process Geomorphology (3) (Same as Geology 450.)

491 Foreign Study (1-15) Prereq: Written consent of department required prior to registration. S/NC or letter grade.

492 Off-Campus Study (1-15) Prereq: Written consent of department required prior to registration. S/NC or better grade.

493 Independent Study (1-15) Prereq: Written consent of department required prior to registration. S/NC or better grade.

499 Proseminar in Geography (3) Major themes in geography, especially trends over the past 40 years. Open to majors. Not open to graduate students. Prereq: Senior standing and completion of at least 12 hours of major or minor requirements in geography. Writing-emphasis course.

GEOLOGY (424)

101 The Dynamic Earth (4) Physical processes within and on the Earth's surface, including the formation of rocks, plate tectonics and earthquakes, and landscapes. Must be taken in sequence. 3 lecture hours and 1-2 hour lab or field period.

102 Earth, Life, and Time (4) Fossils, evolution and ancient environments, plus a review of 4.5 billion years of earth history. Must be taken in sequence. 3 lecture hours and 1-2 hour lab or field period.

103 The Earth's Environments (4) Contemporary problems and solutions related to human disturbance of the environment. Topics include: global climate change, pollution, resource depletion. Prereq: 101. 3 lecture hours and 1-2 hour lab or field period. Fulfills laboratory science sequence requirement for College of Liberal Arts guidelines. Students may not receive credit for both Geology 101 and 107.

107 Honors: The Dynamic Earth (4) Laboratory and field emphasis on understanding fossils, evolution, and ancient environments, including the formation of rocks, plate tectonics, earthquakes, and landscapes. 3 lecture hours, 1-2 hour lab, and 2 field trips. Consult current College of Liberal Arts guidelines. Students may not receive credit for both Geology 101 and 107.

108 Honors: Earth, Life and Time (4) Lab and field emphasis on understanding fossils, evolution, and ancient environments, including the formation of rocks, plate tectonics, earthquakes, and landscapes. 3 lecture hours, 1-2 hour lab, and 2 field trips. Consult current College of Liberal Arts guidelines. Students may not receive credit for both Geology 102 and 108.

201 Biodiversity: Past, Present, and Future (3) Introduction of how biodiversity has changed through time, especially past mass extinctions and current extinctions from human activities. Topics include measurement of biodiversity, how biodiversity originates, and the dynamics of extinction. May not be applied toward the Geology major.

202 Earth as an Ecosystem: Modern Problems and Solutions (3) Study of the earth as an integrated system between physical and biological processes. Focus is on human-environmental interactions throughout 4.5 billion years of Earth history. 3 lecture hours, 1-2 hour lab, and 2 field trips. Consent current College of Liberal Arts guidelines. Students may not receive credit for both Geology 101 and 107.

203 Geology of National Parks (3) Geologically spectacular landscapes and geologic history of national parks of the world. Human attempts to preserve the Earth's geologic heritage. 3 lecture hours, plus a field trip during the term. May not be applied toward the Geology major.

210 Basic Geology for Engineers (2) Materials and structures of the earth. For College of Engineering students only. 2 lecture hours and one 2-hour lab or field period.

310 Mineralogy (4) Introduction of crystallography, crystal chemistry, x-ray diffraction, optical mineralogy, and the structures of rock-forming minerals. Laboratory identification and separation, x-ray diffraction techniques, and microscopic identification of minerals. Prereq: 101, Chemistry 120-130 or equivalent. 3 hours lecture and 1 hour lab.

320 Paleobiology (3) Fossils and their uses in functional morphology, paleoecology, biogeography, biostratigraphy, and evolution. Prereq: 102 or consent of instructor. 2 lecture hours and one 2-hour lab or field period.

325 Geological History of Land Organisms (3) Origin and development of terrestrial life as preserved in the rock, and the relationships of the fossil and present record of land plants and vertebrates. Prereq: Elementary biology sequence or consent of instructor. 2 lecture hours and one 2-hour lab or field period.
481 Studies in History (3) Variable content. Subject matter not covered in other courses. May be repeated. Maximum 9 hours.

482 Colloquium in History (3) Historical theme or problem; emphasis on questions and skills, with special reference to critical analysis of both primary and secondary sources. Recommended for seniors. Writing emphasis course.

483 History of U.S. Foreign Relations Since WW II (3) Examines the ideology and practice of U.S. international relations since World War II.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

HOTEL AND RESTAURANT ADMINISTRATION (551)

120 Introduction to Hotel and Restaurant Administration (3) History and place of industry in national economy; basic operating systems, organization structure, pricing, needs, procurement, storing, producing and serving foods in volume. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progression into HRA program or consent of the instructor. Coreq: 322.

126 Front Office Management (3) Front office procedures within context of overall operation of the hotel/motel; includes reservation systems, equipment, accounting procedures, settlement procedures, public relations and management.

220 Foodservice Systems Administration (3) Management concepts, processes, resources in foodservice systems; decision-making and problem solving principles.

230 Quantity Food Procurement, Production and Service (3) Principles for determining needs, procuring, storing, producing and serving foods in volume. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progression into HRA program or consent of the instructor. Coreq: 322.

231 Quantity Food Procurement, Production and Service Laboratory (1) Application of principles in determining needs, procuring, storing, producing and serving foods in volume as they apply in the hotel/motel industry. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progression into HRA program or consent of the instructor. Coreq: 320.

220 Foodservice Systems Administration (3) Management concepts, processes, resources in foodservice systems; decision-making and problem solving principles.

230 Quantity Food Procurement, Production and Service (3) Principles for determining needs, procuring, storing, producing and serving foods in volume. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progression into HRA program or consent of the instructor. Coreq: 322.

231 Quantity Food Procurement, Production and Service Laboratory (1) Application of principles in determining needs, procuring, storing, producing and serving foods in volume as they apply in the hotel/motel industry. Prereq: 120, 220, NTR 100 or 107, NTR 101, Micro 210 or PH 310; progression into HRA program or consent of the instructor. Coreq: 320.

220 Food and Lodging Cost Control (3) Budget, cost analysis, computer, financial statement use in decision making in lodging and foodservice systems. Prereq: 320, 321 or 322; Accounting 202 or consent of instructor.

402 Field Experience in Hotel and Restaurant Administration (1) Supervised educational experiences in selected tourism, food and lodging operations followed by a two-day seminar. Students enrolled in this course may not enroll in any other courses. Prereq: 320, 321 or 322; Accounting 202; Economics 201; Marketing 301; Business Law 301; 100 hours of verifiable work experience. Satisfactory/No Credit only. May be repeated.

422 Food and Lodging Personnel Development (3) Training programs; personnel management procedures and policies involving human resource analysis for lodging and foodservice systems. Prereq: 320, 321 or 322; or consent of the instructor.

423 Hospitality Sales and Marketing (3) Strategic marketing for lodging and restaurant organizations, includes product, market, and competition analysis; promotion and sales planning; internal and external sales and marketing strategies. Prereq: Marketing 301; progression into HRA program or consent of the instructor.

424 Advanced Hotel and Restaurant Administration (3) Integration of functional areas. Management level administrative processes and decision making concerning hotel and restaurant business policy, strategy formulation, implementation, and evaluation. Prereq: 320, 321 or 322; Accounting 202; Economics 201; Marketing 301; Business Law 301; 100 hours of verifiable work experience.

425 Hospitality Law (3) Legal rights and responsibilities of staff, management, and guests. Prereq: 320, 321, or 322; Bus. Law 301 or consent of the instructor.

426 Convention Management (3) Scope and segments of convention management including requirements for meeting individual needs; methods and techniques for outstanding service. Prereq: 320, 321, 322 or consent of the instructor.

440 Special Topics: Hotel and Restaurant Administration (1-3) Developments, issues and problems in hotel and restaurant management. Prereq: Junior or Senior Standing. Consent of the instructor. May be repeated. Maximum 3 credits.

456 Directed Study: Hotel and Restaurant Administration (1-3) Individual study; faculty experience. Prereq: Junior and Senior Standing, consent of the instructor. Satisfactory/No Credit only.

497 Honors: Hotel and Restaurant Administration (1-3) Honors project. Prereq: Senior standing, consent of the instructor.

HUMAN ECOLOGY (520)

100 Special Topics in Human Ecology (1-3) Topics variable. Prereq: Consent of the instructor. Satisfactory/No Credit only. May be repeated. Maximum 3 credits.

201 Field Experience in Family Life School-based Programs (1-3) May be repeated. Maximum 3 hours. Satisfactory/No Credit only.

210 Microcomputer Applications (3) Introduction to microcomputer applications, use of programs operating systems, word processing systems, data base systems, spreadsheet programs and graphics programs; design of a management information system; spreadsheets, word processing, and databases. Prereq: Declared major in College of Human Ecology.

325 Strategies for Facilitating Learning (4) Methods and techniques for facilitating learning, developing individual and group plans. Includes field experience. Prereq: CFS 205.


445 Field Experience in Community-Based Programs (1-15) Placement in community-based programs or businesses. Includes seminar, May be repeated. Maximum 15 hours. Prereq: Consent of instructor. Satisfactory/No Credit only.

460 Directed Study: Human Ecology (1-3) Topic ar- ranged by individual student under supervision of fac- ulty. May be repeated with different topic. Maximum 6 hours. Prereq: Junior or Senior standing in a major in the College of Human Ecology and consent of instructor.

497 Honors: Home Ecology (3-6) Issues or topics affecting areas within Human Ecology. Designed to meet particular interests of the student Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

HUMAN PERFORMANCE AND SPORT STUDIES (526)

100 Orientation to Physical Education (2) Overview of the professional and disciplinary areas in physical education with special emphasis on introductory field experiences. Prereq: Taken the first semester in the student's major.

102 PE Major: Basketball (1) Fundamentals of basketball, including individual and team skills with consideration of techniques for effective teaching of these fundamentals.

103 PE Major: Tennis (1) Development of skills, rules and game strategies in tennis applying skill analysis and various styles of teaching.

104 PE Education Major: Gymnastics (1) Beginning skills in tumbling and on selected men's and women's gymnastics apparatus. Tumbling skills include forward, backward, and balance skills. Apparatus include vaulting, balance beam, and pommel horse. Special emphasis on teaching techniques, safety, progression, and scoring.

105 PE Major: Folk and Square Dance (2) Basic folk and square dance steps, patterns and designs with emphasis on skill development, terminology, etiquette and teaching techniques.

106 PE Major: Track and Field (1) Basic skills of track and field with consideration of techniques for effective teaching.

260 Exercise Science Practicum I (1) First practicum experience to support and clarify career goals. Satisfactory/No Credit grading only. Prereq: 100.

271 PE Major: Soccer/Softball (1) Basic fundamentals, including individual and team skills with consideration of techniques for effective teaching.

272 PE Major: Volleyball (1) Elementary and intermediate volleyball skills, general rules, and strategy related to the game of volleyball with particular emphasis on teaching techniques and skill development.

273 PE Major: Golf (1) Fundamentals, general rules, and strategies related to the game of golf with emphasis on skill development and teaching techniques.

274 PE Major: Gymnastics II (1) Beginning skills in tumbling and on selected men's and women's gymnastics apparatus. Tumbling skills will include twisting skills, kips, and back arches, and combinations of these skills. Apparatus will include uneven bars, horizontal bar, parallel bars, and still rings.

275 PE Major: Ballroom Dance (2) Basic ballroom dance patterns and designs, terminology and etiquette with application to the various techniques of teaching.

276 Fitness for Life (2) Evaluation and discussion of factors related to optimal health: cardiorespiratory function, muscular strength and endurance, flexibility, low back function, nutrition, and stress. Emphasis on evaluation of current status with respect to health-related goals. (Same as PE 276.)

290 Human Motor Behavior (3) Theories and principles explaining motor behavior; psychological factors related to and/or affecting motor skill acquisition and performance. Prereq: At least sophomore standing.

291 Sport in American Society (3) For all university undergraduates on the study of sport in American society from a sociological perspective. (Same as Sociology 291.)

292 Field Studies I (2) Peer teaching, using selected styles, and systematic observation of motor behaviors of physical education students in elementary, middle, and high school settings. Prereq: 100.

311 Coaching Football (1) Theoretical and practical emphasis on various coaching techniques in football for the prospective secondary/college coach. Includes analysis and selection of appropriate game plans, specific conditioning and training programs, practice organization, player evaluation, scouting, individual and team offensive and defensive. Prereq: Consent of instructor.

312 Coaching of Basketball (1) Individual and team fundamentals for the high school coach; conditioning, skill development, and other business arrangements. Prereq: Consent of instructor.

313 Coaching of Track and Field (1) Coaching methods and training techniques for various track and field events, including experience observing and working at meets and practices. Prereq: Consent of instructor.

314 Coaching of Gymnastics (1) Fundamentals used in the coaching and judging of competitive men's and women's gymnastics. Emphasis on the safety and spotting of competitive gymnastics skills. Prereq: Consent of instructor.

315 Coaching of Baseball/Softball (1) Theoretical and practical application of various coaching techniques in baseball/softball for the secondary/college coach. Topics include analysis and selection of appropriate game plans, contemporary conditioning and training techniques, practice organization, player evaluation, scouting, individual and team offensive and defensive strategies. Prereq: Consent of instructor.

Human Performance and Sport Studies/Courses of Instruction
3) Historical survey of the development of sport and physical education from ancient primitive to twentieth century civilization. Prereq: Progression to the major or consent of instructor.

322 Fitness Activities (2) Methods of instructing and leading athletic and non-athletic groups and activities. Relationship to health, music, water activities, and fitness games. 1 hour lecture; 3 hour lab. Prereq: At least junior standing and progression to the major.

325 Athletic Training Techniques (2) Prevention of athletic injuries, including recognition, treatment and management of injuries. Prereq: Progress to the major or consent of instructor.

326 Practicum in Preschool Aquatics (2) Individualized planning and teaching of aquatic experiences to three to five-year-old children within the context of a broad-based motor development program. Prereq: Permission of the instructor.

330 Wellness Through Health, Leisure, and Physical Activity (3) (Same as Health 330.)

332 Applied Anatomy (3) Structure and roles of bones, joints and muscles in human movement and exercise; selected perceptive-motor development, movement and physical fitness for children. Prereq: Permission of the instructor.

335 Motor Development (3) Evolution of human motor behavior within the context of structural-functional changes, and with the respect to psychological, sociological, and biological factors related to and affecting motor performance/learning; analysis of changes in motor performance and underlying attributes across the lifespan with emphasis upon critical developmental periods. Prereq: Progression to the major or consent of instructor.

372 Philosophy of Sport and Physical Education (3) Theories of reality and value as they apply to sport with emphasis on ethical issues. Prereq: Progression to the major or consent of instructor.

380 Special Topics (1-3) Study in selected disciplinary or professional areas of Physical Education. May be repeated. Prereq: Progression to the major.

391 Psychology of Coaching (2) Major topics and theories dealing with the social psychological factors affecting and relating to student-teacher interaction, with practical implications and applications to teaching and coaching. Prereq: Progression to the major or consent of instructor.

405 Sociology of Sport (3) Social meaning, organization and process of sport. Difference between sport and play and games. Selection, adaptation and sport as an occupation, place of sport in mass culture, sport subcultures, and reciprocal influences of sport and cultural milieu. Prereq: 291 or Sociology 285, or permission of instructor. (Same as Sociology 405.)

410 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfaction/No Credit only. Sp, Su

411 Applied Physical Education (3) Developmental disabilities, other physical/motor handicaps and vari-invariant characteristics of specific syndromes germane to motor-skill, psychological and social factors related to special education needs.

412 Practicum in Adapted Physical Education (1) Teaching those with special education needs. Observation and assistance to physical education teachers who teach in schools for the handicapped and/or in which many handicapped individuals are mainstreamed. Prereq: Progression to the major. Coreq: 411.

413 Special Practicum in Adapted Physical Education (2) Two sections including an on-campus lab program with one-on-one with a 5-6 year-old child who is a high educational risk and a section with experiences relevant to student needs with a physical education teacher, physical or occupational therapist, at a school for the handicapped. May be repeated. Maximum 3 hours.

414 Physical Testing and Exercise Prescription (3) Relationship of exercise to cardiorespiratory function, body composition, strength and flexibility. Measurement and evaluation of fitness in normal populations. (Same as Health 414.)

416 Athletic Coaching Field Experience (1) Practical experience in coaching and related responsibilities. May be repeated. Maximum 2 hours. Prereq: Approval of instructor.


422 Applied Kinesiology (3) Study and emphasis of human movement with emphasis on biomechanical principles and their application to movement and neuromuscular fitness. Prereq: 332.

423 Readings in Physical Education (2) Current and classic literature in physical education.

425 Administration and Evaluation In Physical Activity and Sport (3) Fundamental principles of organization, administration, and evaluation in the areas of physical activity and sport. Prereq: Admission to Teacher Education Program. Coreq: 450 for teacher education students.

426 Exercise Science Practicum II (1-6) Supervised experiences in exercise fitness areas may be repeated for a maximum of 10 hours. Satisfaction/No Credit grading only. Prereq: 260, 322, 332, 414, progression to the major and consent of instructor.

429 Approaches to Physical Education for Children (3) Contemporary approaches with emphasis upon movement education. Prereq: Admission to Teacher Education Program.

460 Field Experience II (3) This course continues to develop instructional skills from HPSS 202 and is designed to provide opportunities for students to teach in K-12 physical education settings. Prereq: 292, 435 and Admission to Teacher Education Program. Coreq: 421, 425, 465, 466.

465 Movement Education (2) Educational games/sports, dance, and gymnastics for children. Prereq: 356, 435, and admission to Teacher Education Program.

466 Motor Development Laboratory (3) Application of selected perceptual-motor, movement education, and pedagogical concepts to performance assessment and motor skill assessment to normally developing preschool and primary age children. Participation in intra- or inter-disciplinary research projects. Prereq: Progression to the major or consent of instructor.

480 Physiology of Exercise (3) Lecture and lab class dealing with functions of the body in muscular work. Topics include physiological aspects of fatigue, training and strength. Prereq: Zoology 290 or 440, 2 lectures and 1 lab. (Same as Zoology 480.)

481 Internship I: Grades K-12 (3-6) Methods and theories of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. Satisfaction/No Credit only. F

482 Internship II: Grades K-12 (3-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfaction/No Credit only. Sp

490 Exercise Physiology/Fitness Internship (12-15) Full-time practice in exercise fitness at approved agency. Satisfaction/No Credit grading only. Prereq: 442, 468, 480 and consent of instructor.

493 Directed Independent Studies (1-3) Independent study in a specialized area with physical education. May be repeated. Maximum 9 hours. Prereq: Consent of advisor and progression to the major. Satisfaction/No Credit or letter grade.

HUMAN RESOURCE DEVELOPMENT (529)

161 Graphic Communications (3) Drafting as a means of communication in technology. Orthographic and multiview drawing, conventions for technical graphics and applications, sheet metal development and auxiliary view drawing. Scripting, dimensioning, board work, and CAD. F

163 Power and Energy Systems (3) Automotive technology, internal combustion engines, fuel injection systems, and various prime movers, methods of utilization, distribution, and transmission of power. Engine tune up and overhaul and small engine maintenance and repair is stressed through experimental and applied laboratory experiences. F

165 Woods Technology (3) Processes, equipment, materials and products of the woodworking industry. Importance of safety and using hand tools and basic machinery. F

166 Metals Technology (3) Processes, equipment, materials and products of metal working industries. Processes in machine, foundry, forging, heat treatment, sheet metal and fabrication. F

201 Field Experience in Vocational Technical Education (1) Field experience in public school programs in distributive education. May be repeated. Maximum 3 hours. Satisfaction/No Credit only. E

230 Typewriting and Shorthand Proficiency (3) Proficiency for technical teachers. Operating and determining word-speed, circuit analysis, introduction to semi-conductors and laboratory experiences that involve the function of different types of circuits. Prereq: 163 or consent of instructor. Sp

268 Construction Technology (3) Residential construction, including site selection, foundations, framing, roofing, interior and exterior finishes. Prereq: 165 or consent of instructor. Sp

266 Machine Tool Processes (3) Function, care, setup, operation and theory of basic machine tools. Prereq: 168 or consent of instructor. Sp

336 Micro Business Applications (3) Operating and programming microcomputers. BASIC language is used and programming examples are oriented in business applications. Prereq: Admission to Teacher Education Program. F

380 Related and Applied Theory in Occupations (1-15) Applicants must show evidence of basic knowledge, practical work and experience in a field of employment compatible with state plan requirements. Written theory tests and the submission of a comprehensive portfolio are used to award variable credit. May be repeated. Maximum 15 hours. Satisfaction/No Credit only. Prereq: Junior standing and approval of instructor. E

351 Manipulative Skills in Occupations (1-15) Applicants must show evidence of basic knowledge, practical work and experience in a field of employment compatible with state plan requirements. Written theory tests and the submission of a comprehensive portfolio are used to award variable credit. May be repeated. Maximum 15 hours. Satisfaction/No Credit only. Prereq: Junior standing and approval of instructor. E

352 Practicum in Industrial Education (1-3) Updating and upgrading experiences in non-traditional settings for education majors. May be repeated. Maximum of 6 hours. Satisfaction/No Credit only. E

354 Job Analysis Techniques and Curriculum Development (3) Theoretical and practical techniques used by educators in job analysis. F

355 Microcomputer Applications in Technology (3) Theories and applications of microcomputers for education,
420 Human Services Methodologies I (3) Basic helping skills essential to the effective delivery of Human Services. Prereq: Progression to the major or consent of instructor.

390 Information Interpretation and Assessment (3) Information gathering and assessment for human services are examined in depth in relation to human services practice. Formulating questions, identifying relevant data, using related resources, interpreting information, and applying this information in a practical setting. Prereq: Progression to the major. Sp

420 Human Services Methodologies II (3) Includes reality therapy, behavior modification, family systems, client-centered and rational emotive therapy. Discussion and role-playing of methods and skills that will be utilized during field experience. Prereq: Progression to the major. 220, 225. Coreq: Other.

430 Working Within The System (3) Capstone Experience. Context within which the need for human services arises and analysis of the process through which services are provided. Prereq: Progression to the major. 300, 330, senior standing or consent of instructor. Sp Writing-emphasis course.

441 Human Services Field Work II (3) Practical field experiences in appropriately organized and directed human services settings. Develops specific helping skills; involvement in roles and functions of social services; and provides direct services in a supervised learning situation. For majors only. Prereq: Progression to the major or consent of instructor. Coreq: 420. Satisfactory/No Credit only. F

450 Special Topics in Human Services (3) Issues, methods, techniques, and trends in human services. May be repeated. Maximum 9 hours.

451 Foreign Study (1-15) Registration by permission of the Director of Interdisciplinary Studies.

452 Off-Campus Study (1-15) Registration by permission of the Director of Interdisciplinary Studies.

453 Independent Study (1-15) Registration by permission of the Director of Interdisciplinary Studies.

INTERDISCIPLINARY PROGRAMS (270)

100 Selected Topics (1-3) May be repeated. Maximum 6 hours.

400 Selected Interdisciplinary Topics (1-12) Acceptable for major or minor credit in any Interdisciplinary Programs. Prerequisite: Consent of the Director of Interdisciplinary Programs and the respective chairperson. May be repeated for credit to a maximum of 12 hours. Letter grade or S/NC grading.

401 Foreign Study (1-15) Registration by permission of the director of Interdisciplinary Studies.

402 Off-Campus Study (1-15) Registration by permission of the director of Interdisciplinary Studies.

403 Independent Study (1-15) Registration by permission of the director of Interdisciplinary Studies.

INTERIOR DESIGN (582)

140 Introduction to Interior Design (2) Orientation to the profession; relationship to allied fields; contender-
ary developments; philosophical approaches. Open only to majors in interior design and architecture.

150 Visual Studies (4) Classification and properties of two and three-dimensional visual organization; design principles; visual and spatial elements within simple and complex visual systems; role of movement in experiencing scale and volumetric space. One hour lecture and three hour studio. Open only to majors in interior design and architecture. Coreq: 140.

200 Human-Environment Systems (3) Role of culture in defining environment; physical, social, and conceptual aspects of human-environment systems; impact of environment on human behavior, feelings and values; mutual-cultural role of environment systems. (Same as Urban Studies 200).


250 Fundamentals of Interior Design II (4) Problem solving, spatial organization of micro environments, increasingly larger scale; communication of total design solution through visual and oral presentation techniques; emphasis on the use of color. One hour lecture and three hour studio. Prereq: 240.

260 Materials and Resources for Interiors (2) The development and application of materials and resources used in interior architectural space. Prereq: RCS 120.

280 Micro-Computers for Interior Design (3) Introduction to computer-based spreadsheets, desktop publishing, database and other software applications in various aspects of project design and management, including cost estimating and budget constraints, optimizing design criteria, proforma analysis and information and resource management. One hour lecture and two hour studio. Prereq: or Coreq: 240. Interior Design majors only.

310 Survey of Interior Design (3) Planning and organizing interior spaces (rooms, apartments, residences) to meet personal and family housing needs; relation of furnishings to architectural space. Not open to Interior Design majors. Enrollment preference given to Home Economics Education and Hotel Restaurant Administration majors.

315 Hospitality Interiors (3) Planning and organizing interior spaces for restaurants and lodging facilities; relation of furnishings to architectural space. Open only to Hotel and Restaurant majors.

340 Intermediate Interior Design I (5) Studio problem of intermediate complexity with emphasis on programmatic and schematic design phases; in-depth analysis of current programming methods; integrates and extends previous knowledge of working drawings, materials and sources, design methods, spatial organization and planning of micro and macro environments. Two hour lecture and three hour studio. Coreq: Third year standing in Interior Design program or consent of instructor.

350 Intermediate Interior Design II (5) Studio problems of intermediate complexity; integrates and extends previous knowledge of working drawings, materials and sources, design methods, spatial organization and planning of micro and macro environments. Two hour lecture and three hour studio. Prereq: or Coreq: 280, 340, 460, Physics 122.


370 History of Interior Architecture (4) Interior architecture, decoration and decorative arts within cultural context, ancient through nineteenth centuries, emphasis on Italy, France, England, and America. Prereq: Art History 172 and 173 or consent of instructor.

400 Proxemics (3) Analysis of space and behavior; within a cultural context. Application to design and the design process. Examination of theoretical foundations and concepts and design behavior. One hour lecture and three hour studio. Prereq: Application for and approval of behavioral design requirements. Prereq: 200, 280, 4-10, or consent of instructor.

417 Honors: Interior Design (1-4) Advanced research in interior design problems for juniors or seniors. May be repeated. Maximum 8 hours. Consent of Interior Design faculty.

420 Practicum for Interior Design (12) Supervised experience in a professional design firm; business practice, project management and design philosophy. Prereq: 240. Sixty hours and one hour studio. Coreq: Fourth year standing in Interior Design.


440 Advanced Interior Design I (6) Non-residential studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Two hour lecture and three hour studio. Prereq: 350; Coreq: 400, or consent of the instructor.

450 Advanced Interior Design II (5) Comprehensive studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Two hour lecture and three hour studio. Prereq: 440 or consent of instructor.

460 Lighting for Interior Designers (3) Application of elements and principles of lighting and wiring to design of visual environment. Prereq: 420, or Coreq: 350, Physics 122 or consent of instructor.

470 History of the Contemporary Interior Architecture (2) Interior architecture, furniture, design philosophies, nineteenth century roots for twentieth century developments, Europe and America. Design influenced by movements in the fine arts, technological advances, cultural context. Prereq: ID 370 or consent of instructor.

475 History of American Interior Architecture (3) Historical developments in interior architecture and decorative arts within cultural context, colonial era through nineteenth century. Prereq: 370 or consent of instructor.

480 Furniture Design (4) Human factors data applied to design of body support, task support, storage and system, construction drawings and scale models; advanced millwork design; materials and manufacturing processes. One hour lecture and two hour studio. Coreq: Fourth year standing in Interior Design program or consent of instructor.

485 Interior Design Synthesis (5) Advanced integrative design/research experience. Prereq: 450 or consent of instructor.

491 International Study (1-15) Individual or group studio and/or study abroad; academic research, field investigation, or study Touring; may be repeated for 420 in student’s professional curriculum. Determination of credit based on particular international experience. Prereq: Consent of the instructor.

493 Directed Studies in Interior Design (1-4) Student or staff initiated research or studio investigation of special topic. Elective credit only. May be repeated. Maximum 8 hours. Prereq: Consent of instructor.

ITALIAN (584)

111-112 Elementary Italian (3,3) Introduction to Italian. Must be taken in sequence. Language Laboratory required. F, Sp

199 Italian Language and World Business (2) This course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team consisting of a finance professor and a professional from the Italian American Arts will provide an overview of the value of language study, and international cultural awareness in world business. Restricted to students majoring in Language and World Business. See the Director for further information. F

211-212 Intermediate Italian (3,3) Sequence stresses reading, writing, listening and speaking Italian to prepare for upper division courses in the language. Must be taken in sequence. Language Laboratory required. F, Sp

311-312 History of Italian Literature (3,3) Chronological view of Italian Literature in relation to the specific historical developments that have influenced it. Prereq: 212 or equivalent.

314 Highlights of Italian Civilization (3) Survey of Italian civilization with special attention to major social, political, and cultural achievements. Prereq: 212 or consent of instructor.

341-342 Intermediate Grammar, Composition and Conversation (3,3) Grammatical accuracy of Italian prose; review of grammatical principles and their application in translation from English to Italian, both written and oral exercises in free composition. Prereq: 212 or equivalent.

401 Dante and Medieval Culture (3) Introduction to the significance of the great Italian writer. Prereq: 212 or consent of instructor. (Same as Medieval Studies 401.)

402 Petrarch and Boccaccio (3) Prereq: 212 or consent of instructor. (Same as Medieval Studies 402.)

403-404 Literature of the Risanamento (3,3) From Pucci to Sasso, the Quattrocentro and the Cinquecento. Prereq: 212 or consent of instructor.

405 Modern Italian Poetry (3) Prereq: 212 or consent of instructor.

406 The Modern Italian Novel (3) Prereq: 212 or consent of instructor.

409 Directed Readings (3)

410 Italian Theatre (3) Survey of Italian theatre from Renaissance to present. Prereq: 212 or consent of instructor.

421 Topics in Italian Literature and Cinema (3) Examination of Italian literature and cinema from 1930 to the present focusing on literary works translated into English and adapted into film. Objectives of the course are to make students familiar with the film industry and cinema and to achieve a greater understanding of Italian culture since 1930. Films will be shown in Italian with English subtitles. May be repeated. Maximum of 6 hours. (Same as Cinema Studies 421.)

490 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language & World Business Director. For Language & World Business majors only. Satisfactory/No Credit only.

491 Foreign Study (1-15)

JOURNALISM (594)

201 Publicity and Public Relations (3) Principles and practice of writing for mass media. Public information campaigns for organization and institutions. Not available for majors in the College of Communications. Prereq: English 102. F, Sp

203 Editing (3) Methods and practice in judging news, editing copy, writing headlines and designating newspaper emphasis. Prereq: Typing proficiency. Emphasis on precise word use and news display. Prereq: Communications 200. E

270 Public Relations Principles (3) Theories and principles of public relations. Overview of public relations' role in the management of government, institutions and organizations. Brief case studies and public relations projects. F, Sp

290 Photojournalism (3) Principles and practice of photography as a creative tool of communication. Basic camera technique, darkroom work, historical and contemporary photojournalism. Lecture and laboratory. E

310 Feature Writing (3) Skills of journalism for writing feature articles for newspapers, magazines and company publications. Critiquing of students' work in writing workshops, and writing short-in-class pieces as assigned. Prereq: Typing proficiency.


370 Public Relations Cases (3) Oral and written analysis of current and classic case studies in public relations. Ethic, professional organizations, publications, research and forms of public relations. Methods of communication and persuasion. Prereq: 270. F, Sp

390 Communications Graphics (3) Principles and practice of visual aspects of communication. Emphasis on graphic design, typography, illustration and photography, printing and production techniques and publication design. Lecture and laboratory. Prereq: 201, or Consent of Instructor.

403 International Communications (3) Development and operations of world mass communications chan-
nals and agencies. Comparative analysis of media, media practices, flow of news throughout the world. Print and broadcast systems in terms of relevant social, political, economic, and cultural factors. Relation of communication practices to international affairs and understanding.

412 Opinion Writing (3) Analysis of editorial positions, practices, and pages. Writing editorials and columns for newspapers, magazines, and company publications, with emphasis on use of persuasive devices and logic. Prereq: 203 or consent of instructor.

414 Magazine Article Writing (3) Techniques of writing in-depth articles for mass circulation and specialized magazines. Organizing and presenting material, with attention to problems in areas such as business, science, agriculture, the humanities. Prereq: 203 or consent of instructor.

416 Issues in Journalism (3) Topics vary. May be repeated. Maximum credit 6 hours. Prereq: Consent of instructor.

420 Print Media Management (3) Current business practice among print media, especially newspapers. Problems in management and production, and the outlook for new technologies. Prereq: 6 hours math and/or accounting, and senior standing. Sp


433 Advanced Editing (3) Primary focus is on sensitivity to language and editing skills. Includes headline writing, layout and production. Prereq: 203.

444 Journalism as Literature (3) Study of writers from the 17th century to the modern era whose works have endured as both journalism and literature. An emerging genre called literary journalism will be examined as a means of cultural reporting with a personal narrative style. Prereq: Consent of instructor.

450 Writing about Science, Technology, and Medicine (3) Writing workshop in which students analyze examples of successful science writing and write a series of articles for the general public based on scientific journals, news conferences, technical meetings, and interviews. Prereq: Consent of instructor. F, Sp

451 Environmental Reporting (3) Writing for news media on such environmental issues as strip-mining, water pollution, air pollution, allergens, nuclear power, fossil fuel power, and solid wastes. Students hear presentations from and interview experts in environmental science and reporting. Exemplary popular literature in environmental reporting is reviewed. Prereq: 203 for majors; consent of instructor for non-majors.

455 Issues in Science Communications (3) May be repeated. Topics vary. Prereq: Consent of instructor.

456 Science Writing as Literature (3) Survey of important science writing for the general public across the spectrum of science, engineering, and medicine. Works by authors such as Arthur C. Clark, Stephen J. Gould, and Richard Selzer will be analyzed for literary qualities.


470 Public Relations Campaigns (3) Research, planning and communication and evaluation of major public relations campaigns. Oral and written presentation of a public relations project from inception to completion. Extensive out-of-class work. Prereq: 270. E

480 Journalism in the High School (3) Functions and methods of high school publications. Staff selection, content of publications, copy, layout, photography, printing, advertising. Planning course outlines and curricula for journalism/mass media studies.

490 Advanced Photojournalism (3) Advanced principles and methods of black-and-white photography, introduction to color photography. News and feature photography, photo essays. Prereq: 290, or consent of instructor. Sp

492 Field Experience (1-2) Approved internships and other supervised practice in journalism and public relations. May be repeated for a maximum of 4 credit hours. Prereq: Senior standing and consent of instructor. E

493 Independent Study (3) May be repeated for a maximum of 6 hours. Prereq: Consent of instructor.

**LATIN**

111-112 Beginning Latin (3,3) Must be taken in sequence. Not available to students eligible for Latin 150.

150 Latin Transition (3) This course is designed to prepare students for enrollment in Latin 251. Prereq: Two years of high school Latin and a score on the Latin placement exam below that required for admission to Latin 251.

251 Intermediate Latin: Grammar Review and Readings (3) Prereq: 112 or 150 or placement through the Latin placement examination.

252 Intermediate Latin: Vergil's Aeneid (3) Prereq: 251 or equivalent.

351 Cicero and Sallust (3) Prereq: 252 or equivalent.

352 Roman Lyric Poetry (3) Poetry of Catullus, Horace, and the elegists. Prereq: 252 or equivalent.

414 Cicero and Techniques of Latin Prose Composition (3) For advanced students in Latin. Practice in prose composition, the writings of Cicero the model. Prereq: 351-352 or consent of instructor.

431-432 Selected Readings from Latin Literature (3,3) For advanced students in Latin. Oratory, historical writings, poetry of ancient authors, and the original Latin. May be repeated for credit. Maximum 9 hours. Prereq: 351-352 or consent of instructor.

435 Medieval Latin (3) Selected readings from the Latin prose and poetry of medieval Europe. Prereq: Consent of instructor.

**LATIN-AMERICAN STUDIES (600)**

251-252 Introduction to Latin American Studies (3,3) Socioeconomic issues of Latin America, with special emphasis on dominant culture patterns, social changes, and impact of nationalism. 251-Pre-Colonial and Colonial periods through Independence era. 252-Latter 19th century and the Modern period. Writing-emphasis course.

311 Aspects of Luso Brazilian Literature (3) (Same as Portuguese 311.)

313 Peoples and Cultures of Mesoamerica (3) (Same as Anthropology 313.)

319 Caribbean Cultures and Societies (3) (Same as Anthropology 319 and African-American Studies 319.)

336 Aspects of Spanish American Literature (3) (Same as Spanish 336.)

355 Latin American Government and Politics I (3) (Same as Political Science 355.)

360 History of Latin America (3) (Same as History 360.)

361 History of Latin America (3) (Same as History 361.)

372 Geography of Middle America (3) (Same as Geography 372.)

373 Geography of South America (3) (Same as Geography 373.)

401 Cultural Plurality and Institutional Changes in Latin America (3) Value systems, behavioral patterns, political parties, role of the military, the Church, educational institutions, dictatorship and nationalism. Writing-emphasis course. Prereq: 6 hours of Latin American Studies courses or consent of instructor.

402 Latin American Studies Seminar (3) Selected topics in Latin American studies. May be repeated. Maximum 6 hours. Prereq: 6 hours of 300 or 400 level Latin American Studies courses or consent of instructor.

431 Directed Readings in Brazilian and Portuguese Literature (3) (Same as Portuguese 431.)

432 Directed Readings in Brazilian and Portuguese Literature (3) (Same as Portuguese 432.)

455 Latin American Government and Politics II (3) (Same as Political Science 455.)

471 Latin American Civilization (3) (Same as Spanish 471.)

473-474 Survey of Spanish American Literature (3) (Same as Spanish 473-474.)

475 Studies in Latin American History (3) (Same as History 475.)

479 Social Protest Literature of Latin America (3) (Same as Spanish 479.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

**LIBRARY AND INFORMATION SCIENCE (620)**

101 Information Foundations (3) Nature of information: sources, value, creation, organizing principles, transfer, uses in society. Issues: ethics, privacy, copyright, preservation, national information policy, equity of access. Information-oriented careers. Undergraduate credit only.

102 Technologies for Information Retrieval (3) Prerequisites, selection, and use of computer-based information management applications; software identification and task appropriate uses, telecommunications, utilities, and memory management systems; multiplexer systems and technology for national network connections; information services via computers. Undergraduate credit only.

310 Information Seeking: Resources and Strategies (3) Information as critical resource for research and decision making; emphasis on planning, executing, and evaluating information searches. Focus on topics of student's major. Undergraduate credit only.

330 Books and Related Materials for Children (3) Materials for children in leisure time or classroom activities; criteria for selecting books, magazines, recordings, films and related materials; storytelling and other devices for encouraging reading. Undergraduate credit only. E

350 Information Consumer (3) Information in society, information economy, knowledge/learning society; publishing and information providers: hosts, bulletin boards, networks, information overload/anxiety, science fraud, gatekeeping concepts; updating systems, environmental scanning; information consumption techniques. Undergraduate credit only.

430 History of the Book (3) History of writing and various methods of bookmaking.

450 Writing About Science, Technology and Medicine (3) (Same as Journalism 450.)

475 Utilization of Instructional Media (3) (Same as Educational Curriculum and Instruction 475.)

485 Electronic Communication and Information Resources on Internet (3) Exploration of worldwide information and communication resources including e-mail, gopher, Archie, Veronica, WAIS, WWW, and newsgroups.

490 Information Environment (3) Generation, production, dissemination, and use of information. Roles of information in society, information seeking and use behavior, information industry, economics of information products and services, technological and organizational change, information professions, and issues.

**LINGUISTICS (623)**

200 Language, Linguistics, and Society (3) Introduction to linguistics with focus on language development and use of language by individuals and groups. Prereq: Completion of Freshman English or equivalent.

371 Foundations of the English Language (3) (Same as English 371.)

372 The Structure of Modern English (3) (Same as English 372.)

400 Topics in Linguistics (3) Content varies. May be repeated. Maximum 6 hours.
411 Linguistic Anthropology (3) (Same as Anthropology 411.)

420 The Development of Historical Linguistics as a Science (3) Development of the scientific understanding of language change. Emergence of the Neogrammarian paradigm from 19th century intellectual trends. Impact of synchronic, descriptive, structural and transformational-generative linguistics on contemporary diachronic theory. Prereq: 6 hours of courses required for Linguistics concentration or consent of instructor.

425 Introduction to Descriptive Linguistics (3) (Same as French 425, German 425, Russian 425, and Spanish 425.)

426 Methods of Historical Linguistics (3) (Same as French 426, German 428, Russian 426, and Spanish 426.)

429 Romance Linguistics (3) (Same as French 429 and Spanish 429.)


435 Structure of the German Language (3) (Same as German 435.)

436 History of the German Language (3) (Same as German 436.)

471 Sociolinguistics (3) (Same as English 471 and Sociology 471.)

472 American English (3) (Same as English 472.)

474 Teaching English as a Second or Foreign Language I (3) (Same as English 474.)

475 Teaching English as a Second or Foreign Language II (3) (Same as English 475.)

485 Special Topics in Language (3) (Same as English 485.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

LOGISTICS AND TRANSPORTATION (624)

301 Introduction to Logistics (3) Business logistics as a functional area within the firm and as a strategic element of the marketing mix. Roles of materials management and physical distribution, and activities such as customer service, order processing, and information flow, transportation, warehousing, purchasing, inventory, and system design and organization.

302 Introduction to Transportation (3) Transportation and distribution as a vital part of the nation’s economic and social structure; U.S. transportation system; society’s demands for mobility and policies of public and private sectors to meet those demands. Prereq: Econometrics 201.

300 Special Topic in Logistics and Transportation (3) Seminar in current problem area in logistics and transportation. Topic announced prior to offering. May be repeated once for additional credit provided topic is different. Maximum 6 hours. Prereq: Consent of instructor.

401 Materials and Traffic Management (3) Planning and management of logistics activities including import, export, distribution, storage, warehousing, and transportation. Materials management tools and organizational structures for various industries. Prereq: 301-302.

402 Transportation Operations and Cost Management (3) Focuses on transportation systems with the development of carrier costs and their control considered by each mode individually and in coordination with other modes. Prereq: 301-302.


450 Computer Information Systems Analysis and Design (3) Design of operational/logistical information systems for organizations based on evolving microcomputer hardware networks, data base design theory, procedural and standards languages/software. Analysis of both operational and decision support requirements. Prereq: Management 303.

461 Seminar in Logistics Strategy (3) Senior seminar in development of strategy in logistics management. Major writing requirement. Prereq: 301, 302 and senior standing.

462 Seminar in Transportation Strategy (3) Senior seminar in development of strategy in transportation management. Prereq: 301, 302, and senior standing.

493 Independent Study (1-5) Directed research on subject of mutual interest to student and staff member. May be repeated. Maximum 6 credit hours. Prereq: Consent of instructor.

487 Honors: Executive-in-Residence in Transportation and Logistics (3) Student interaction with top-level logistics and transportation executives. Focus on the strategic decision-making process. Prereq: Consent of instructor.

MANAGEMENT (625)

301 Principles of General and Operations Management (3) Basic fundamental concepts and definitions in management. Prereq: Consent of instructor.

303 Management Information Systems (3) Management information needs, management decisions relating to technology and systems design. Data base management systems and applications development software. Prereq: Computer Science 102.


321 Organizational Structure and Behavior (3) Behavioral processes in organizations; motivation, leadership, decision making, communication; behavioral consequences; group behavior, informal organizations, organizational structure, conflict, politics, change and development. Prereq: 301.


401 Business Strategy/Policy (3) Strategy and policy which affect the character and success of the total enterprise. Capstone course which integrates all functional areas in the formulation and implementation of strategic decisions which will determine organizational reach and objectives. Major writing requirement. Prereq: Completion of business core courses and senior standing. Must be approved to a business school. Prereq: 301.


431 Personnel Management (3) Theory, methods and issues pertaining to successful personnel management. Prereq: 301, senior standing.

432 Implementation and Evaluation of Personnel Programs (3) Methods of identifying, developing, implementing and evaluating various personnel programs. Prereq: 431, senior standing.

440 Organizational Psychology (3) (Same as Psychology 440.)

441 Operations Management II (3) Planning and control of operations systems. Aggregate modeling; scheduling systems, material management. Prereq: 341.

471 International Management (3) Focus on the manager in international business activities. Prereq: 301.

493 Independent Study (3) Readings, research, and special projects. Prereq: Consent of instructor. May be repeated one time for credit.

MANAGEMENT SCIENCE (627)

310 Management Science and Managerial Decision Support Systems (3) Introduction to quantitative decision models and their integration into microcomputer-based management support systems. Emphasis on dynamic and network programming, as well as decision analysis, Markov, inventory and queueing models. Prereq: Mathematics 121, 122 and Statistics 201.

MARKETING (632)

301 Marketing Management (3) Institutions comprising the marketing system and their relation to other social, political, and economic influences. Cases include internal and external influences. Prereq: Accounting 201-202, Economics 201, and Statistics 201.

310 Buyer Behavior - Analysis for Marketing (3) Comprehensive framework of consumer behavior concepts and processes. Application to market analysis, design and control of marketing programs. Prereq: 301.

320 Marketing Research and Information Planning (3) Marketing Research process from its inception to implementation of the study’s results. Should be able to critically evaluate the merit of a research project as well as possess the ability to design a sound marketing research plan. Major writing requirement. Prereq: 301 and 320.

420 Promotion Management (3) Principles and practices of promotion management and their relationship to overall marketing planning. Managerial focus emphasizing functional understanding and functionally controlling promotion activities. Prereq: 301.


493 Independent Study (1-6) Directed research on subjects of mutual interest to student and staff member. May be repeated. Maximum 6 credit hours. Prereq: Consent of instructor.

487 Honors I (3) Topics may include non-business marketing applications, microenvironmental issues, market segmentation, international marketing, services marketing, marketing channels and related issues. Prereq: Consent of Instructor.

MATHEMATICS (641)

100 Intermediate Algebra (3) First degree equations and inequalities, polynomials, rational expressions, exponents, graphing, second degree equations and inequalities, systems of equations, introduction to exponential and logarithmic functions. Prereq: Two years of algebra and one year of geometry in high school and either satisfactory placement test scores or Math 100. This course should not be taken to remove an entrance requirement.

115 Statistical Reasoning (3) An introduction to probability and statistics without calculus. Not available for credit to students in the College of Business Administration. Prereq: Two years of algebra and one year of geometry and either satisfactory placement test scores or Math 100.

119 College Algebra (3) A review of algebraic functions, equations, and inequalities for students who satisfy the course prerequisites for 121 but whose placement test scores indicated additional preparation is necessary. Students who receive a grade of C or better in any course numbered 121 or higher may not subsequently receive credit for 119. Prereq: Two years of algebra and one year of geometry and either satisfactory placement test scores or Math 100. This course should not be taken to remove an entrance requirement.
121 Calculus A (3) For students not planning to major in the physical sciences, engineering, mathematics, or computer science. Calculus of algebraic, exponential, and logarithmic functions, with applications. No student who has received credit for Math 141 or 151 with a grade of C or better may subsequently receive credit for 121. Prereq: Two years of algebra and one year of geometry in high school, plus satisfactory placement test scores or C or better.

122 Calculus B (3) Sequel to 121, including elementary matrix algebra, multivariable calculus, and optimization. No student who has received credit for 142 or 152 may subsequently receive credit for 122. Prereq: 121, or 141, or 151.

130 Precalculus I (4) Review of algebra, logarithmic, exponential, and trigonometric functions for students who satisfy the course prerequisites for 141 or 151, but whose placement tests indicate additional preparation is necessary. Students who have received a grade of C or better in 141 or 151 may not subsequently receive credit for 130. Prereq: Two years of algebra, a year of geometry, and half a year of trigonometry in high school. Students who did not study trigonometry in high school may take the noncredit course in trigonometry simultaneously with 130.

141-142 Calculus I, II (4,4) Standard first-year course in single variable calculus, especially for students of science, engineering, mathematics, and computer science. Differential and integral calculus with applications. Prereq: Two years of algebra, a year of geometry, and half a year of trigonometry in high school, plus satisfactory placement test scores, or Math 130.

143-144 Microcomputer Laboratory (1,1) Optional supplement to calculus courses, featuring computer demonstrations and projects. Coreq: Students registering for 143 must also be registered for 141 or 142; students registering for 144 must also be registered for 143 or 145.

147-148 Honors: Calculus I, II (4,4) Honors version of 141-142 for well-prepared students. Quanified students are usually invited to enroll, but inquiries from other students having excellent high school mathematics background and scores. Credit will not be given for 147 or 141.

151-152 Biocalculus I, II (3,3) For students majoring in the life sciences. Topics from calculus of algebraic, logarithmic, and exponential functions, probability and statistics, with emphasis on applications to the life sciences. Prereq: Two years of algebra, a year of geometry, and half a year of trigonometry in high school, plus satisfactory placement test scores, or Math 150.

200 Matrix Computations (1) Introduction to matrix calculations, including determinants, eigenvalues and eigenvectors. For students in the College of Engineering and College of Business Statistics majors only. Students who have received credit for Math 141 or 151 may not subsequently receive credit for 200. Prereq: 142 or 148.

201 Structure of the Number System (3) Problem solving, sets and relations, number systems, integers, elementary number theory, rational numbers and decimals. Prereq: Two years of algebra and one year of geometry in high school and satisfactory placement test score.

202 Probability, Statistics, and Euclidean Geometry (3) Probabilities in simple experiments, measures of central tendency and variation, basic plane and three-space geometry, congruence and similarity, constructions, compass and straightedge, transformations, area and volume measurement. Turtle graphics. Prereq: Two years of algebra and one year of geometry in high school and satisfactory placement test score.

221-222 Discrete Mathematics I, II (3,3) Logic, sets, combinatorics and probability, functions and relations, induction and recursion, elementary number theory. Prereq: 141 or 151.


241 Calculus III (4) Calculus of functions in two or more dimensions. Includes solid analytic geometry, partial differentiation, multiple integration, and selected topics in vector calculus. Prereq: 142 or 148.

243 Microcomputer Laboratory (1) Optional supplement to 241, featuring computer demonstrations and projects. Coreq: 241 or 247.

247 Honors: Calculus III (4) Prereq: 147-148 or invitation of the department.

251 Matrix Algebra I (3) First course in the algebra of simultaneous linear equations and matrices. Includes Gaussian elimination, determinants, vector spaces, linear transformations, eigenvalues, and eigenvectors. Prereq: 141-142.

253 Microcomputer Laboratory (1) Optional supplement to 251, featuring computer demonstrations and projects. Coreq: 251 or 257.

257 Honors: Matrix Algebra I (3) Prereq: 148 or invitation of the department.

323 Probability and Statistics (3) Discrete and continuous random variables; conditional probability, expectation, moment generating functions; law of large numbers and central limit theorem. Elements of statistical inference, estimation, and hypothesis testing. Prereq: 221, 241.

341 Analysis I (3) Introduction to the theory of the real number system, limits of sequences, and functions of a real variable. Prereq: 241 or 247, and 221.

351 Algebra I (3) Introduction to abstract algebra, emphasizing integers and polynomial rings. Prereq: 251 or 257, and 221.

371 Numerical Algorithms I (3) Selection of algorithms and associated software for problems selected from root solving, matrix system solution, linear regression, least squares data fitting, interpolation, numerical integration, numerical methods for ordinary differential equations. Prereq: 231, 241, or 247, and 251 or 257, and knowledge of a high level programming language, such as FORTRAN. (Same as Computer Science 371)

399 Studies in Mathematics (3) May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

400 History of Mathematics (3) Development of major ideas in mathematics from ancient to modern times and the influence of mathematics in technology, science, and culture. Prereq: 141-142 or equivalent. Writing emphasis course: at least one class examination and 3000 words of writing outside the classroom.

410 Laboratory Safety Education (2) Preparation for research in the physical sciences. Topics: basic chemical hazards, laboratory safety, laboratory techniques, protective gear, good laboratory practice, clear thinking, emergency procedures, and other topics as selected by the instructor. Prereq: 243.

425 Statistics (3) Derivation of standard statistical distributions including the binomial, normal, Student's t, and other distributions. Methods of estimation and hypothesis testing, Neyman-Pearson theorem; likelihood ratio and other parametric and non-parametric tests; sufficient statistics. Prereq: 323 or consent of instructor.


443 Complex Variables I (3) Introduction to the theory of functions of a complex variable, including residue theory and contour integrals. Prereq: 241 or 247.

444 Complex Variables II (3) Applications of complex variables to steady-state temperatures, electrostatics, and fluid flow. Prereq: 443.

445-446 Advanced Calculus I, II (3,3) Introduction to the theory of sequences, series, differentiation, and Riemann integration of functions of one or more variables. Prereq: 341 or consent of instructor.

447-448 Honors: Advanced Calculus I, II (3,3) Honors version of 445-446. Prereq: 341 or consent of instructor.

510 Topics in Algebra (3) Topics chosen from number theory and the theory of polynomial equations, such as the quadratic reciprocity law, and Sturm separation. Prereq: 351 or consent of instructor.

531 Algebraic Number Theory (3) Advanced topics in algebra, including the Jordan canonical form. Prereq: 251 or 257.

545-546 Abstract Algebra I, II (3,3) Introduction to algebraic structures such as groups, rings, fields, vector spaces and linear transformations. Prereq: 351 or consent of instructor.

547-548 Honors: Abstract Algebra I, II (3,3) Honors version of 545-546. Prereq: 351 or consent of instructor.

460 Geometry (3) Axiomatic and historical development of Euclidean, and hyperbolic geometry stressing proof technique and critical reasoning. Models of Non-Euclidean geometry. Prereq: 142 or 148, and 221, or consent of instructor.

561 Topology (3) Includes topology of line and plane, separation properties, compactness, connectedness, continuous functions, homeomorphisms, continua, and topological invariants. Prereq: 341 or consent of instructor.

471 Numerical Analysis I (3) Introduction to computation, instabilities, and rounding. Interpolation and approximation by polynomials and orthogonal polynomials. Quadrature and numerical solution of initial and boundary value problems of ordinary differential equations, including stiff systems. Prereq: 271 or consent of instructor. (Same as Computer Science 471.)


490 Readings in Mathematics (1-3) Open to superior students with consent of department head. Independent study with faculty guidance. May be repeated. Maximum 9 hours. Prereq: Agreement of faculty mentor to supervise independent work.

499 Seminar in Mathematics (1-3) Topics will vary. Will require out-of-class projects and in-class presentations by students. Recommended: agree to the number of credit hours announced for a particular seminar. May be repeated. Maximum 9 hours. Prereq: Consent of instructor.

MEDICAL BIOLOGY (661)

410 Laboratory Safety Education (2) Preparation for laboratory work. Discussion of common laboratory hazards, use of personal protective gear, laboratory safety, and equipment will be discussed. Techniques of safe operation and handling will be presented.

411 Undergraduate Research Participation (1-3) Experience in research and active involvement in research projects under supervision of faculty. Students in pre-medical and
other biology majors may conduct their own research projects within designated areas. Prereq: Junior or senior standing; prior consent of faculty member. May be repeated with consent. Maximum 5 hours. Satisfactory/No Credit only.

MEDICAL TECHNOLOGY (699)

410-411 Microbiology (4,4) Laboratory work in bacteriology, mycology, and parasitology. Emphasis on pathogenic bacteria and fungi, their sources, methods of culture, techniques of identification, and evaluation of antibacterial sensitivity. General and qualitative examination of blood and other body fluids. Grade: Satisfactory/No Credit. Prereq: Consent of instructor. May be repeated. Maximum 6 hours. Satisfactory/No Credit only.

420-421 Clinical Chemistry (5,5) Clinical aspects of biochemical analysis. Includes review of principles and instrumentation with emphasis on practical laboratory application of analytical procedures, specimen collection and handling, significance of results, and quality assurance. Grade: Satisfactory/No Credit. Prereq: Consent of instructor. May be repeated. Maximum 5 hours. Satisfactory/No Credit only.

430-431 Hematology and Clinical Microscopy (4,4) Principles, theories, and instrumentation related to 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 on microscopic identification of cells and the significance and correlation of laboratory data. Grade: Satisfactory/No Credit. Prereq: Consent of instructor. May be repeated. Maximum 5 hours. Satisfactory/No Credit only.


450 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.

470 Orientation and Basic Techniques (1) For facilitation of students from campus to hospital community and clinical laboratory. Introduction to medical terminology, ethics, and health team concept. Orientation to basic techniques including procedures for collection and handling of specimens, principles of operation of many laboratory instruments, review of laboratory math, and introduction to proficiency testing. Procedures portions of course extend over entire clinical year.

480 Principles of Supervision and Education in Medicine (1) Seminars in basic principles of management, supervision, and education theories and methods. Comprehensive examination covers entire course.

MEDIEVAL STUDIES (674)

201-202 Medieval Civilization (3,3) Introduction to basic themes in the medieval educational experience from interdisciplinary points of view and including philosophy, religion, art and architecture, language and literature, social and political history. Writing-emphasis course.

261 Medieval Culture: Readings from the Early Middle Ages, 500-1000 A.D. (3,3) Critical analysis and interpretation of selected works from the early medieval period. Focuses on major types of literature produced during the period 500-1000 A.D., e.g., cultural, religious, rhetorical, lyric, epic, biographical. Includes Augustine’s Confessions, Beowulf’s Beowulf, St. Gregory’s Life of St. Benedict, The Life of Charlemagne, etc. Writing-emphasis course.

262 Medieval Culture: Readings from the Later Middle Ages, 1000-1500 (3,3) Critical analysis and interpretation of selected works from the later medieval period. Focuses on romantic, allegorical, and classic writings from the high and later Middle Ages, e.g., the Song of the Nibelungen, the Romance of the Rose, St. Bernard’s Commentary on the Song of Songs, Peter Abelard’s History of My Calamities. Should be taken in sequence with 261. Writing-emphasis course.

312-313 Medieval History (3,3) (Same as History 312-313)

322 Medieval Philosophy (3) (Same as Philosophy 322)

371 Early Christian and Byzantine Art, to 1500 (3) (Same as Art 371)

372 Northern European Painting, 1350-1600 (3) (Same as Art 372)

381 Medieval Art of the West, 800-1400 (3) (Same as Art 381)

382 The Art of Italy, 1250-1450 (3) (Same as Art 382)

384 Dante and Medieval Culture (3) (Same as Italian 401)

385 Medieval History (3,3) (Same as History 312-313)

392-393 Seminar in Medieval Studies (3) Interdisciplinary treatment of selected topics. Content varies. May be repeated. Writing-emphasis course.

410 Medieval French Literature (3) (Same as French 410)

415 Medieval Architecture (3) (Same as Architecture 415)

475 Ancient and Medieval Political Thought (3) (Same as Political Science 475)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

MICROBIOLOGY (684)

210 General Microbiology (3) General properties of bacteria and viruses including physiology, metabolism, genetics, applied bacteriology, pathogenesis, and community. May not be used as part of the major in microbiology. 2 hours and 2 labs.

310 Introduction to Microbiology (3) Introduction to bacteria and viruses including physiology, metabolism, and genetics of bacteria and replication and expression of viruses; bacterial and viral pathogenicity; mechanisms of resistance to disease. Prereq: Biology 210. Coreq: Biology 220.

319 Introductory Microbiology Laboratory (1) Basic techniques for the examination, cultivation, and identification of microorganisms. Coreq: 310.

320 Advanced Microbiology (3) Cell and molecular biology of microorganisms, principles and applications in modern technology. Intended for Microbiology majors. Prereq: 310.

329 Advanced Microbiology Laboratory (2) Laboratory exercises designed to accompany 320. Prereq: 319. Coreq: 320.

400 Laboratory Problems in Microbiology (2-4) Research projects under the direction of a faculty member. May not be used for credit toward requirements for a major. May be repeated. Maximum 9 hours. Satisfactory/No Credit only. Prereq: Consent of instructor.

401 Undergraduate Research in Microbiology (3) Research experience in laboratory of faculty member with faculty committee guidance. Prereq: Junior or senior standing, 310: 319-320: 329, 3.2 minimum grade point average in all course work, consent of department head.

402 Microbiology Senior Honors Thesis (4) Supervised research, preparation and presentation of the senior honors thesis. Prereq: Senior standing, 401, 3.2 minimum grade point average in all course work and 3.5 in Microbiology courses, and consent of department head.

410 Bacterial Physiology (3) Modern concepts of the structure and function of the bacterial cell. Prereq: 310.


420 Medical Microbiology (3) Disease producing microorganisms including bacteria, virusses, chlamydia and fungi. Prereq: 310.

429 Medical Microbiology Laboratory (2) Laboratory exercises designed to accompany 420. Prereq: 319. Coreq: 420.

430 Immunology (3) Principles of inflammation and immunity, immunoglobulins, theories of cell-mediated immunity; diversity, complement, hypersensitivities, cell cooperation and recognition in immune mechanisms and regulatory factors. Prereq: Biology 220. (Same as Zoology 430)

439 Immunology Laboratory (2) Laboratory exercises designed to accompany 430. Coreq: 430. (Same as Zoology 439)


470 Microbial Ecology (3) Physiological diversity and taxonomy of microorganisms from natural environments. Emphasis on the functional role of microorganisms in natural and simulated ecosystems. Prereq: 310. F

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

495 Senior Seminar (3) In-depth consideration of microbiological problems of current interest requiring an integration of two or more disciplines. Emphasis on historical literature and the experimental basis of recent knowledge. Historical background, impact on society, prediction of the future, and the basis of moral and ethical judgments. Written reports required. A capstone course. Prereq: Senior standing. Writing-emphasis course. May be repeated. Maximum 5 hours. Only 3 hours may be counted toward the major. E

MILITARY SCIENCE (688)

110 Basic Military Science I (3) Formation and functioning of the American defense establishment and its relationship with American society, customs and traditions of the army, aspects of military physical fitness training related to duties, world affairs; challenges facing the military in the future. Adventure training skills lab introduces mountaineering, rifle marksmanship, and optional field training exercises. Prereq: United States citizen; freshman or sophomore standing. Students with higher standing require consent of instructor. Letter grade only. F, Sp

120 Basic Military Science II (3) Introduction of basic leadership theory, principles and skills, with emphasis on effective oral communication. Students present a military skills subject briefing. Skills taught include rifle marksmanship, small unit communications, and land navigation. Identification of the army, aspects of military physical fitness training which includes rappelling, tactical formation, drill and ceremony and optional field exercises. Prereq: United States citizen; freshman or sophomore standing. Letter grade only. 2 hour class and 1 hour lab. Sp

130 Army Conditioning Program (1) Challenging instruction that concentrates on students’ individual weaknesses and directly applies exercises designed to increase flexibility, muscular strength, and cardiorespiratory endurance. Student also develops the ability to design and lead a fitness program. May be repeated.

200 Basic Military Science - Practicum (4) 240 contact hours of instruction and evaluation at Fort Knox, Kentucky over a six-week period during the summer. Prereq: United States citizen; physically qualified; at least sophomore standing with two years remaining at the University (either undergraduate or graduate student). Includes additional coursework required. Cumulative GPA of 2.00 or above; legally qualified. Letter grade only. Su

210 Basic Officer Skills I (3) The study of American Military History from 1775 to present. Study includes the roles of military forces in peace and war and focuses on the history of military art, memoirs, battle history, technical studies, and the relationship of armed forces with society. Includes training in management, physical training, drill and ceremony, and historical field trips. Prereq: US citizen, freshman or sophomore standing; 3 years remaining to complete degree. Letter grade only. 2 hour class and 1 hour lab. Sp

220 Basic Officer Skills II (3) Practical application of small unit operating techniques to include first aid, marksmanship and weapons familiarization, map reading and land navigation, drill and ceremony, processing of enemy prisoners of war (EPW), execution of ind-
310 Advanced Military Studies I (4) Discussion and practical exercise of leadership including operation of the military team, land navigation, small unit patrolling, and physical fitness. Tactical and administrative roles in the military are developed in the classroom and applied during leadership training. Prereq: United States citizen; minimum of 55 credit hours passed and have at least two years remaining to complete degree (undergraduate or physically qualified). cumulative GPA 2.00 or higher; legally qualified; 3 or 4 years of JROTC (or 110, 210, 220 completion or 200 completion or basic training completion. Letter grade only. Sp.

320 Advanced Military Studies II (2) Preparation of the future officer leadership to excel at MS 400 Advanced Camp Practicum. Instruction builds on lessons-learned in the 310 and refines small unit leadership skills, map reading techniques, oral and written communication skills, and physical fitness. Includes three field exercises and a leadership laboratory. Prereq: 310. Letter grade only. 3 hours and 1 hour lab. Sp.

400 Advanced Camp Practicum (4) 240 contact hours of instruction and evaluation of leadership skills, group dynamics, communication skills, decision-making skills during the summer between the junior and senior year. Prereq: 310, 320, Letter grade only. Su.

410 Command and Staff Functions (4) Command and staff duties and relationships including logistics, personnel systems, efficiency reports, correspondence, training, management, briefings, counseling, strategic force positioning, and fielded officer resource preparation. Prereq: 310 and 320, 400 or consent of instructor. Letter grade only. 3 hours and 1 hour lab. F.

420 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leadership, military justice system, individual leadership, Law of Land Warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 3 hours and 1 lab. Sp.

430 U.S. Military History, 1754 to the Present (3) Prereq: 410 or consent of instructor. Letter grade only. This class cannot be used to meet any core requirements and to acquaint students with a variety of choral conducting opportunities for student conductors. Prereq: Conducting II or consent of instructor and admission to Teacher Education Program. Letter grade only. F.

330 Public Speaking and Public Addressing (3) Prereq: 310, 320 and 400, Conducting II. Letter grade only. F.

340 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leadership, military justice system, individual leadership, Law of Land Warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 3 hours and 1 hour lab. Sp.

400 Advanced Camp Practicum (4) 240 contact hours of instruction and evaluation of leadership skills, group dynamics, communication skills, decision-making skills during the summer between the junior and senior year. Prereq: 310, 320, Letter grade only. Su.

410 Command and Staff Functions (4) Command and staff duties and relationships including logistics, personnel systems, efficiency reports, correspondence, training, management, briefings, counseling, strategic force positioning, and fielded officer resource preparation. Prereq: 310 and 320, 400 or consent of instructor. Letter grade only. 3 hours and 1 hour lab. F.

420 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leadership, military justice system, individual leadership, Law of Land Warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 3 hours and 1 lab. Sp.

430 U.S. Military History, 1754 to the Present (3) Prereq: 410 or consent of instructor. Letter grade only. This class cannot be used to meet any core requirements and to acquaint students with a variety of choral conducting opportunities for student conductors. Prereq: Conducting II or consent of instructor and admission to Teacher Education Program. Letter grade only. F.

330 Public Speaking and Public Addressing (3) Prereq: 310, 320 and 400, Conducting II. Letter grade only. F.

340 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leadership, military justice system, individual leadership, Law of Land Warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 3 hours and 1 hour lab. Sp.

400 Advanced Camp Practicum (4) 240 contact hours of instruction and evaluation of leadership skills, group dynamics, communication skills, decision-making skills during the summer between the junior and senior year. Prereq: 310, 320, Letter grade only. Su.

410 Command and Staff Functions (4) Command and staff duties and relationships including logistics, personnel systems, efficiency reports, correspondence, training, management, briefings, counseling, strategic force positioning, and fielded officer resource preparation. Prereq: 310 and 320, 400 or consent of instructor. Letter grade only. 3 hours and 1 hour lab. F.

420 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leadership, military justice system, individual leadership, Law of Land Warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 3 hours and 1 lab. Sp.

430 U.S. Military History, 1754 to the Present (3) Prereq: 410 or consent of instructor. Letter grade only. This class cannot be used to meet any core requirements and to acquaint students with a variety of choral conducting opportunities for student conductors. Prereq: Conducting II or consent of instructor and admission to Teacher Education Program. Letter grade only. F.

330 Public Speaking and Public Addressing (3) Prereq: 310, 320 and 400, Conducting II. Letter grade only. F.

340 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leadership, military justice system, individual leadership, Law of Land Warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 3 hours and 1 lab. Sp.

400 Advanced Camp Practicum (4) 240 contact hours of instruction and evaluation of leadership skills, group dynamics, communication skills, decision-making skills during the summer between the junior and senior year. Prereq: 310, 320, Letter grade only. Su.
MUSIC HISTORtY (709)

200 Introduction to Music Literature (3) Basic forms of music and accepted masterworks through chronological approach. For music majors and minors only.

210-220 History of Music I, II (3,3) 210 to 1750. 220-1750 to present. Prereq: 200. Must be taken in sequence.

310 Introduction to African-American Music (3) History of African music, gospel music, and jazz with emphasis on Black artists and their contributions. (Same as African-American Studies 310.)

330 Women in Music (3) History of women in music from the Middle Ages to the present as composers, performers, educators, and patrons. (Same as Women's Studies 330.)

350 History of Jazz (3) Origin, development, and styles of jazz music and its exponents. Cultivation of special listening techniques. (Same as African-American Studies 350.)

360 History of African-American Music (3) History of African music, gospel music, and jazz with emphasis on Black artists and their contributions. (Same as African-American Studies 310.)

370 World Music (3) Basic attitudes and techniques of ethnomusicology. Survey of music cultures throughout the world, with emphasis on the Pacific, Near East, Asia, and Europe.

400 Music History Survey (3) History of music with emphasis on periods, style changes, and cultural forces. Western European tradition from 400 to 1900. Recommended as a review course for graduate students. Prereq: Consent of instructor.

410 Opera History Genre (3) Topics vary. May be repeated for credit. Maximum 8 hours.

420 History of Opera (3) Dramatic, vocal, and orchestral elements in opera of Italian, French, and German schools. 1600-present.

430 Symphonic Literature (3) Survey of literature for orchestra from Baroque to the present, with emphasis on the evolution of the symphony.

440 Music of North America (3) Folk and art music of the United States and Canada from colonial times to the present. Writing-emphasis course.

450 Composer Seminar (3) Life and works of a single composer. Subjects vary.

460 Music Aesthetics (3) Nature of music and musical experience, sense perception and emotion, and role of artist in society. Aesthetic viewpoint of individuals and historical eras through collected writings. Writing-emphasis course.

480 Music in Christian Worship (3) Hymnody, liturgies, and liturgical music.

490 Church Music Methods and Administration (3)

493 Independent Study (1-15) Prereq: Consent of department head. May be repeated for credit.

MUSIC INSTRUMENT (710)

310 Brass Literature and Pedagogy (3) Survey of brass solo and ensemble literature, including instructional materials and methods. Application of pedagogical procedures to individual instruction and performance; demonstration lessons by applied brass faculty and class members. Prereq: Consent of instructor.

320 Woodwind Literature and Pedagogy (3) Survey of woodwind solo and ensemble literature, including instructional materials and methods. Application of pedagogical procedures to individual instruction and performance; demonstration lessons by applied woodwind faculty and class members. Prereq: Consent of instructor.

330 Percussion Literature and Pedagogy (1) Survey of percussion solo and ensemble literature, including instructional materials and methods. Application of pedagogical procedures to individual instruction and performance; demonstration lessons by applied percussion faculty and class members. Prereq: Consent of instructor.

340-350 String Literature and Pedagogy I, II (3,3) 340-Survey of string techniques, issues, research and pedagogies; topical presentations by the applied string faculty and guests. 350-Development of the string family of instruments and bows; survey of string literature, performance practices, and performance styles; application of historical, analytical, and pedagogical procedures to performance. Prereq: 340 and applied enrollment in strings at 300 level or above or consent of instructor.

490 Instrumental Conducting (3) Knowledge and skills in instrumental conducting; various periods and composers and relationships of different styles to the conductor's art; musical analysis and practice in conducting. Prereq: Music Education 320 or equivalent.

MUSIC JAZZ (711)

110 Jazz Theory (2) Fundamentals of the jazz language, including terminology, chord symbols, chord scales, and chord progressions, plus ear-training lab. Prereq: Music Theory 110.

120 Analysis of Jazz Styles (2) Individual improvisatory styles through analysis of their transcribed solos. Training and function of the ear in music. Transcription of solos from recordings and preparation of analysis. Prereq: 110.

130-140 Jazz Piano I, II (1,1) Harmonic language of jazz. Interpretation of chord symbols, formualae for voicing chords, chord progressions, and fundamental melody-playing and improvisation for right hand. Must be taken in sequence.

150 Studio Guitar Styles (2) Introduction to guitar styles in jazz, rock, country, and blue idioms. Prereq: Consent of instructor.

160 Introduction to Styles in Jazz Drumming (2) Examination of major composers and performers who have contributed significantly to creation of principal styles of jazz drumming.

210-220 Jazz Improvisation I, II (2,2) Study and application of principles of improvisation, including nomenclature, chord progressions, chord-scales, patterns, melodic development, and tune styles. Prereq: 110.

310 Jazz Composition and Arranging (2) Prereq: Consent of instructor.

320 Jazz Band Arranging (2) Arranging and scoring for the Big Jazz Band. Prereq: Consent of instructor.

410 Advanced Improvisation (3) Development of individual skills and solving individual problems in jazz improvisation. Prereq: 210 and 220.

420 Jazz Pedagogy (1) Methods and materials relating to teaching of jazz, designing and administering jazz programs, and rehearsing and teaching jazz ensembles. Prereq: Studio Music and Jazz major or consent of instructor.

MUSIC KEYBOARD (712)

110-120 Class Piano I, II (1,1) Development of keyboard skills in reading, technique, repertoire, harmonization, and transposition. Must be taken in sequence.

210-220 Class Piano III, IV (1,1) Continuation of 110-120; 220 completes piano competency requirement; must be taken in sequence.

230 Keyboard Harmony (1) Melody harmonization, figured bass realization, and improvisation. Prereq: Music Theory 110-120.

240 Church Service Playing I (1) Practical skills applicable to the use of the organ in church services, including improvisation, hymn playing, and accompanying. Prereq: 230 and organ proficiency at the 200 level.

310-320 Church Service Playing II, III (1,1) Continuation of 240. Prereq: 240.

330 Sight Reading at the Keyboard (1) Prereq: Consent of instructor.

340-350 Piano Pedagogy I, II - Practicum (3,3)


440-450 Piano Pedagogy I, II (2,2) Pedagogical methods and materials related to the development of principles of learning; specific programs based on pupil aptitude and background; collaborative teaching experience. Must be taken in sequence. Prereq: Consent of instructor.

460-470 The Organ and Its Literature I, II (3,3) Development of the organ and organ literature from the Middle Ages to the present; problems of style and interpretation; organ literature and methods; organ design. Prereq or Coreq: Music History 320 and consent of instructor.

480 Teaching Class Piano III (3) Historical survey and research of teaching methods and materials. Prereq: Consent of instructor.

495 Suzuki Piano Method II (2) Study of the psychology, procedures, and literature of the Suzuki piano method. Must be taken in sequence. Prereq: Consent of instructor.

496 Composition for Media (2) May be repeated. Prereq: Consent of instructor.

MUSIC PERFORMANCE (713)

Admission by audition only. Prerequisite: Mus Gan 140 or equivalent.

103-203-303-403-503 Flute (1-4) May be repeated.

105-205-305-405-505 Oboe (1-4) May be repeated.

110-210-310-410-510 Bassoon (1-4) May be repeated.

115-215-315-415-515 Clarinet (1-4) May be repeated.

120-220-320-420-520 Saxophone (1-4) May be repeated.

125-225-325-425-525 Horn (1-4) May be repeated.

130-230-330-430-530 Trumpet (1-4) May be repeated.

135-235-335-435-535 Trombone (1-4) May be repeated.

140-240-340-440-540 Baritone (1-4) May be repeated.

145-245-345-445-545 Tub (1-4) May be repeated.

150-250-350-450-550 Percussion (1-4) May be repeated.

155-255-355-455-555 Voice (1-4) May be repeated.

160-260-360-460-560 Violin (1-4) May be repeated.

165-265-365-465-565 Viola (1-4) May be repeated.

170-270-370-470-570 Cello (1-4) May be repeated.

175-275-375-475-575 String Bass (1-4) May be repeated.

176-276-376-476-576 Electric Bass (1-4) May be repeated.

179-279-379-479-579 Guitar (1-4) May be repeated.

180-280-380-480-580 Piano (1-4) May be repeated.


190-290-390-490-590 Organ (1-4) May be repeated.

284-384-484-584 Composition (1-3) May be repeated. Prereq: Consent of instructor.

395-495-595 Composition with Electronic Media (1-3) May be repeated. Prereq: Consent of instructor.

496 Composition for Media (2) May be repeated. Prereq: Consent of instructor.

498 Improvisation (1-2) May be repeated. Prereq: Consent of instructor. Cannot be used to satisfy applied music requirement.

MUSIC THEORY (714)

110-120 Theory I, II (3,3) Materials of music including basic elements through triads and seventh chords and modulation. Exercises in writing and analysis of music with emphasis on common practice.

140 Ear Training II (1) Development of proficiency in identifying and notating melodic, harmonic and rhythmic models. Includes computer lab. Should be taken concurrently with 120. A, B, C, NC grading.

210-220 Theory III, IV (3,3) Materials of music with emphasis on literature of Classic, Romantic, and contemporary periods. Exercises in writing and analysis. Must be taken in sequence. Prereq: 120 or consent of instructor.


250 Composition (2) Writing short vocal and instrumental compositions using conventional and new forms of notation. Prereq: 220 or consent of instructor. May be repeated for credit. Maximum 4 hours.

250 Sound Recording Techniques (3) Theory and applications of audio recording sound production and reinforcement systems. Topics include room acoustics, audio measurements, microphones, studio and real-time processing, noise reduction, mixing, editing, monitors, system wiring, and maintenance.

310 Form and Analysis (3) Study and practice in analysis of forms from smallest structural units to large compound forms. Prereq: 220.

320 Instrumentation (3) Basic techniques in scoring for voice, brass, woodwind and string choirs and performance. To be taken by jazz and music education majors.

340 Introduction to Computer Music Transcription (3) Exercise in notation, publishing and including appropriate elements of word processing, graphic design, sequencing and page layout. Study of Music Instrument Digital Interface protocol as it applies to computer music analysis. Prereq: consent of instructor.

390 Synthesis Techniques (3) Studio and real-time applications of synthesizers. Historical background, theoretical concepts, equipment interface and usage, analysis of sounds and compositions. Prereq: 290 or consent of instructor.

400 Survey of Music Theory (3) Emphasis on harmonic practice of Baroque, Classic, and Romantic periods. Examination of voice leading and advanced techniques of counterpoint. Recommended as a review course for graduate students. Prereq: Consent of instructor.

410 Ear Training Review (1) Review and application of harmonic and melodic dictation skills for graduate and advanced students. Prereq: 401 or equivalent. Required of entering graduate students with a deficiency in ear-training.

420 Orchestration (3) Advanced techniques in instrumental writing with emphasis on scoring for the concert orchestra. To be taken by theory and composition majors.

430-440 Countertop I, II (3, 3) 430-Species counterpoint in modal and tonal styles with emphasis on works of Palestrina and J. S. Bach. Prereq: 220. 440-Writing of counterpoint in the manner of the 18th century and fugue analysis of works from the 18th through the 20th centuries. Prereq: 430.

450 Choral Arranging (2) Analysis of scores and writing of arrangements for choirs. Prereq: 220 or consent of instructor.

483 Independent Study in Music Theory (1-3) May be repeated for credit. Prereq: Consent of department head.

MUSIC VOICE (715)

110 Class Voice I (1) Development of basic vocal skills. May be repeated for credit. Maximum 2 hours.

120 Class Voice II (1) Prereq: Consent of instructor. May be repeated for credit. Maximum 2 hours.

130-140 Fundamentals of Acting for Singers I, II (1,1) Development of basic techniques for dramatic presentation of music on stage. Introduction to history of opera and musical theatre. Prereq: Vocal major or consent of instructor. Must be taken in sequence.

210 Vocal Techniques in Popular Music (1) Development of performance techniques in Broadway and other contemporary musical styles. Prereq: Consent of instructor. May be repeated for credit. Maximum 4 hours.

230 Fundamentals of Acting for Singers III (1) Advanced work on song presentation and interpretation; scene study and characterization. Prereq: Music Vocal 140 or consent of instructor.


330 Opera Production (1-3) Supervised work on opera productions. May be repeated for credit. Prereq: Consent of instructor. Maximum 12 hours.

410-420 Song Literature I, II (2,2) 410-German songs. 420-French, Italian, Russian, Scandinavian, Czechoslovakian, British, and American art songs.

425 Functional Diction for Singers (3) Comprehensive one-semester survey of all languages: English, French, German, Italian, Latin and Spanish. Basic instruction in the International Phonetic Alphabet; development of basic diction skills; overview of diction styles and traditions in each language; survey of diction resources and reference materials. Suitable for Sacred Music and Music Education majors with a concentration in Voice and for graduate students in Choral Conducting. Does not fulfill deficiency requirements for graduate students in Voice or Accompanying.

450-460 Pedagogy I, II, (1,1) 450-Concepts and approaches to teaching singing (past and present). 460-Vocal teaching materials and collaborative teaching experiences. Prereq: Consent of instructor.

NURSING (720)

All upper division nursing courses, except 301 and 314, are restricted to students who have progressed into the major (see PROGRESSION POLICIES AND PROCEDURE/NO CREDIT only). Sp

201 Health and Culture (3) An exploration of the beliefs and practices of various cultural groups within the United States in relation to health, illness and the health care delivery system. Implications for the helping professions are examined. This course has no prerequisites and is open to all UT Knoxville undergraduate students.

301 Clinical Pharmacology (3) Biochemical and pharmacological effects of therapeutic drugs on the human body; positive and negative reactions to drugs and interaction effects between and among drugs. Prereq: Chemistry 100-10 and 6 semester hours of anatomy and physiology. F

322 Introduction to Professional Nursing (3) History, philosophy, and scope of nursing practice with emphasis on nursing process and preparation of the nursing professional. Prerequisite: consent of instructor. Does not fulfill deficiency requirements for in-patient services. Emphasis on application of fundamental nursing concepts, process, and practice. 3 lectures, 3 labs. Coreq: or F

340 Nursing Assessment and Wellness Promotion (4) Developmental, psychosocial, cultural, environmental, spiritual, family, and physical dimensions of health assessment. Collection, analysis, and application of assessment data in wellness-oriented nursing diagnoses and use of the nursing process in promotion and wellness. Evolution and expansion of the nursing role in wellness-oriented education. Literature sessions for development of nursing assessment skills. 3 lectures, 1 lab. F

356 Transition to Professional Nursing (3) Current status of professional nursing; utilization of the nursing process in a clinical laboratory setting. Philosophy and conceptual framework of the baccalaureate nursing program and selected ethical considerations related to the delivery of nursing. Prereq: Consent of instructor. Must be taken in sequence.

313 Introduction to Nursing Research (3) Language of research, types of research designs, methodological approaches, sampling, data analysis, and significance of findings. Evaluation of existing and ongoing nursing research studies. Prereq: 302 or 305 or consent of instructor. Sp

314 Wellness and Lifestyle (3) Models of wellness and holistic health within the framework of modern medicine, eastern philosophy, and recent discoveries about the interaction of mind and body. Biochemical and physiological interactions of lifestyle and genetic risk factors for cardiovascular and malignant diseases, wellness potential, and potential lifestyle changes. Prerequisite: 301. Coreq: 316, 325. F

316 Health Deviation Concepts II (4) Continuation of 316 with emphasis on the nursing process as applied to patients with physiologic and behavioral deviations underlying or associated with more complex and critical illnesses such as circulatory failure, cardiac dysrhythmias, neurological damage. Prereq: 301, 306, Sp

320 Advanced Placement Credit: Care of the Adult Client (3) For registered nurses only. Satisfaction/No Credit only.

321 Advanced Placement Credit: Care of the Child-Bearing Client (3) For registered nurses only. Satisfaction/No Credit only.

322 Advanced Placement Credit: Care of the Child (2) For registered nurses only. Satisfaction/No Credit only.

323 Advanced Placement Credit: Care of Client with Mental Disorder (3) For registered nurses only. Satisfaction/No Credit only.

324 Nursing of Children and Adults (6) Content and clinical laboratory experience related to nursing care of acutely ill children and adults. Emphasis on application of physiological and behavioral concepts to the provision of comprehensive nursing care for hospitalized clients. 4 lectures, 4 lab. Prereq: 301, 302, 304, 306; or Coreq: or Corse: 316, Sp

325 Nursing of Children and Adults Theory (2) Theoretical component of 324. For RN's only. Prereq: 301, 304, 305, 306, Sp

401 Family Health Nursing (6) Nursing needs of families in illness and crisis. Emphasis on the critical role of family in health promotion, prevention, and crisis intervention to nursing care of children and adults experiencing normal pregnancy and childbirth and to those experiencing such health problems or complications as congenital anomalies, high risk birth, disturbed parent/child relationships, or gynecologic disturbances. 3 lectures, 3 lab. Prereq: All 300 level clinical nursing courses, F, Sp

402 Family Health Nursing Theory (3) Theoretical component of 401. For RN's only. Prereq: 316, 325, F, Sp

403 Community Health Nursing (6) Application of the nursing process to care of individuals, families, and groups in home and community settings with special emphasis on health promotion, prevention, and control of communicable diseases. Epidemiological approach is used to identify aggregates within the population that are at risk for illness, disability, or premature death. Political, social, environmental, and ethical issues related to community health nursing. 3 lect., 1 sem., 2 lab. Prereq: All 300 level clinical nursing courses.

405 Professional Nursing Seminar (2) Critical examination of legislative, legal, ethical, social, and educational issues and trends that have immediate or long-range implications for professional nursing practice. Prereq: All 300 level clinical nursing courses.

409 Nursing Management and Strategies (6) Management and leadership principles and their application to client care. Course topics include quality assurance programs, satisfying patient needs, application of delivery models, nursing practice standards, and evaluation of nursing practice; opportunities are provided for development.
314 Energy Metabolism and Metabolic Integration (3) Integration of carbohydrate, fat and protein metabolism as applied to nutrient utilization and requirements in humans. Prereq: 310, 313.

410 Professional Issues in Dietetics (1) Dietetic registration, licensure, third-party payments; dietetic practice; marketing dietetics; internship application preparation; public policy in dietetic practice. Prereq: Senior standing.

411 Nutrition in Disease (4) Metabolic processes of diseased organs and systems; dietary modifications required. Prereq: 312, 313.

412 Food and Nutrition in the Community (3) Influence of health characteristics, geographic, social, economic, educational and cultural factors on food and nutritional needs of specific groups. Prereq: consent of instructor, public policy. Prereq: 302, 415.

413 Experimental Food Science (3) Individual and group laboratory experimentation in food science; microcomputer applications. Prereq: 312, PSSC 471, 1 hour and 2 labs.

414 Nutrition-Drug Interactions (2) Nutrient effects on efficacy and toxicity of drugs; drug effects on absorption, metabolism, and nutritional status. Prereq: 310 or equivalent.


420 Food and Nutritional Analysis (4) Principles, procedures, and instrumentation for analysis of food and body fluids. Interpretation of chemical, dietary, and anthropometric data analysis in nutrition research. Prereq: 100, 310.

450 Special Topics: Nutrition (1-3) Developments, issues, and problems in Nutrition; topics variable. Prereq: Junior or Senior standing in NTR or consent of instructor. May be repeated. Maximum 3 credits.

492 Field Experience: Nutrition (1-3) Prereq: Junior or Senior standing, consent of instructor. Satisfactory/No Credit only.

493 Directed Study: Nutrition (1-3) Individual student: faculty experience. Prereq: Junior or Senior standing, consent of instructor. Satisfactory/No Credit only.

470 In-depth study of selected nursing topics, problems, or issues not covered in other courses. Topics determined by faculty and student interest. Prereq: Consent of instructor.

493 Independent Study (1-3) Nursing or health-related topic not covered in other nursing courses. Prereq: Senior standing or consent of instructor.

NUTRITION (725)

100 Introductory Nutrition (3) Nutritional concepts; current consumer issues in nutrition; nutritional needs through life cycle; international nutrition concerns and issues. A student who has received credit for NTR 300 may not receive credit for this course. F, Sp

101 Food Principles (3) Food selection, safety, preparation, evaluation, meal planning, service. 2 hours and 1 lab.

200 Fundamentals of Nutrition (3) Nutrition in normal and altered health states during life cycle; nutritional analysis of diets. Prereq: Chemistry 110 or equivalent, Zoology 230. A student who has received credit for NTR 100 may not receive credit for this course. F, Sp

202 Life Span Nutrition (3) Physiological development and psychosocial factors that influence nutrient needs and nutrition behaviors of individuals across the life span. Nutrition education strategies for various age groups. Prereq: 100, Zoology 230 or consent of instructor. F, Sp

310 Physiological Chemistry (3) (Same as Biochemistry 310.)

312 Science of Food (4) Elements of food selection, safety, preparation and evaluation. Chemical and physical properties of foods; application to functional and nutritional properties. Sensory evaluation of foods and consumer behavior. Effects of processing on food. Prereq: 100, Chemistry 350. Coreq: Micro 210. 3 hours and 1 lab.


314 Energy Metabolism and Metabolic Integration (3) Integration of carbohydrate, fat and protein metabolism as applied to nutrient utilization and requirements in humans. Prereq: 310, 313.

410 Professional Issues in Dietetics (1) Dietetic registration, licensure, third-party payments; dietetic practice; marketing dietetics; internship application preparation; public policy in dietetic practice. Prereq: Senior standing.

411 Nutrition in Disease (4) Metabolic processes of diseased organs and systems; dietary modifications required. Prereq: 312, 313.

412 Food and Nutrition in the Community (3) Influence of health characteristics, geographic, social, economic, educational and cultural factors on food and nutritional needs of specific groups. Prereq: consent of instructor, public policy. Prereq: 302, 415.

413 Experimental Food Science (3) Individual and group laboratory experimentation in food science; microcomputer applications. Prereq: 312, PSSC 471, 1 hour and 2 labs.

414 Nutrition-Drug Interactions (2) Nutrient effects on efficacy and toxicity of drugs; drug effects on absorption, metabolism, and nutritional status. Prereq: 310 or equivalent.


420 Food and Nutritional Analysis (4) Principles, procedures, and instrumentation for analysis of food and body fluids. Interpretation of chemical, dietary, and anthropometric data analysis in nutrition research. Prereq: 100, 310.

450 Special Topics: Nutrition (1-3) Developments, issues, and problems in Nutrition; topics variable. Prereq: Junior or Senior standing in NTR or consent of instructor. May be repeated. Maximum 3 credits.

492 Field Experience: Nutrition (1-3) Prereq: Junior or Senior standing, consent of instructor. Satisfactory/No Credit only.

493 Directed Study: Nutrition (1-3) Individual student: faculty experience. Prereq: Junior or Senior standing, consent of instructor. Satisfactory/No Credit only.

470 In-depth study of selected nursing topics, problems, or issues not covered in other courses. Topics determined by faculty and student interest. Prereq: Consent of instructor.

493 Independent Study (1-3) Nursing or health-related topic not covered in other nursing courses. Prereq: Senior standing or consent of instructor.
PHILOSOPHY (745)

110 The Human Condition: Value and Reality (3) The meaning of life, the existence of God, freedom of the will, human nature and values. Writing-emphasis course.

111 The Human Condition: Knowledge and Reality (3) The place of mind in the material universe and the nature and possibilities of human knowledge. May be taken before 110. Writing-emphasis course.

120 Foundations of Western Thought: Antiquity through 1500 (3) Plato, Late Antiquity and the Medieval Period. Writing-emphasis course.

121 Foundations of Western Thought: 1500 through Early Twentieth Century (3) Development of Rationalist and Empiricist thought, Nineteenth Century and early Twentieth Century Philosophy. May be taken before 120. Writing-emphasis course.

130 Critical Thinking (3) An introduction to practical reasoning in natural language, designed to enhance skills in recognizing, analyzing, and constructing arguments. Satisfies Liberal Arts Basic Skills Requirement "Mathematics, Computer Science or Logic".

135 Formal Logic (3) Introduction to formal deductive systems: propositional and predicate logic. Satisfies Liberal Arts Basic Skills Requirement "Mathematics, Computer Science or Logic".

200 Special Topics (3) When content varies, may be repeated. Maximum 6 hours.

240 Ethics (3) Theories of ethical values. Writing-emphasis course.

242 Ethical Theory and Its Applications (3) A study of moral values and principles in theoretical and practical contexts. Open only to students registered in the College of Business Administration.

250 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy.

260 Ancient Western Philosophy (3) Writing-emphasis course.

262 Medieval Philosophy (3) Development of medieval thought from St. Augustine to William of Ockham. Satisfies Liberal Arts Basic Skills Requirement "Mathematics, Computer Science or Logic".

264 Seventeenth- and Eighteenth-Century Philosophy (3) Writing-emphasis course.

266 Nineteenth- and Twentieth-Century Philosophy (3) Writing-emphasis course.

335 Intermediate Formal Logic (3) Metatheory of formal logic and philosophy of logic. Prereq: 135 or consent of instructor.

342 Business Ethics (3) Ethical problems as they confront both business as a social institution and individuals in business.

344 Professional Responsibility (3) Critical analysis of selected classic texts from philosophy, religious studies, and social sciences dealing with responsibility and the nature of professionalism. Theoretical principles and analytical skills applied to selected case studies and other detailed descriptions of professional practice from engineering/architecture, business accounting, and at least one of law/politics; helping professions (social work, human services, ministry); teaching. (Same as Religious Studies 344.)

345 Medical Ethics (3) Ethical issues in medicine such as abortion, euthanasia, human experimentation, fairness in health care delivery and the doctor-patient relationship. (Same as Religious Studies 345.)

346 Environmental Ethics (3) Issues concerning the nature of the environment and the place of humanity within it.

349 War and Morality (3) Moral justification for war (just war). Legal and moral constraints in war (just in war). Satisfies Liberal Arts Basic Skills Requirement "Mathematics, Computer Science or Logic".

350 Aesthetics (3) Philosophical discussion of art. Writing-emphasis course.

353 Philosophy and Literature (3) Nature of literature; philosophical assumptions in literary works. Writing-emphasis course.

356 Introduction to Philosophy of Science (3) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

360 Introduction to Philosophy of Science (3) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

363 Conceptual History of Science (3) Historical evolution of thought in astronomy, mechanics, and the study of living things, from the Greeks through the early twentieth century. Prereq: 8 hours of physical science or consent of instructor.

370 Philosophy of Religion (3) Analysis of basic issues in the philosophy of religion. (Same as Religious Studies 370.)

374 Philosophy and Religion of India (3) (Same as Religious Studies 374.)

376 Buddhist Philosophy and Religion (3) (Same as Religious Studies 376.)

379 Religion and Philosophy in China (3) (Same as Religious Studies 379.)

380 The Concept of Woman (3) The nature of woman as it has been conceived by major western philosophers from Plato to Simone de Beauvoir. (Same as Women's Studies 380.) Writing-emphasis course.

382 Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women today. (Same as Women's Studies 382.)

390 Philosophical Foundations of Democracy (3) Philosophical problems relating to the nature and justification of the central values, principles, and concepts of democratic society. Writing-emphasis course.

393 Marxism (3) Basic philosophical issues in Marxist thought: ideology, dialectics, praxis, the critique of modern society. (Same as Russian and East European Studies 393.)

395 Existentialism (3) Themes related to freedom and finitude in the tradition that begins with Kierkegaard and Nietzsche, and extends to Heidegger and Jaspers, Sartre and Merleau-Ponty.

400 Special Topics (3) When content varies, may be repeated. Maximum 6 hours.

411 Modern Religious Philosophies (3) (Same as Religious Studies 411.)

412 Classical Indian Systems of Philosophy: The Moksha Tradition (3) (Same as Religious Studies 412.)

420 Topics in History of Philosophy (3) One or more significant topics in the history of philosophy. (Same as Religious Studies 420.)

425 American Philosophy (3) Colonial to early 20th Century. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum 9 hours.

426 American Philosophy (3) Colonial to early 20th Century. Prereq: 6 hours of philosophy or consent of instructor. Writing-emphasis course.

440 Contemporary Ethical Theory (3) Topics in metaphysics or ethics. Prereq: 6 hours of philosophy or consent of instructor.

446 Theoretical Issues in Medical Ethics (3) Prereq: 240 or 345 or consent of instructor. (Same as Religious Studies 446.)

460 Philosophy of Science (3) Methodological and conceptual issues in the natural and social sciences: patterns of theory modification and replacement, the nature of explanation and causation, the status of theoretical entities. Prereq: 350 and one year of natural or social science, or consent of instructor.

465 Philosophy of History (3) Speculative and critical aspects of philosophy of history. Prereq: 6 hours of philosophy or consent of instructor.

473 Philosophy of Mind (3) Problems of mind and body in relation to consciousness and personal identity. Prereq: 6 hours of philosophy or consent of instructor.

475 Analytic Metaphysics and Epistemology (3) Topics in metaphysics and epistemology in recent Anglo-American tradition. Prereq: 6 hours of philosophy or consent of instructor.

476 Philosophy of Language (3) Survey of issues such as meaning, reference, and truth. Prereq: 6 hours of philosophy or consent of instructor.

478 Philosophy of Mind (3) survey of issues such as meaning, reference, and truth. Prereq: 6 hours of philosophy or consent of instructor.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

PHYSICAL EDUCATION SERVICE PROGRAM (764)

The following courses may not be repeated:

200 Special Topics (1-2) When content varies, may be repeated. Maximum 6 hours.

201 ARC WS1-Handicapped (1)

202 Badminton (1)

203 Elementary Ballet I (2)

204 Elementary Ballet II (2)

205 Basketball (1)

206 Bowling (1)

209 Flag Football (1)

210 Folk and Square Dance (2)

211 Golf (1)

212 Handball (1)

213 Ice Skating (1)

214 Elementary Jazz I (2)

215 Elementary Jazz II (2)

216 Martial Arts: Special Topics (1)

219 Coed Gymnastics: Men's Apparatus (1)

220 Elementary Modern Dance I (2)

221 Elementary Modern Dance II (2)

222 Paddleball (1)

223 Personal Safety and Self-Defense (1)

224 Physical Fitness: Conditioning (1)

225 Physical Fitness: Exercise to Music (1)

226 Exercise and Weight Control (1)

229 Physical Fitness: Jogging (1)

230 Physical Fitness: Swimming (1)

231 Physical Fitness: Walking (1)

222 Racquetball I (1)

233 Racquetball II (1)

234 Soccer (1)

235 Social Dance (2)

236 Softball (1)

239 Beginning Swimming (1)

240 Intermediate Swimming (1)

241 Emergency Water Safety (1)

242 Tap Dance I (2)

243 Tap Dance II (2)

244 Tennis I (1)

245 Tennis II (1)

246 Track and Field (1)

249 Tumbling I (1)
**PHYSICS (773)**

121-122 Introductory Physics (3,3) For students whose major is outside the physical sciences. Concepts of physics developed by observation of phenomena and logical reasoning. A minimum of analytical analysis. 121-Description of motion, forces, energy and momentum, properties of matter. 122-Electricity, magnetism, light, topics from modern physics. Introduction of properties of atoms and nuclei. Must be taken in sequence. Prereq. or Coreq. for 311; 231 or 138 and Mathematics 231. Coreq. for 312: Mathematics 241.

321 Thermal Physics (3) Concepts of temperature and heat, laws of thermodynamics; elementary statistical mechanics; applications to physical and chemical phenomena. Prereq. 311, or 138, and Coreq. of instructor.

341 Introduction to Nuclear Physics (3) Introductory theoretical nuclear physics with emphasis on applied aspects. Prereq. 240 or 232.


361-362 Electronics Laboratory (3,4) Electronic devices and instrumentation techniques in the physics laboratory. 361-381 analog and digital electronics, including elementary building blocks of relevance to data acquisition systems, operation amplifiers, digital-to-analog and analog-to-digital conversion, use of standard laboratory instruments, and applications of microcomputers. 362-Advanced instrumentation techniques applied to the study of electronic circuits as dynamic physical systems, circuits and noise, data acquisition, Fourier analysis and synthesis, nonlinear circuit dynamics. Prereq. 138 or 232. 6 hours lab per week.

401 A Survey of Physics (3) A survey of physics from earliest times to the present, emphasizing the unifying philosophie and mathematical principles. Classical theories of gravitation, electromagnetism, and relativities; various forms of quantum mechanics, quantum electrodynamics, and recent theories of particles, fields, and their interactions. Consideration of the effects of physics on modern society and the practice of physics from a value-oriented perspective. Written reports on important original papers, thought-provoking problems involving different fields of classical physics, and a final oral and written report on some independent study. Prereq. Senior standing in Physics or consent of instructor.

411-412 Introduction to Quantum Mechanics (3,3) Fundamental principles of quantum mechanics and methods of calculation. Solution of the Schrodinger equation for simple systems. Applications to atomic, molecular, nuclear, and condensed matter physics. Must be taken in sequence. Prereq. 240 or equivalent, Mathematics 240.

421 Modern Optics (4) Transmission of light in uniform and nonuniform media, interference and diffraction, boundary effects, relations of Fourier optics and holography. Prereq. 431, or either 232 or 138, and Coreq. of instructor. 3 hours lecture, 3 hours lab.

425 Principles of Non-Destructive Testing (3) (Same as Engineering Science and Mechanics 425.)

431-432 Electricity and Magnetism (3,3) Electrostatics, magnetostatics, coupled electric and magnetic fields, Maxwell's Equations, electromagnetic waves and radiation. Prereq. 226 or 232.

462 Modern Physics Laboratory (3,3) Introductory to fundamental and modern techniques in experimental physics, including the practice of measurement and data analysis. Selected experiments in nuclear, atomic, molecular and solid state physics, and modern optics. Prereq. 361 and either 240 or 411. 462-Advanced experiments in modern physics. Experimental team work. Limited to one student per team. Prereq. 461. 5 hours lab per week.

472-472 Health Physics (3,3) Radiolocation, interaction of electromagnetic radiation with matter, radiation quantums and units, point kernel and extended sources, X-rays and gamma radiation, photon interactions with charged particles with matter, stopping power, range, energy relations, counting statistics, shielding, dosimetry, waste disposal, criticality prevention, radiation biology and ecology. Prereq. of instructor.

490 Senior Seminar (1-3) Topics of current interest. May be repeated with consent of department. Maximum 6 hours.

491 Foreign Study (3-15)

492 Off-Campus Study (3-15)

493 Research and Independent Study (1-3) Research and study in field of particular interest with faculty guidance. Consent of department is required. Maximum 6 hours.

**PLANNING (782)**

401 The City in the United States (3) Development and character of United States cities. Contemporary issues and selected case studies. (Same as Urban Studies 401)

402 Survey of Planning (3) History of city development and of planning with special attention to the United States experience in urban and other levels of planning. State of the art, the process, the comprehensive plan, implementation devices. Planning issues in society. Not for credit for M.S.P. degree. (Same as Urban Studies 406.)

446 Housing (3) Nature and demand for housing in U.S. and abroad, U.S. experience. Private market processes and public influences. Problems of changes in housing supply, impact of new technology, and governmental programs to improve supply and quality of housing.

**PLANT AND SOIL SCIENCE (792)**

200 Current Topics in Environmental Science (1) Lectures and invited presentations on current environmental issues and careers in Environmental Science. Sp

210 Introduction to Soil Science (3) Differences in soils: soil genesis, physical, chemical, and biological properties of soil; relation of soils to land use and pollution; soil management related to tillage, erosion, moisture supply, temperature, aeration, fertility, and plant nutrition. Introduction to fertilizer chemistry and use. Prereq. Chemistry 130 or equivalent. 3 hours and 1 lab. F, Sp

211 Introduction to Soil Science Laboratory (1) Experiments on topics covered in 210. Coreq. 210, 2 hours. F, Sp

230 Introduction to Crop Science (3) Fundamentals of plant structure, classification, growth and reproduction of higher plants, use of plants, crop production. Principles and methods of growing several of the world's important grain, fruit and vegetable crops, detailing their origin and cultural requirements. 2 hours lecture and one 2 hour lab. Prereq. Botany 110, 120 or Biology 110, 120, F

292 Soil Morphology (1) Intensive course involving describing, classifying, and interpreting soils in preparation for regional and national soil judging contests. Prereq. 210 and consent of instructor. May be repeated. Maximum 4 hours. 1 hour and 1 lab. F, Sp

311 Soil Fertility (3) Influence of soil properties on plant nutrient availability and uptake, Principles of fertilizer use and their reactions in soils. Prereq. 210, 2 hours and 1 lab. Sp

312 Soil and Water Conservation (2) Hydrologic, agronomic, and engineering principles applied to resource management problems including flood and erosion control, drainage and water quality. Prereq. 210. Coreq. 313. S

313 Soil and Water Conservation Laboratory (1) Laboratory on topics covered in 312. Coreq. 312.

333 Field and Forage Crops (3) Agronomic principles of crop production and management. Crop improvement, cropping systems, tillage, soil judging contests, pest management, harvest and utilization of major field and forage crops. Prereq. 210 or 230. 2 hours and 1 lab. Sp

332 Fruit Crops (3) Fundamentals of site selection, Fruit propagation, tree training, pest control and related management factors for deciduous fruit crops will be emphasized. Prereq. 230. 2 hours and 1 lab. F-A

333 Vegetable Crops (3) Characteristics, economic importance, adaptability and production of vegetables
for fresh and processing markets with emphasis on both warm and cool season crops. Prereq: 210 or 230. 2 hours and 1 lab. Sp-A

334 Weed Management (3) Principles of weed interference, integrated management, herbicide selectivity and behavior; specific recommendations for various crop and non-crop situations. Prereq: 210, 2 hours and 1 lab. F

392 Practicum (2-4) Working with agricultural, environmental or biological enterprises in an area of student's career interest. May not be used as 300-level prerequisite for any course in Plant and Soil Science. Prereq: Consent of advisor and faculty committee. E

401 Seminar (1) Current topics in the plant and soil sciences; present oral and written professional presentations; professional ethics; review of literature; assignments for written and oral presentations. Senior standing. Sp-A

411 Soil Microbiology (3) Soil microbial population and the soil ecosystem; microbial transformations of inorganic and organic compounds; decomposition of residues; dynamics of soil organic matter. Prereq: 210 and Chemistry 110 or 350 or consent of instructor. 2 hours and 1 lab. F

412 Soil Genesis, Classification and Mapping (3) Soil genesis and formation; observing and describing morphology of agricultural and forest soils; chemical and physical properties, classification, mapping. Two Saturday field trips required. Prereq: 310 or consent of instructor. 2 hours and 1 lab. F

413 Soil Chemistry (3) Structure and chemical properties of soil materials with emphasis on the colloidal fraction and exchange, chemical equilibria, soil acidity, oxidation-reduction, weathering, nutrient availability and waste disposal. Prereq: 311 or consent of instructor. F

414 Soil, Land Use and the Environment (3) Soil as an environmental component and soil properties affecting land use. Soil as a resource in development planning including nonengineering aspects of site selection for land use, soil survey and resource data in land use recognition and prevention of soil pollution. Prereq: 210 or consent of instructor. Sp-A

415 Soil Hydrology (3) Physical relationships among solid, liquid, and gaseous phases of the soil system. The relationships of soil properties to the processes governing transport of water, and chemicals in soil. Prereq: 210. 2 hours and 1 lab. F, A

431 Crop Physiology and Ecology (3) Plant physiology and ecology applied to crop production. Effects of environmental conditions on biological processes. Prereq: 230, Botany 321. 2 hours and 1 lab. F-A

432 Bioclimatology (3) Solar energy budget; interactions between global, regional and local climates and biological systems; characterisation of macro and microclimates; microclimate modification; automated weather station data collection and analyses; biological responses to climatic stresses; climate change and their effects on biological systems. Prereq: One year of physical or biological science, junior standing. 2 hours and 1 lab. F-A

433 Agricultural Pesticides (3) Regulation of pesticide development, manufacture, transportation, marketing and use. Structure, use, modes of action, degradation and environmental impact of pesticides used in agriculture, forestry and related areas. Prereq: 1 year biological sciences and 1 semester chemistry. 2 hours and 1 lab. Sp-A

434 Postharvest Biology and Technology (3) Principles, methods, and techniques related to the maintenance of quality of horticultural commodities. Emphasis is placed on preharvest management, harvesting, storage facilities and techniques, quality evaluation and the biological and physiological mechanisms related to maturation, ripening, and senescence. Two Saturday field trips. 2 hours and 1 lab. Prereq: 1 year Biological Science at Junior standing. F

453 Principles of Plant Breeding (3) Genetic principles and techniques used in crop improvement. Prereq: Biology 220 or equivalent. 2 hours and 1 lab. Sp-A

471 Statistics for Biological Research (3) Notation, descriptive statistics, probability, distributions, confidence intervals, hypothesis testing, chi-square tests, analysis of variance, mean separation procedures, linear regression and correlation. Prereq: Math 121 or equivalent. 3 hours and 1 rec. F

493 Problems in Plant and Soil Science (1-3) Special research or library projects in plant and soil science. May be repeated. Maximum 6 hours. E

POLITICAL SCIENCE (801)

101 United States Government and Politics (3) Introduction to fundamental institutions and processes of American National Politics including the Constitution, the Presidency, the Congress and the courts.

102 Introduction to Political Science (3) Introduction to politics and political systems.

107 Honors: United States Government and Politics (3) Analysis of the American political system for students with superior ability. Admission by permission of department for students with at least B average; entrance exam accepted on basis of strong placement scores and high recommendation.

201 Introduction to Political Analysis (3) Nature, character, and function of research design, data collection and statistical techniques used in the study of politics.

311 Contemporary Issues in American Public Policy (3) Selected public policy issues confronting the nation, including the background, nature, and effects of present policies, and options for the future. Writing-emphasis course.

312 Popular Culture and American Politics (3) Popular culture related to election outcomes focusing on the role of film, television, fiction, music, drama, art and sports. Writing-emphasis course. (Same as American Studies 312.)

315 Tennessee Government and Politics (3) Major elements in Tennessee government and politics.

320 State Government and Politics (3) Setting, institutions, and processes of government in the fifty states: generalizations and comparisons, with emphasis on federalism and inter-governmental relations.

321 Urban Politics and Process (3) Development of political and policy-making systems in cities. (Same as Urban Studies 321.)

322 Minority Group Politics in the United States (3) Content varies. May be repeated with the consent of the department. Maximum 6 hours. (Same as African-American Studies 322.)

330 Law in American Society (3) Law as a process through which social problems are addressed in the United States. Examples from case law, legislation, and administrative regulation. Writing-emphasis course.

331 Judicial Process (3) Courts as components of political systems, and the policy formulation through judicial decision making.

340 Introduction to Public Administration and Public Policy (3) Public agencies, their organization, personnel and financial management and administrative responsibilities, the policy-making process, political environment.

350 Political Change in Developing Areas (3) Characteristics and problems of political change with primary focus on areas of the underdeveloped world. Writing-emphasis course.

355 Latin American Government and Politics I (3) Introduction to contemporary conditions in Latin America. (Same as Latin American Studies 355.) Writing-emphasis course.

361 Politics in Western Democracies (3) Political culture patterns, and institutions of Western democratic systems. Writing-emphasis course.

365 United States Foreign Policy Process (3) Processes by which United States foreign policies are made and implemented, focusing on interaction between federal bureaucracy and private interests. Writing-emphasis course.

366 United States Government Foreign Policy Process (3) Processes by which United States foreign policies are made and implemented, focusing on interaction between federal bureaucracy and roles of the President, Congress, the press, and public opinion.

370 Contemporary International Problems (3) Analysis of current international events.

374 American Political Thought (3) Major themes and ideas in American political thought related to the development of American political institutions, values, and practices. Writing-emphasis course.

387-388 Junior Honors Seminar (3, 3) Required of honors majors; admission with consent of department.

410 Special Topics in Political Science (3) May be repeated with consent of department. Maximum 6 hours.


420 Political Attitudes and Behavior (3) Systematic examination of political attitudes, public opinion and political behavior. (Same as American Studies 420.)

421 Political Parties and Interest Groups (3) Analysis of political parties, interest groups, campaigns and elections.

430 United States Constitutional Law: Sources of Power and Restraint (3) Judicial review, constitutional powers of the President and Congress, federalism, sources of regulatory authority, and constitutional protection of political and economic rights.

431 United States Constitutional Law: Civil Rights and Liberties (3) Current issues in civil rights and liberties including: first amendment freedoms, equal protection, privacy and the right of the accused.

440 Public Management and Human Resources (3) How to mobilize and manage technical and human resources in pursuit of public sector organization goals.

441 Budgetary Process and Public Management (3) Fiscal budgeting, planning and expenditure processes in government, their policy and administrative implications.

442 Administrative Law (3) Legal dimensions of administrative power and procedures, and constitutional controls over administrators.

452 Black African Politics (3) Recent evolution and current political environment of Black African nations. (Same as African-American Studies 452.) Writing-emphasis course.

454 Government and Politics of China and Japan (3) Political setting, structure and political processes in China and Japan. Writing-emphasis course.

455 Latin American Government and Politics (3) Evolution and current political environment of Latin America. (Same as Latin American Studies 455.) Writing-emphasis course.

459 Government and Politics of the Soviet Union (3) Origins and development of the Soviet political system, and selected policy areas. (Same as Russian and East European Studies 459.) Writing-emphasis course.

461 Policy Making in Democracies (3) Comparative approach to theory and process of making public policies.

463 Contemporary Middle East Politics (3) Government and movements in the Middle East, their characteristics, bases, and interrelationships.

470 International Law (3) Nature and development of international law and compliance with it. Particular attention to function of international law in the context of international conflict.

475 Ancient and Medieval Political Thought (3) Major political thinkers from the Middle Ages to the Renaissance. (Same as Medieval Studies 475.)

476 Modern Political Thought (3) Major political thinkers from Machiavelli to modern times.

491 Senior Honors Thesis and Seminar (3, 3) Required of honors majors; admission with consent of department.

491 Foreign Study (1-15) Prereq: Consent of Department. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prereq: Consent of Department. May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Prereq: Consent of Instructor. May be repeated. Maximum 15 hours.

494 Internship (1-6) Prereq: Consent of department. May be repeated. Maximum of 6 hours. SNC only.
PORTUGUESE (811)
111-112 Elementary Portuguese (3,3) Introduction to Portuguese. Must be taken in sequence. Language Laboratory required. F, Sp
199 Portuguese Language and World Business (2)
The course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team of faculty from the Colleges of Business and Liberal Arts will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in the Language & World Business concentration major. See the Director for further information. F
211-212 Intermediate Portuguese (3,3) Strengths reading, writing, listening, and speaking of Portuguese for upper division courses in the language. Must be taken in sequence. Language Laboratory required. F, Sp
300 Portuguese for Spanish Speakers (3) Accelerated class for beginning students of Portuguese with a strong background in another Romance language. Introduction to reading, writing, and culture of Portugal and Brazil. Prereq: 3 hours at 300 level in another Romance language or equivalent.
301-302 Literature, Culture & Civilization of the Portuguese-Speaking World (3,3) A course for students who have completed an advanced level of Portuguese and wish to enhance their knowledge of language and culture through the medium of literature. Taught in Portuguese. Prereq: 212, 200 or the equivalent.
305 Introduction to Conversation & Composition (3) Designed to improve proficiency in oral and written communication in Portuguese. Prereq: 212, 300 or the equivalent.
315-316 Aspects of Luso-Brazilian Literature (3,3) Luso-Brazilian literature through literary history and selection of literary works. Prereq: At least one course at the 300 level or the equivalent. (Same as Latin American Studies 315-316.)
409 Advanced Conversation & Composition (3) Formal and informal conversation on contemporary topics (business, economics, religion, an culture) and formal writing practice at an advanced level. Prereq: 309 or the equivalent.
431-432 Topics in the Literature & Language of the Portuguese-Speaker (3,3) Outstanding works of literature and culture from the countries where Portuguese is spoken. Topics may vary. May be repeated. Maximum 12 hours. Prereq: At least one course at the 300 level or the equivalent. (Same as Latin American Studies 431-432.)
430 Internship (1-15) Career-related experiences in the United States or abroad with permission of the Language and World Business Director. For Language and World Business majors only. S/NC only.
451 Foreign Study (1-15) Language and World Business Director. For Language and World Business majors only. S/NC only.
493 Independent Study (1-15)

PSYCHOLOGY (830)
110 General Psychology (3) Introduction to primary approaches to the study of human behavior and experience. F
210 Biological Basis of Behavior (3) Survey of theories and research concerning the role of genetic factors, nervous and endocrine systems, and other biological influences on behavior. Prereq: 110 or equivalent, or consent of instructor. F, Sp
220 Behavior and Experience: Humanistic Psychology (3) Behavioral and phenomenological analysis of individuals and their development in natural environments. Prereq: 110 or equivalent, or consent of instructor. E
300 Child Psychology (3) The normal child from conception through infancy, childhood, and adolescence. Physical, cognitive, social, and emotional development. Prereq: 110 or equivalent and 210 or 220, or consent of instructor. E
310 Learning and Thinking (3) Survey of theories and research concerning both humans and nonhumans. Prereq: 110 or equivalent and 210 or 220 or consent of instructor. F, Sp
320 Motivation (3) Survey of theories and related research; discussion and applications. Prereq: 110 or equivalent and 210 or consent of instructor. F
330 Abnormal Psychology (3) Individual and environmental factors in deviant and maladaptive behavior; neurotic and psychotic reactions. Contemporary methods of treatment. Prereq: 110 or equivalent and 210 or consent of instructor. E
359 Laboratory in Human Relations (3) Interpersonal relationships and communication through structured experiences in small groups. Prereq: 110 or equivalent, and consent of instructor. May be repeated. Maximum 6 hours.
360 Social Psychology (3) Theories, methods, and findings of research concerning individual behavior in a social context. Prereq: 110 or equivalent, and 210 or E
370 Ethology and Sociobiology (3) Basic concepts in the evolutionary approach to behavior, including applications to psychology, the social sciences, and the arts. (Same as Zoology 370.) Sp
375 Working with Data (3) Data organization and analysis; using graphs and figures to display data, and interpretation of data as presented in various formats. Open to students who have received credit for Psychology 385 or 395, Mathematics 115, or Statistics 201.
380 Contemporary Topics in Psychology (3) Current issues or problems, such as: psychology of creativity, intelligence, social control, or recent developments in philosophy. Prereq: 110 or equivalent and 210 or consent of instructor. May be repeated. Maximum 6 hours may be applied toward major.
385 Statistics in Psychology (3) Descriptive statistics; logic of hypothesis-testing and statistical inference. Basic parametric and non-parametric tests. Prereq: Mathematics 110. Not open to students with credit in Mathematics 115, Statistics 201, or equivalent. E
386 Methods of Research in Psychology (3) Fundamentals in the design, conduct, and interpretation of research, including systematic observation, experiments, quasi-experiments, and program-evaluations. Focus on both laboratory and natural settings. Prereq: 110 or equivalent, 210 or 220, and 385 or Statistics 201 or Mathematics 115, or equivalent. F, Sp
390 Laboratory in Psychology (3) Introduction to techniques used in the laboratory to study topics is psychology, such as perception, memory, learning, and social behavior. Prereq: 395. F, Sp
395 Supervised Research (1-3) Field experience in community-based research and service settings. Prereq: 110 and 210 or 220, and 385 or Mathematics 115, or equivalent, or consent of instructor. May be repeated. There is no restriction on the number of times or hours this course may be repeated. Maximum 12 hours in 395, 495, 498 and 499 and 498 combined may be applied toward the major. F
409 Group Facilitation (3) Study of theory and technique through supervised experience in small groups. Prereq: 359 and consent of instructor. May be repeated. Maximum 6 hours.
424 Psychology and the Law (3) Psychological aspects of legal activity. Prereq: 210 or equivalent. Upper-division standing and consent of instructor.
430 Health Psychology (3) Psychological factors related to health and illness, including stress, personality, and environment. Application of psychological treatments to physical illness. Prereq: 110 or equivalent, 210.
434 Psychology of Gender (3) Biological, psychological, and social factors in gender. Importance of gender roles and stereotypes for behavior and experience. Prereq: 110 or equivalent, 210, 220. (Same as Women's Studies 434.)
450 Organizational Psychology (3) Social-psychological analysis of organizations, emphasizing role-theory and decision-making. Prereq: 360. (Same as Management 440.)
450 Comparative Animal Behavior (3) Same as Zoology 450.) F
459 Comparative Animal Behavior Laboratory (3) Coreq: 450. (Same as Zoology 450.) F
461 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Biological basis of emotion, learning, memory, and perception. Prereq: 110 or equivalent, 210, and one year of Biology or Zoology introductory sequences or equivalents. F, Sp
469 Laboratory in Physiological Psychology (3) Laboratory studies of nervous system and physiological correlates of behavior. Coreq: 461.
470 Theories of Personality (3) Major theories of human personality and their development. Prereq: 220 and 300 or 330. F, Sp
480 Theories of Learning (3) Classical and current approaches to learning and cognition. Prereq: 310.
482 Topics in Psychology (3) Intensive analysis of special topics, such as: American-American Psychology or evaluation of programs in the community. Prereq: 210 or 220 and at least 9 credit hours in 300 level courses. Recommended: 385, 395. Prereq: May be repeated. Maximum of 6 hours may be applied toward the major.
489 Supervised Research (1-9) Prereq: Consent of instructor. Prereq: May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 498 combined may be applied toward the major. E
491 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 498 combined may be applied toward the major. F
492 Off-Campus Study (1-15) Prereq: Consent of instructor. Prereq: May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 498 combined may be applied toward the major. E
493 Independent Study (1-15) Prereq: Consent of instructor. Prereq: May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 498 combined may be applied toward the major. E
496 Senior Seminar: Great Ideas in Psychology (3) Key Ideas that have shaped conceptions of humankind. Exploration of historical development, scientific evolution, and larger social context. Prereq: Consent of instructor and senior standing. Writing-emphasis course. F, Sp

PUBLIC HEALTH (839)
300 Introduction to Public Health (3) Aspects of public health including: discussion of contemporary and controversial health issues. E
305 Communicable and Noncommunicable Diseases (3) Modern concepts of disease, etiology of common communicable and noncommunicable diseases, including prevention and control. Prereq: 1 year of biological science or consent of instructor. F
310 Environmental Management and Control (3) Contemporary principles of disease-producing agents in our environment. Emphasizes concepts for effective application of control principles to vocational endeavors and daily living activities. Includes: Drinking water quality (chemical, physical and biological), waste management (liquid, solid and hazardous), vector control, safe food management, recreational sanitation and safety, neonatal intensive care and elderly care (homes, child care, schools, hospitals, etc.), occupational health and safety. F, Sp
400 Consumer Health (3) (Same as Health 400.)
410 Health in the Work Environment (3) Fundamental issues involved in creating a healthful work environment aimed at reducing health problems for employees. Emphasis on workplace health hazards and problems of concern to nurses, medical doctors, engineers, and others involved in industrial health and safety fields. Prereq: Consent of instructor. May not be taken for credit by occupational health concentration (MHP) majors. F

480 Special Topics (3) Instructional or research topics to be assigned by instructor. May be repeated under different topics. Maximum 6 hours. E

493 Directed Independent Study (1-3) Individual study of selected issues. Prereq: Consent of instructor. May be repeated. Maximum 6 hours. E

RECREATION AND LEISURE STUDIES (853)

110 Foundations for Leisure Studies and Services (3) Focuses on understanding concepts, principles, and practices relevant to providing leisure services including philosophy, history and theory, programming, economics, leadership, and a survey of leisure services organizations and occupational opportunities. F, Sp

210 Dynamics of Recreation Leadership (3) Theories, practices and concepts as they apply to all roles of recreation leadership. F, Sp

250 Specialized Study in Leisure Education (1-3) Focus on developing positive attitudes toward leisure. Contribution of leisure to mental and physical health. Creative Cooking, Bike Hikes, New Games. E

290 Practicum in Recreation (1-3) Supervised practice in approved agencies offering leisure and sport management opportunities. Each hour of credit requires 40 clock hours of work. For recreation students only. S/N only. Prereq: Permission of instructor. E

310 Leisure Program Development and Evaluation (3) Essential elements and basic principles involved in organization, administration, marketing, evaluation of various types of recreation programs with emphasis on development of program objectives, practical and comprehensive program designs and evaluation for population and facility with student's particular area of interest. Prereq: 210 or consent of instructor. Sp, Su

320 Therapeutic Recreation and Special Populations (3) Principles, concepts, historical development of recreation, therapeutic recreation, and leisure services to special populations. Explanation of legislation, attitudes, barriers to participants, mainstreaming, advocacy, as related to leisure fulfillment. Prereq: Consent of instructor. F

390 Practicum in Recreation (1-3) Supervised practice in approved agencies offering leisure and sport management opportunities. Each hour of credit requires 40 clock hours of work. For recreation majors only. S/N only. Prereq: 290 and permission of instructor. E

410 Maintenance and Management of Recreation and Sports Related Facilities (3) Principles for operationalizing modern facility maintenance systems and management strategies for recreation/sports related facilities and settings. Cost tracking, inventory systems, specialized maintenance techniques, safety guidelines, maintenance management systems and security. Prereq: 110, 310 or consent of instructor. F, Sp

415 Managing Leisure/Sport & Related Facilities (3) Principles of planning, designing, outfitting and operating Leisuresports facilities such as community centers, tennis complexes, activity centers, etc. Prereq: 310, or consent of instructor. (Same as Sport Management 415.)

420 Principles of Therapeutic Recreation (3) Principles and practices in therapeutic recreation including activity analysis, activity and program selection adaptation, individual assessment, treatment plans and professional issues. Prereq: 320 or consent of instructor. F

430 Organization and Administration of Leisure Service (3) Prerequisites: Also applicable to provision of leisure services offered by public, private and/or commercial enterprises. Organizational structures, personnel management, law, ethics, legal autonomy, introduction to budgeting and fiscal procedures. Prereq: 310 or consent of instructor. F, Su

440 Dimensions of Private and Commercial Recreation Businesses (3) Nature and function of recreation in private, commercial, and industrial settings. Development and management of commercial businesses and services offered in leisure market, factors influencing participation, management considerations, and research in commercial recreation and tourism. Prereq: 110, junior standing and consent of instructor. F

450 Specialized Study in Leisure Education (1-6) Special interest leisure activities for developing positive attitudes toward leisure. Contribution of leisure to mental and physical health. May be repeated. Maximum 6 hours. E

490 Internship in Recreation (12) Full time practice in approved leisure or sport management agency. Emphasis on supervisory and administrative procedures. Prereq: 290, 390, senior standing. Satisfactory/No Credit only. E

RELIGIOUS STUDIES (863)

101 World Religions In History (3) Introduction to religion in culture and society, including examination of religious traditions from China, India, and the Mediterranean world. Writing-emphasis course.

102 The Comparison of World Religions (3) Introduction to religion in culture and society, focusing on cross-cultural interpretation and the treatment of common problems and themes within religious traditions. Writing-emphasis course.

232 Varieties of Religious Community (3) How different forms of religious communities (sects, monastic orders, denominations, familial, etc.) have sought to reject, reinforce, transform, ignore, or dominate their culture and society. (Same as Sociology 232.)

235 Issues in Religious Studies (1-3) Introduction to the study of religion through selected themes, problems, controversies, or contemporary issues. Variable content. May be repeated. Maximum 6 hours.

300 Ways of Understanding Religion (3) Sources and methods used in the study of religion and religions; analysis of approaches to the study of religion. Writing-emphasis course.

301 Religious Myth, Symbol, and Ritual (3) Distinctive modes of religious expression and analysis of theoretical approaches appropriate to their particular social and cultural functions in religions.

302 Anthropology of Religion (3) Religions of selected non-literate peoples. Role of religion in their social and cultural systems. (Same as Anthropology 302.)

305 Modern Religious Thought (3) Major themes, issues, and thinkers of nineteenth and twentieth century religion. Variable content. May be repeated. Maximum 6 hours.

309-310 Elementary Classical Hebrew (3,3) Basic elements of Hebrew phonology, script, morphology and syntax. Introduction to basic elements of text, form, and literary criticism.

311 Ancient Hebraic Religious Traditions (3) Development of ancient Israelite and early Jewish traditions with emphasis on those concerning the Exodus, Davidic kingship, and Zoon in historical, prophetic and apocalyptic material. Writing-emphasis course.

312 Religious Aspects of Biblical and Classical Literature (3) Ways in which contemporary modes of literary study enhance appreciation of biblical and classical material. Ways in which the western literary tradition has affected and racized the biblical and classical heritage. Writing-emphasis course.

313 Religious Aspects of Modern Literature (3) Issues raised for religious inquiry in contemporary literature. Relation of religious and moral considerations to problems of literary analysis; relation between religious language and forms of human expression (symbol, metaphor, myth, image) identified in study of literature. Writing-emphasis course.

315 Reformation Europe, 1550-1650 (3) (Same as History 315.)

316 Topics in Religion and Literature (3) Selected themes that suggest points of intersection between literary art and the religious imagination. Variable content. May be repeated. Maximum 6 hours.

319 Sociology of Religion (3) (Same as Sociology 319.)

320 Women and Religion (3) Concepts of gender in religious traditions, religious, social and psychological dimensions of gender-related symbols (e.g., the Goddess, God the Father) that shape women's and men's experiences; contemporary feminist discussions of ways in which religious traditions oppress women. (Same as Women's Studies 320.)

321 New Testament Origins (3) Influence of pre-Christian Judaism and Greek culture and philosophy on early Christianity. Motivations and guiding concepts with the formation of the New Testament. Victory of the Christian Church over the forces of persecution and the Constantinian settlement (311 A.D.). Writing-emphasis course. (Same as History 321.)

322 Christian Thought (3) Principal forms of Christian thought and institutions through the interpretation of representative thinkers and movements from Augustine of Hippo to Immanuel Kant. Writing-emphasis course. (Same as History 322.)

326 Images of Jesus (3) Major portrayals of Jesus Christ from the first century to the twentieth within the context of the cultural milieu which gave birth to each. Extensive use of slides, video material, recordings, and literature.

329-330 Intermediate Classical Hebrew (3,3) Readings in narrative material from the Hebrew Bible. Sp 330 Readings in poetic and prophetic material from the Hebrew Bible. Prereq: 329 or consent of instructor.

331 Introduction to Judaism (3) History, traditions, philosophy, theology and religion of the Jewish people from the ancient period to the present. May be repeated. Maximum 6 hours.

332 Classical Islam (3) Content limited to events prior to 1773 CE, focusing on the Qur'an, the Prophetic Tradition, Islamic law, Shi'ism, and Sufism. Writing-emphasis course. (Same as Asian Studies 332.)

333 Islam in the Modern World (3) Beginning with the Wahhabi revolution (ca. 1773 CE), this course examines movements of revival and reform in modern Islam, as well as contemporary missionary activity and the growth of the Islamic community in the US. Prereq: Religious Studies 332 or consent of instructor. (Same as Asian Studies 333.)

342 Religious Ethics (3) Selected ethical theories and moral teachings of religious communities and thinkers, their action-guides for individuals and institutions, their application to persons and social problems.

344 Professional Responsibility (3) (Same as Philosophy 344.)

345 Medical Ethics (3) (Same as Philosophy 345.)

351 Introduction to Religion in the United States (3) A representative profile of religion in the United States, organized around selected themes and problems. Prereq: Freshman Writing.

352 African-American Religion in United States (3) Historical and critical examination of formation and development of African-American religious thought and institutions in America. (Same as African-American Studies 352.)

353 Topics in African-American Religion (3) Selected figures, themes, movements, or problems in the African-American religious tradition. Variable content. May be repeated. Maximum 6 hours. (Same as African-American Studies 353.)

355 Religion and Culture in the United States (3) Selected figures, movements, and problems in American religious life, thought, and culture from pre-colonial period to present. Prereq: 351 or consent of instructor. May be repeated. Maximum 6 hours. Writing-emphasis course. (Same as American Studies 355.)

370 Philosophy of Religion (3) (Same as Philosophy 370.)

371 Eastern Religions and Western Thought (3) Comparative study of selected movements, thinkers, and processes of religious traditions, Asian and Western. Writing-emphasis course.

373 African Religions (3) Religions of the indigenous peoples of Africa, including how myths, rites, and symbols and certain cultural and political movements in Africa have been and are shaped by religious sensibilities. (Same as Anthropology 373 and African-American Studies 373.) Writing-emphasis course.
374 Philosophy and Religion in India (3) Survey of the development of the major non-Buddhist themes of philosophical and religious thought in India. (Same as Philosophy 374.) Writing-emphasis course.

376 Buddhist Philosophy and Religion (3) Survey of the origins of Buddhism and the further development of Buddhist philosophy and religion in India, China, Korea, Japan, the countries of Southeast Asia, and beyond. Writing-emphasis course. (Same as Philosophy 376.)

379 Religion and Philosophy in China (3) Traditional thought and religion of China in its cultural setting as a basis for understanding modern China. (Same as Philosophy 379.) Writing-emphasis course.

380 Contemporary Jewish Thinkers (3) Renewal trends in Nineteenth and Twentieth-Century Judaism. Writing emphasis. May be repeated. Maximum 6 credit hours.

384 Zen Buddhism (3) Historical, philosophical, and mediational aspects of Zen. Special emphasis on myths of emptiness, no-mind, and enlightenment and on practices of meditation and the use of the koan. Recommended Prereq: One or more of the following: 376, 379, 385.

385 Intermediate Sanskrit I (3,3) Intermediate Sanskrit I. Prereq: 379-376 or consent of instructor. Reading and writing emphasis. May be repeated. Maximum 6 credit hours.

426-428 Advanced Grammatical Construction and Reading of Epic and Classical Religious and Narrative Texts. Prereq: Consent of instructor.

469 Readings in Selected Languages Related to Religious Studies (1-3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

470 Readings and Research in Religious Studies (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

471 Foreign Study (1-15) Prereq: Consent of the instructor. May be repeated. Maximum 6 hours.

472 Directed Study (1-15) Prereq: Consent of the instructor. May be repeated. Maximum 6 hours.

472 Directed Study (1-15) Prereq: Consent of the instructor. May be repeated. Maximum 6 hours.

500 Advanced Study of Sanskrit. Prereq: 426-428 or consent of instructor. May be repeated. Maximum 9 hours.

501-502 Elementary Russian (4,4) Must be taken in sequence.

199 Russian Language and World Business (2) This course will examine the importance of foreign trade at the local, state, and national levels. An interdisciplinary team of faculty from the colleges of Business and Liberal Arts will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students in the Language and World Business program. See the Director for further information. F

201-202 Intermediate Russian (4,4) Must be taken in sequence.

221-222 Russian Literature in English Translation (3,3) Nineteenth and twentieth-century Russian literature. No foreign language credit. Writing-emphasis courses.

301-302 Introduction to Russian Literature (3,3) Russian poetry, short stories, and short novels. Prereq: 302. Need not be taken in sequence. (Same as Russian and East European Studies 301-302.)

311-312 Russian Composition and Conversation (3,3) Practice in writing and speaking; grammar review and vocabulary building. Prereq: Completion of 302. (Same as Russian and East European Studies 321.)

320 Works of Dostoevsky in English Translation (3) Crime and Punishment, Brothers Karamazov, and other works. Writing-emphasis course. (Same as Russian and East European Studies 320.)

371-372 Background and Main Currents of Russian Culture (1,1) Interdisciplinary approach to the appreciation of the language, literature, art, music, geography, and social problems of Russia. No knowledge of Russian required. Writing-emphasis course.
RUSSIAN AND EAST EUROPEAN STUDIES (887)

301-302 Introduction to Russian Literature (3,3) (Same as Russian 301-302)
321 Works of Dostoevsky in English Translation (3) (Same as Russian 321)
322 Works of Tolstoy in English Translation (3) (Same as Russian 322)
340-341 History of Russia (3,3) (Same as History 340-341)
375 Geography of the Soviet Union (3) (Same as Geography 375)
393 Marxism (3) (Same as Philosophy 393)
401-402 Advanced Russian Grammar, Conversation and Composition (3,3) (Same as Russian 401-402)
410 Selected Topics in Russian and East European Studies (3) Interdisciplinary seminar on a selected topic using a comparative approach. Requires research using Russian language sources, regardless of country, and a paper of 25-30 pages. Writing-emphasis course.
451-452 Senior Seminar (3,3) (Same as Russian 451-452)
469 Soviet Foreign Policy (3) (Same as Political Science 469)
491 Foreign Study (1-15)
492 Off-Campus Study (1-15)
493 Independent Study (1-15)

SAFETY (890)

400 Directed Independent Study (1-3) Individual identification and study of safety or safety education problem/issue. Specific proposal must be made to instructor before registration. May be repeated. Maximum 12 hours. Prereq: Consent of instructor.
411 Driver and Traffic Safety Education (3) Preparation of traffic safety instructors for schools, colleges, industry and commercial agencies. Each participant required to teach at least two non-drivers to drive, valid driver's license required. 3 hours lecture and 2 hours lab.
412 Advanced Driver and Traffic Safety Education (3) Teaching driver education through use of simulation, multimedia, and multiple-car driving range. Emphasis placed on teaching skills and supervision. 2 hours and 2 labs.
443 Sports and Recreational Safety (3) Accident prevention and injury control in sports activities; philosophy of sports safety; human environmental factors and interrelationships in sports injury and control; risk-taking and decision solution strategies; and contributions of sports medicine to safety. 3 hours and 2 labs.
492 General Safety (3) Principles, practices, and procedures in general safety. Safety problems in school, traffic, recreation, industry, home, and other public areas. F, Su
470 Special Topics (1-3) Study in selected disciplinary or professional areas of safety. May be repeated. Maximum 12 hours.

SOCIAL WORK (905)

200 Introduction to Social Work (3) Emergence of the social work profession; professional mission; knowledge, skills, and values; practice settings; client groups; helping services; career patterns; practice methods. Designed to assist students to consider their ability for careers in social work.
250 Social Welfare (3) Development, structure and function of the social welfare institution. Analysis of social welfare programs and impact of the institution on society.
312 Social Work Practice I (3) Knowledge, values, and skills for entry level generalist practice in a variety of settings. The social work problem solving process, different range client systems, ethno-sensitive assumptions, and the worker's role for person-environment conceptualization. Concurrent skills laboratory. Prereq: Initial progression. Pre or Coreq: 314.
314 Human Behavior and the Social Environment (3) Interrelatedness of biological, social, cultural, environmental and psychological factors in human behavior. Person-in-environment over the life span with special attention to diversity, impact of racism, sexism, and other sociocultural factors. Integration of knowledge into a social work practice perspective. Prereq: Initial progression.
412 Social Work Practice III (3) Generalist practice with emphasis on groups and communities, including treatment theories, techniques, and issues. Prereq: Full progression. Coreq: 416 and 480.
460 Integrative Seminar (2) Social work content for entry-level professional practice and current issues influencing the practice of social work. Experiential learning through development of a portfolio reflecting BSW competencies. Prereq: Full progression. Coreq: 491.
491 Foreign Study (1-15) Prereq: Consent of instructor.
492 Off-Campus Study (1-15) Prereq: Consent of instructor.
493 Independent Study (1-15) Prereq: Consent of instructor.

SOCIOLOGY (915)

110 Social Problems and Social Change (3) Increasingly acute and intense problems such as alcoholism, violence, crime, inequality, lifestyle and environmental pressures, and environmental abuse within the context of social change. Assessment of control strategies. May be taken instead of 100.
120 General Sociology (3) Major concepts and theoretical approaches of sociology with emphasis on current, socialization, social organization, and social stratification.
200 Sociological Analysis (3) Selected set of contemporary issues emphasizing theoretical and logical structure of the issues and development of data needed to enter informed debates on the issues. Students are expected to develop their own analytical arguments. Prereq: English 102 and either Sociology 100 or consent of instructor.
220 Interpersonal Communication (3) (Same as Speech 220)
292 Varieties of Religious Community (3) (Same as Religious Studies 232)
291 Sport in American Society (3) (Same as Physical Education 291)
310 American Society (3) Institutional organization of contemporary American society with particular attention to major social values. Writing-emphasis course.
311 Family (3) Theoretical frameworks and methodological approaches; their application in the sociological study of past and present family forms.
319 Sociology of Religion (3) Interrelationship of sociology, culture, and religion. (Same as Religious Studies 319)
320 Interpersonal Communication Processes (3) (Same as Speech 320)
321 Sociological Theory (3) Survey of contemporary issues and problems in sociological theory with an emphasis on their historical development and their importance for the field. Students are required to form critical analysis of the topics addressed. Prereq: 200 or consent of instructor.
330 Computers and Society (3) History of computing and computer systems; capabilities of computer applications in various fields; social, cultural, and economic impacts.
331 Sociological Research (3) Issues in philosophy of social science, research design, sampling, methods of data collection, and interpretation. Written research report. Prereq: 200 or consent of instructor.
343 Race and Ethnicity (3) Social sources of racial and ethnic cleavages and social, economic, and political consequences. Emphasis on race and ethnicity in the United States. (Same as African-American Studies 343 and American Studies 343.) Writing-emphasis course.
344 Power and Society (3) Sociological analysis of the formation and application of nation state policies. Examination of who gets what, why and how. Emphasis on contrasting explanations of the control of the state and the relative autonomy of the state.
345 Collective Behavior and Social Movements (3) Collective phenomena leading to social change; response to disaster, popular crazes, and social movements, and organization, and function of social movements. Emphasis on American cases. (Same as American Studies 345.)
346 Sociology of Occupations (3) Occupations and professions as interest groupings in work settings and the larger community.
350 Criminology (3) Systemic inquiry into alternative definitions of crime, statistical distribution of different types of criminal activities, and responses to crime, primarily by the police.
352 Deviance and Social Control (3) Deviants, their lifestyles, social organization, and social control.
360 Environment and Resources (3) Relationship between scarcity of natural resources and changes in societal beliefs and structural change. Topics include social and physical limits to growth and collective action problems.
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
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<tr>
<td>493 Independent Study (1-15)</td>
<td>Prereq: Advance departmental approval of number of hours and topics. May be repeated. Maximum 15 hours.</td>
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<td>491 Foreign Study (1-15)</td>
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<td>480 Diffusion of Agricultural Technology (3)</td>
<td>(Same as Rural Sociology 480.)</td>
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320 Special Education Strategies (3) Introduction to special education strategies, including formal and informal assessment, development of Individual Education Plans, and behavioral analysis. Prereq: Admission to Teacher Education Program. Sp

331 Articulation Disorders (3) Prereq: Admission to Teacher Education Program (Same as Audiology and Speech Pathology 331.)

371 Audiology I (3) (Same as Audiology and Speech Pathology 371.)

404 Appraisal of Speech and Language Disorders (3) (Same as Audiology and Speech Pathology 404.)

410 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp

415 Language Development for the Hearing Impaired I (3) Language problems of hearing impaired contrasted with scope and sequence of normal language development. Formal linguistic systems used to describe language development problems.

416 Language Development for the Hearing Impaired II (3) Developmental and remedial systems of teaching language to hearing impaired children. Comprehension and production differences, idiomatic and figurative structures.

419 Speech Development of Hearing Impaired (4) Theories of speech development, approaches in training perception and production of speech, and oral habilitation, Pracicum experiences.

420 Psychology and Education of Students with Mild Disabilities (6) Nature and characteristics of persons with mild handicaps and the educational strategies appropriate for these persons. Prereq: 310, 320, Educational Curriculum and Instruction 422 and Admission to Teacher Education Program. Coreq: 421.

421 Field Experience in Modified Programs (3) Practicum in teaching in modified programs: planning, developing, implementing, and evaluating instruction. Prereq: 310, 320, Educational Curriculum and Instruction 422 and Admission to Teacher Education Program. Coreq: 420. Satisfactory/No Credit only. F

423 Communication Processes for the Hearing Impaired (3) Expressive and receptive vocabulary development in communication in the context of situations. F

424 Nature of Hearing Impairments (3) Anatomy and physiology of hearing; nature and causes of hearing loss; methods and instrumentation for assessment of hearing levels; services to the hearing impaired. Prereq: 420 and Admission to Teacher Education Program. Sp

425 Introduction to the Psychology and Education of the Hearing Impaired (3) Primarily for those planning to teach the hearing impaired. Research related to psychology, social adjustment, communication methodology, language development, and education of the hearing impaired. Survey of literature. Visits to programs.

430 Psychology and Education of Students with Moderate Disabilities (5) Nature and characteristics of persons with moderate/severe disabilities and the educational strategies appropriate for those persons. Prereq: 310, 320, Educational Curriculum and Instruction 422 and Admission to Teacher Education Program. Sp

431 Field Experience in Comprehensive Programs (3) On-site teaching experience with moderately and severely handicapped children and youth. Prereq: 310, 320, Educational Curriculum and Instruction 422 and Admission to Teacher Education Program. Coreq: 430. Satisfactory/No Credit only. Sp

433-434 Clinical Practice in Speech Pathology (1-4) (Same as Audiology and Speech Pathology 433-434.)

440 Voice Disorders (3) (Same as Audiology and Speech Pathology 440.)

454 Education of the Gifted and Talented Children (3) Psychometric and behavioral studies of giftedness. Analysis of past and present school practices in reference to curriculum and program implementation. Prereq: Admission to Teacher Education Program. Sp

456 Speech and Language Basis of Learning Disabilities in the Classroom (3) Normal and pathological development understanding of speech and language impairments in school-age students; integration of oral/ written communication skills into existing curriculum, especially for high incidence special education students.

470 Psychology of the Exceptional Child (3) General characteristics and educational needs of exceptional children. Implications of developmental variations for functioning as adults. Enrollment limited to non-education majors.

471 Internship I: Special Education (3-15) Testing methods and theories of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to the Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. Satisfactory/No Credit only. F

473 Audiology II (3) (Same as Audiology and Speech Pathology 473.)

482 Speech and Language Services in the Schools (3) Organization and implementation of speech and language programs. Emphasis on the IEP process as it affects assessment, case selection, and programming for students age 4-21. Prereq: 420 or previous program, group intervention, and consultation. Prereq: Admission to Teacher Education Program.

483 Clinical Practice in Communication Disorders in Schools (3) Supervised practicum with children with communication disorders. Prereq: 433, 434 (80-100 clinical contact hours) and admission to Teacher Education Program.

484 Internship with Hearing Impaired Children (3) Supervised practicum with preschool, day school and residential students. Prereq: Admission to Teacher Education Program.

485 Student Teaching in Special Education (3-10) Intended for students in the four year program or equivalent. Not to be substituted for internship. Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and Educational Curriculum and Instruction 203 (1). Satisfactory/No Credit only.

493 Directed Independent Study (1-3) Tutorial and special area. Prereq: Consent of instructor. May be repeated. Maximum 8 hours. S/NC or letter grade.

494 Aural Habilitation/Rehabilitation of the Hearing Impaired (3) (Same as Audiology and Speech Pathology 494.)

SPEECH COMMUNICATION (943)

100 Introduction to Speech Communication (3) Fundamental theories and practices with particular reference to interpersonal, intergroup, organizational, and public communication.

200 Developing Speech Confidence (1) Principles and techniques for coping with apprehension about communicating. Recommended for students who are concurrently enrolled in 200 level speech courses and desire additional work in dealing with their anxiety about speaking.

210 Public Speaking (3) Preparation and delivery of informative and persuasive speeches. Topics include research, organization, adapting to an audience, topic selection, reasoning, and evaluating the discourse of others.

220 Interpersonal Communication (3) Process by which thoughts, feelings, and actions affect and are affected by the facial and nonverbal communication situation. (Same as Sociology 220.)

230 Listening (3) Study of the principles and techniques of listening. Focuses on theoretical and practical listening skills.

240 Business and Professional Speaking (3) Basic principles of oral presentation. Includes organizations, including such topics as organizational/communication theory, group problem solving, formal presentations, and interviewing.

260 Communication and Society (3) Study of communication strategies and public opinion, with emphasis on communication media, thought, and cultural products. Prereq: Consent of instructor. S/NC or letter grade.

270 Argumentation and Debate (3) Reasoned decision-making with emphasis on analysis, evidence, reasoning, constructing and refuting arguments.

280 Introduction to Oral Interpretation (3) Act of reading aloud: development of interpretive techniques and their application to selected passages of prose, poetry, and drama. Writing-emphasis course.

285 Communication Research Methods (3) Survey of contemporary methods used in research in Speech Communication. Emphasis on designing and evaluating communication research reports.

300 Nonverbal Communication (3) Exploration of nonverbal communication from human communication perspectives: origins and research, usage and coding of nonverbal behavior, research strategies, and theoretical approaches.

310 Persuasion (3) Methods which contribute to effective and ineffective persuasion. Topics include credibility, message construction, receiver variables.

320 Interpersonal Communication Processes (3) Social dimensions of interpersonal communication and relationships. Prereq: Speech Communication 220 or consent of instructor. (Same as Sociology 320.)

330 Group Communication (3) Small group decision-making: evidence, argumentation, leadership, roles, rules, and other processes as they affect group effectiveness. Prereq: Consent of instructor.

350 Communication Theory (3) Survey of social science approach to theorizing about communication.

360 Topics in Communication and Society (3) Content varies. Studies in social function of such communication forms as posters, speeches, songs, plays, demonstrations. May be repeated with consent of department: Maximum 6 hours.

370 Evidence and Argumentation (3) Concept of evidence in public controversies, uses and sources of evidence, and conditions affecting credibility.

380 Advanced Oral Interpretation (3) Individual and group performances of prose literature and poetry. Prereq: 280 or consent of instructor. Writing-emphasis course.

390 History of Rhetorical Theory (3) Western rhetorical theory from Plato to the present.

400 Topics in Speech Communication (3) Variable content course affording opportunity to offer subject matter not covered in an existing course. Topics, scope of subject matter, and prerequisites to be determined by department. May be repeated. Maximum 6 hours. Major credit limited to 3 hours.

420 Communication and Conflict (3) Communication as significant factor in the development, management, and resolution of conflict at the interpersonal, small group, organizational, or societal levels.

430 Family Communication (3) Dynamics of interactions within family systems, marriage, and parent-child relationships. Study of verbal and nonverbal communication processes, patterns, and problems. Prereq: Child and Family Studies 220 or Speech Communication 320 or consent of instructor.

440 Organizational Communication (3) Organizational setting and those variables of the communication process that affect the quality of human interaction both within and outside the organization.

445 Internship (1-3) Supervised care-related experiences in Speech Communication theories and techniques in government and for profit and non-profit organizations, culminating in a written and oral report. Prereq: Consent of instructor. Minimum level is at least a 3 GPA, or by special permission of internship Director. S/NC only. May be repeated: maximum 6 hours. Major credit limited to 3 hours.

450 Propaganda (3) Study of political communication, and social commentary in United States during the World War I to the present. Writing-emphasis course.

465 Studies in Rhetorical History and Criticism (3) May be repeated. Maximum 6 hours.
493 Directed Independent Studies (1-3) Independent study in a specialized area of sport management. May be repeated. Maximum of 9 hours. Prereq: Progression to Sport Management Major. E

STATISTICS (962)

201 Introduction to Statistics (3) Data collection; descriptive and inferential statistics. Random variables, sampling distributions, estimation of means; confidence intervals; contingency tables. Prereq: Mathematics 121. E


254 Probability and Statistics for Scientists and Engineers II (3) Hypothesis testing; analysis of variance; covariance; simple linear regression; multiple linear regression; statistical process control. Prereq: 251 (or Statistics 201 and permission of instructor). Students must also have a working knowledge of the UTCC VAX System or Coreq: 251 Sp.


302 Statistical Methods I Linear regression and correlation; multiple regression; diagnostic and variable data; analysis of data. Emphasis on data analysis and interpretation. Use of computer facilities. Not counted toward a major or minor in statistics. Not available for credit to students with credit in 461. Prereq: 201 or equivalent. E


411 Introduction to Statistical Computing (3) Use of computer operating system commands and packaged programs for statistical analysis and management. Not acceptable for credit for statistics majors. Prereq: 201 or 251. E


462 Analysis of Variance and Experiment Design (3) Analysis of variance techniques for single and multifactor models, post hoc procedures. Design considerations for completely randomized and split-plot experiments, balanced incomplete block and designs, response surface methodology. Major writing requirement. Prereq: 252 or 261 and graduate status and consent of instructor. Sp.


483 Special Topics in Statistics (1-3) Topics vary. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

485 Principles of Statistical Process Management (3) Control charts and other statistical techniques applied to management of business processes. Prereq: Consent of department head. E

492 Internship (1-6) Supervised off-campus experience in application of statistical principles and methods in business, industry, or government or in a written and oral report. Prereq: Permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Letter grade or satisfactory/no credit only. May be repeated. Maximum 6 hours.

493 Independent Study (2-6) Faculty directed reading and investigation of specified topic in probability or statistics culminating in a written report. Prereq: Two courses and permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Letter grade or satisfactory/no credit may be repeated. Maximum 6 hours.

THEATRE (976)

100 Introduction to Theatre (3) Understanding theatre: theory, philosophy, aesthetics, and production practices. Writing-emphasis course.

200-221 Acting (3, 3) 220-Basic Acting techniques. 221-Further exploration and development of acting techniques through exercises and beginning scene work. Prereq: 220. Writing-emphasis course. Prereq: to 221: 220.

228 Voice and Diction (3) Voice production; attention to diction.

245 Basic Stage Costuming (3) Costume design and construction; basic theory and technique. Production participation required.

250 Introduction to Scenery Technology (3) Techniques of scenery and stage properties construction. Production participation required.

260 Fundamentals of Lighting and Sound Production (3) Survey of practical information on electricity, physics, psychology, and instrument engineering as it relates to stage lighting and sound production. Emphasis on hands-on skills in lab. Writing-emphasis course.

310 Theatre History and Dramatic Literature I (3) History and literature of theatre. Drama in performance with particular emphasis on major trends and movements of European, Eastern and non- Mainstream Theatre from Antiquity to the Italian and French Renaissance.

311 Theatre History and Dramatic Literature II (3) History and literature of Theatre. Drama in performance with particular emphasis on major trends and movements of European, Eastern and non- Mainstream Theatre from English Renaissance to early 19th century.

312 Theatre History and Dramatic Literature III (3) History and literature of Theatre. Drama in performance with particular emphasis on major trends and movements in contemporary international theatre from development of realism to present.

313 American Theatre (3) Development of theatre from origins to 20th century with emphasis on the evolution of plays, playwrights and major innovators.

320 Advanced Acting (3) Characterization and scene study in realistic plays. Prereq: 220-221 and consent of instructor. May be repeated. Maximum of 9 hours.

323 Stage Movement (2) Introduction to and application of theatre movement techniques.

324 Dance Theatre I (3) Dance techniques incorporating elements of musical theatre. Prereq: 223 or consent of instructor.

430 Introduction to Costume Design (3) Development of research and rendering skills. Prereq: 225 or consent of instructor.

456 Introduction to Scene Design (3) Introduction to art and craft of scenic design.

582 Lighting Design (3) Mechanics and theory of stage lighting; problems in basic lighting practice. Prereq: 260.

401 Principles of Theatrical Design (3) Fundamental principles of design; visual and structural relationships; Projects will be assigned to develop understanding and perception.

405 Stage Make-Up (2) Problems in make-up design and application; character analysis, physiognomy and charismac. Prereq: 100.
410 Special Studies in History, Literature, and Criticism (3) Content varies. Concentrated study in a given period or area of Theatre History, Literature, or Criticism. May be repeated.

420 Special Studies in Acting (3) Content varies. Exercises in selected concentrated areas such as styles, techniques, approaches, e.g., Shakespeare, movement, humor. Prereq: consent of instructor. May be repeated. Maximum 9 hours.

423 Period Movement and Dance (2) Movement styles and dances from the Renaissance to the 20th Century. Prereq: 323 or consent of instructor.

424 Theatre Dance II (2) Advanced dance technique incorporating elements of musical theatre. Prereq: 324 or consent of instructor. May be repeated. Maximum 4 hours.

425 Selected Musical Theatre Techniques (2) Study and practice of musical theatre material including diction and vocal work. Prereq: 324 or consent of instructor. May be repeated. Maximum 6 hours.

426 Applied Phonetics (3) Development of skills in transcription and reproduction of the principal varieties of the English Language in North America and Great Britain and selected foreign dialects in North America. Prereq: Consent of instructor.


446 Costume Patternmaking (3) Draping patterns for typical costume types. Includes corsetry and the study of historic patterns 1500-1900. Prereq: 345 or consent of instructor.

450 Advanced Scenery Technology I (3) Study and practice of theatre woodworking, production participation will be required. Prereq: 250. Graduate credit available to theatre M.F.A. students only.

451 Advanced Scenery Technology II (3) Study and practice of metalworking and plastics for theatrical productions; production participation will be required. Prereq: 250. Graduate credit available to theatre M.F.A. students only.

452 Advanced Scenery Technology III (3) Study and practice of stage rigging for theatrical productions; production participation will be required. Prereq: 250. Graduate credit available to theatre M.F.A. students only.

454 Scenery Painting (2) Introduction to materials, techniques, tools. Emphasis on gaining skill and understanding through studio experience. Prereq: Consent of instructor.


456 Rendering (3) Techniques in monochrome and full color illustration of space and form. Some acquaintance with basic mechanical perspective and freehand sketching is assumed.

460 Advanced Lighting and Sound Technology (3) Projects in lighting and sound coordination. May include opera, dance, musical theatre, and "Rock video." Final projects will be live productions. Emphasis on developing artistic sensitivity and subtleties in control. Prereq: 260.

462 Advanced Lighting Design (3) Advanced problems in lighting design and theory including areas such as lighting for musicals, opera, and dance. Prereq: 362 or consent of instructor.

463 Sound Design (3) Sound design for the performing arts. Review of equipment and acoustical factors that affect sound production. Emphasis on gaining skill and understanding through the role of the designer. Prereq: 362 or consent of instructor. May be repeated.

464 Computer Assisted Design for Stage Lighting (3) Advanced techniques in computer assisted design for stage lighting. Work with OAD and other stage lighting software for preparation of lighting plots and associated paperwork. Prereq: Theatre 362 or consent of instructor.

465 Aesthetics of Lighting Design (3) Theory and practice of stage lighting design with emphasis on the relationship between designers and non-design practitioners such as directors, actors, choreographers, architects, etc.

470-471 Playwriting (3,3) Advanced instruction in the writing of plays. Prereq: Consent of instructor.

481 Applied Theatre: Costumes (2) Laboratory in costuming for theatrical productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

482 Applied Theatre: Scenery (2) Laboratory in scenery for departmental productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

483 Applied Theatre: Lighting (2) Laboratory in lighting for departmental productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

484 Applied Theatre: Performance (2) Laboratory in performance for departmental productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

485 Applied Theatre: Management (2) Laboratory in management for departmental productions. Credit available to Theatre majors only or with consent of instructor. 90 hours of work required.

491 Foreign Study (1-15) Open to any student for further information. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

492 Off-Campus Study (1-15) Open to all students who intend to travel, study abroad. Satisfactory/No Credit grading only. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

493 Independent Study (1-15) Open to University Honors Scholars preparing their senior project for further information. May be repeated. Maximum 8 hours. Satisfactory/No Credit grading only.

UNIVERSITY HONORS (983)

118-128 Whistle Scholars Seminar (1,1) Sequence limited to and required of all Whistle Scholars in their freshman year. 118 concentrates on contemporary issues. 128 concentrates on aspects of leadership. Student work varies. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

237, 337, 437 Honors: Concentration in the Humanities (3,3,3) Small group studies of selected topics, issues or problems with a concentration in the humanities. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated. Maximum 24 hours. Satisfactory/No Credit grading only.

247, 347, 447 Honors: Concentration in the Social Sciences (3,3,3) Small group studies of selected topics, issues or problems with a concentration in the social sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated. Maximum 24 hours. Satisfactory/No Credit grading only.

338-348 Tennessee Scholars Seminar (1,1) Sequence limited to and required of all Tennessee Scholars each year. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

356-366 Chancellor's Scholars Seminar (1,1) Sequence limited to and required of all Chancellor's Scholars each year. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only.

418-428 Seminar on International Travel/Study/Work Overseas (1,1) Seminar for all Whistle Scholars and must be taken prior to their international experience. Open to all students who intend to travel, study or work abroad. Satisfactory/No Credit grading only.

491 Honors: Foreign Study (3-15) Open to any undergraduate honors student. Proposals must be approved in advance. See the Director of University Honors for further information.

492 Honors: Off-Campus Study (3-15) Open to any undergraduate honors student. Proposals must be approved in advance. See the Director of University Honors for further information.

493 Honors: Independent Study (3-15) Open to any undergraduate honors student. Must be used by all University Honors Scholars preparing their senior projects. Proposals must be approved in advance. See the Director of University Honors for further information. Letter grade only.

UNIVERSITY STUDIES (984)

101 Freshman University Seminar (3) Introduction to research as an adventure in personal growth and professional development. A/B/C/G/NC grading. Open only to freshmen, transfer students, and re-entry students, or by permission of instructor.

310-320 Special Topics in University Studies (3,3) Limited to introductory or elementary courses to issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the University (often team-taught). Extensive use of films, field trips, student discussion. May be repeated. Maximum: 9 hours.

311 AIDS and Society (3) Speakers from across the spectrum of scientific, social, medical, emotional and financial aspects of acquired immunodeficiency syndrome. Students are required to participate in some AIDS related community activity and to describe that activity in writing.

321 Aging and Society (3) Multidisciplinary examination of the process of aging and of the medical and community resources for coping with its stresses and challenges.

322 Technology, Society, and the Common Good (3) Examination of the philosophical and religious foundations of a commitment to stewardship of the planet and those with an antagonistic or neutral perception of the natural world. Students are presented in conjunction with cultural species extinctions caused by or related to their beliefs and values.

410-420 Advanced Topics in University Studies (3,3,3) Interdisciplinary research approaches to major issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the University (often team-taught). Extensive use of films, field trips, student discussion. May be repeated. Maximum: 9 hours.

URBAN STUDIES (985)

200 Human-Environment Systems (3) (Same as Interior Design 200.)

250 Introduction to Urban Studies (3) Multidimensional nature of urban studies. Includes lectures by specialists presenting the approach of their disciplines to Urban Studies; application of general approaches to a specific issue; and collaborative teaching involving most faculty of Urban Studies.

251 Urban Politics and Process (3) (Same as Political Science 231.)

232 Behavioral Geography (3) (Same as Geography 322.)

350 Practicum in Urban Studies (3-6) Student and faculty member team, in conjunction with the East Tennessee Design Center, study a selected problem or aspect of the modern city.

410-420 Advanced Topics in Urban Studies (3,3,3) Interdisciplinary research approaches to major issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the University (often team-taught). Extensive use of films, field trips, student discussion. May be repeated. Maximum: 9 hours.

410 The City in the United States (3) (Same as Planning 410.)

402 Survey of Planning (3) (Same as Planning 402.)

441 Urban Geography (3) (Same as Geography 441.)

450 Directed Field Work (3-15) Participant observation and directed field research. Project results are presented to Urban Studies students and faculty.

454 Cities and Urban American History (3) (Same as History 454.)

460 Senior Seminar (3) Variety of disciplines used to approach student selected problem. Prereq: 250, 350 and senior status. Student may not take 450 prior to having taken 450, except with prior permission of the Urban Studies Committee. Writing-emphasis course.

464 Urban Ecology (3) (Same as Sociology 464.)

481 Real Estate Finance and Investment Analysis (3) (Same as Finance 481.)

482 Urban Development and Finance (3) (Same as Finance 482.)
WILDLIFE AND FISHERIES SCIENCE (1993)

341 Law Enforcement and Public Relations (3) Fundamentals and general principles of local, state and federal laws and regulations governing natural resources and their management. Prerequisites: Principles and practices of interacting with the public. F

440 Wildlife Techniques (2) Methods in wildlife damage control, forest, farmland, wetland wildlife habitat management, identification of wildlife field sign, wildlife capturing, techniques and management plan preparation. Weekend field trips (2) required. Prereq: FWF 317 or consent of instructor. 1 hour and 1 lab or field. F

442 Fisheries Techniques (2) Active and passive sampling techniques for fish and aquatic organisms; population analysis; methods of fish handling and transport; food habits analysis; marking and tagging techniques; age determination and incremental growth analysis; stream assessment; equipment and instrument usage and maintenance; safety in sampling methods. Weekend field trip may be required. Prereq: FWF 317 or consent of instructor. 1 hour and 1 lab or field. F

443 Fisheries Science (3) Quantification and management of freshwater resources; population estimation, methods of fish sampling; fish handling and transport; food habits analysis; marking and tagging techniques; age determination and incremental growth analysis; stream assessment; equipment and instrument usage and maintenance; safety in sampling methods. Weekend field trip may be required. Prereq: FWF 317 or consent of instructor. 1 hour and 1 lab or field. F

444 Ecology and Management of Wild Mammals (3) Biological and ecological characteristics of game mammals and ungulates; management and wildlife management, management of aquatic mammals and endangered mammals. Current principles and practices of wildlife management are applied to wild mammal management. Prereq: Forestry, Wildlife and Fisheries 317 and Biology 230, or permission of instructor. 2 hours and 1 lab. S

490 Ethics in Wildlife and Fisheries Management (1) Ethical issues in wildlife and fisheries management are explored. Current principles and practices of wildlife management are applied to wild mammal management. Prereq: Forestry, Wildlife and Fisheries 317 and Biology 230, or permission of instructor. 2 hours and 1 lab. S

493 Independent Study in Wildlife and Fisheries Science (1-15) Special research or individual problem in wildlife and fisheries science. Letter grade or Satisfactory/No Credit. E

WOMEN'S STUDIES (994)

210 Images of Women in Literature: Biography and Autobiography (3) Introduction to women's journals, diaries, biographies, and autobiographies. Writing emphasis course.

215 Images of Women in Literature: Fiction, Poetry, Drama (3) An in-depth study of women's writing through the ages and the stereotypes portrayed in a variety of literary genres (fiction, poetry, and drama), including works that demonstrate the development of women's roles in various historical periods and cultures. Writing emphasis course.

220 Women in Society (3) Role played by women in various societies during different historical periods, factors which have limited women's participation in society, social scientists' assumptions about women.

230 Marriage and Family: Roles and Relationships (3) (Same as Sociology 230.)

310 Emergence of the Modern American Woman (3) Role of women in the development of American civilization and values. Major topics include women's legal and political status, the emergence and development of feminism, women and the creative arts, and women's roles in industrial and post-industrial American society. Writing emphasis course.

320 Women and Religion (3) (Same as Religious Studies 320.)

324 Women in French Culture (3) (Same as French 324.) Writing emphasis course.

330 Women in Music (3) (Same as Music History 330.) Writing emphasis course.

332 Women in American Literature (3) (Same as English 332.)

340 Women, Politics, and the Law (3) An examination of the changing role of women in contemporary American politics. Prereq: Introductory Biology or Zoology major. Prereq: One year of college chemistry. 4 hours and one lab.

350 Comparative Invertebrate Biology (4) Origins, phylogeny, and functional anatomy of invertebrates with emphasis on diversity of life forms and adaptations of selected organisms to specific local environments. 2 hours and 2 labs.

370 Ethology and Sociobiology (3) (Same as Psychology 370.)

400 Undergraduate Research (2) Research projects under supervision of faculty. Prereq.: Junior or senior standing and prior consent of instructor. May be repeated. Maximum of 4 hours may be applied toward the Zoology major.

401 Senior Thesis (3) Senior thesis, Honors Program. Prereq.: Candidate for Honors Zoology degree.

420 Practicum in Zoology (2) Participation in individualized practical applications of zoology in community, government, and industry. Prereq.: Biology 210, 220, 230 and prior consent of instructor.

430 General Genetics Laboratory (3) Experiments designed to illustrate basic principles of inheritance; primary organism used is Drosophila. Prereq.: Biology 220. 2 labs.

450-454-456-458 Microcourse in Zoology (4) Selected advanced topics in zoology, concentrated in time and subject matter. Consult departmental listing for topics offered. Prereq.: As announced. May be repeated for credit but a maximum of 4 hours may be applied toward the Zoology major.

459 Perspectives in Zoology (3) Forefront considerations in modern fields of zoology. Emphasis is on development of applications, including societal and economic impacts and ethical and moral implications. Writing emphasis course. An oral presentation and a referenced library-research essay are required.

460 Cell and Tissue Structure and Function (4) Animal cells and tissues at light and electron microscope levels. Prereq.: Biology 210. 2 hours and 2 labs.

461 Immunology (3) (Same as Microbiology 461.)

462 Immunology Laboratory (2) (Same as Microbiology 462.)

463 Comparative Animal Physiology (3) Comparison of diverse physiological mechanisms aiding in adaptation to particular habitats and lifestyles. Prereq.: Biology 210, 230. 2 years of chemistry recommended. 360.
449 Laboratory in Physiology (2) Prereq or Coreq: 440 or 445.

450 Comparative Animal Behavior (3) Principles and methods of ethology with emphasis on ecological, developmental, physiological and evolutionary aspects. (Same as Psychology 450.)

459 Comparative Animal Behavior Laboratory (3) Introduction to observational and experimental research in ethology. Coreq: 450. (Same as Psychology 459.)

460 Evolution (3) Modern concepts of animal evolution. Prereq: Biology 220.

465 Human Genetics (3) Genetic and molecular principles and problems of human inheritance. Prereq: Biology 220.

470 Aquatic Ecology (3) Introduction to the physico-chemical nature of inland waters with description of biotic communities and their interrelationships. Prereq: Chemistry 120-130 and Biology 230. 2 hours and 1 lab.

472 Arachnology (3) Biology of spiders, mites, scorpions and relatives. Prereq: 460 or 360. 2 hours and 1 lab.

473 Herpetology (3) Biology of amphibians and reptiles with emphasis on ecology and adaptive radiation. Prereq: Biology 230. 2 hours and 1 lab.

474 Ichthyology (4) Evolution, classification, collection and identification, distribution and biology of fishes with emphasis on freshwater faunas of Eastern North America. Prereq: Biology 230 or consent of instructor. 2 hours and 2 labs.

475 Ornithology (3) Behavior, ecology, populations, evolution and field identification of birds. Prereq: Biology 230. 2 hours and 1 lab.

476 Mammalogy (3) Evolution, classification, biogeography, ecology, behavior and functional anatomy of mammals. Prereq: Biology 230 or equivalent. 2 hours and 1 lab.

480 Physiology of Exercise (3) (Same as Physical Education 480.)

490 Comparative Endocrinology (3) Comparative analysis of physiology and morphology of endocrine glands in vertebrates and invertebrates, their role and interaction in maintenance of the organism and species. Prereq: 440 or equivalent.

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492 Off-Campus Study (1-15)

493 Independent Study (1-15)
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