ACCOUNTING (009)

201 Principles of Financial Accounting (3) Introduction to financial accounting theory and practice with emphasis on preparation and reporting of financial information. Prerequisite: to all other courses in accounting. Prereq: Mathematics 110 or 121. E

202 Principles of Managerial Accounting (3) Introduction to managerial and cost accounting concepts with emphasis on uses of accounting data by managers in planning operations, controlling activities, and decision making. Prereq: 201. E

311-312 Intermediate Financial Accounting (3,3) Theory, principles, and procedures related to valuation of assets, liabilities and equities; measurement of periodic income and preparation of financial statements. Prereq: 202 for 311 and 311 with a grade of C or better and Management 303 for 312. E

321 Cost and Managerial Accounting (3) Analysis of costing for products, projects, and management control. Topics include cost behavior, cost prediction, budgeting, and responsibility accounting. Prereq: 202. Prereq or Coreq: Management 303. E

341 Accounting Information Systems (3) Development and use of accounting information systems for collection, organization, and distribution of economic information about organizations for internal and external decision making. Prereq: 321, Management 303, junior standing. Major exam may be given during the last class meetings. F, Sp

411 Auditing (3) Role of auditing in society, operational auditing, professional auditing standards, auditor's legal responsibilities, audit evidence and reporting, role of internal control and statistical sampling in auditing, applications to specific transaction cycles. Prereq: 312 with a C or better, 341. F, Sp

414 Advanced Accounting (3) Issues and alternatives in advanced theory and problem areas including financial accounting theory, partnership accounting, business combinations, consolidated financial statements, and not-for-profit accounting. Major writing requirement. Prereq: 312 with a C or better. E

431 Federal Income Taxation (3) Fundamentals of gross income, deductions, credits, and tax determination. Introduction to taxation of corporations and partnerships. Prereq: 311 with a C or better, or consent of instructor. F, Sp

ADVERTISING (012)

250 Advertising Principles (3) Survey of the role of advertising in American business and society. Relationship between advertising and marketing; functional components of the advertising process: research, media, creative, and management.

340 Advertising Research Methods (3) Secondary data and primary research techniques for advertising decisions. Prereq: 250 and Statistics 201.

350 Advertising Creative Strategy (3) Basic concepts of creative strategy with intensive practice in developing creative platforms, writing and designing advertisements, and judging creative work. Prereq: 250.

360 Advertising Media Strategy (3) Assessment of markets, vehicle audiences and mathematical techniques for advertising planning, instruction in media planning, buying, and evaluation. Prereq: 340.

380 Advertising Professional Seminar (1) Exploration of career choices in mass communications. Resume and letter writing, interviewing, and portfolio preparation. Prereq: Progression as a major in the Department of Advertising.

450 Advertising Management (3) Case-study approach to advertising decisions. Data analysis and interpretation, generating alternative strategies, oral and written presentation of recommendations. Prereq: 350 and 360. Open to marketing seniors in the College of Business Administration with consent of Head of Department of Advertising.

470 Advertising Campaigns (3) Group-based development, execution and evaluation of an advertising campaign for a regional or national client. Prereq: 450.

480 Advertising Issues (3) Examination of the role of advertising in society and controversies surrounding economic, social, cultural and ethical aspects of advertising. Emphasis on written and oral exposition of different viewpoints. Prereq: 340, F, Sp.

490 Special Topics (3) Detailed study of a specialized area of advertising. Topics vary by semester and include advanced media strategy, advanced creative strategy, direct marketing, and multicultural advertising.

492 Advertising Practicum (1) Experience in a functional area of advertising. Ten hours laboratory each week. May be repeated once. Prereq: Progression as a major in the Department of Advertising. Satisfactory/No Credit.

493 Independent Study (1-3) Individual study in a specialized area under the supervision of a faculty member. Prereq: Consent of instructor.

AFRICAN AND AFRICAN-AMERICAN STUDIES (022)

201 Introduction to African-American Studies (3) Multidisciplinary approach to the African-American experience from the Civil War through the Civil Rights era which focuses on such topics as African-American rural and urban societies, the African-American church and education and African-American intellectual and protest movements.

211 Introduction to African Studies (3) Multidisciplinary approach to the study of African traditions, cultures, religions, political economies, colonial democracies, and states from the first through the sixteenth century.

212 Introduction to African Studies (3) The Multidisciplinary study of Africa and its incorporation into the world economy between the sixteenth and the twentieth century. Includes the rise of nationalism, post-colonial dependency, contemporary problems, and current liberation struggles in various areas of the continent.

310 Introduction to African-American Music (3) (Same as Music History 310.)

314 Peoples and Cultures of Africa (3) (Same as Anthropology 314.)

315 African-American Anthropology (3) (Same as Anthropology 315.)

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

322 Minority Group Politics in the United States (3) (Same as Political Science 322.)

343 Race and Ethnicity (3) (Same as Sociology 343.)

350 History of Jazz (3) (Same as Music History 350.)

352 African-American Religion in the United States (3) (Same as Religious Studies 352.)

353 Topics in African-American Religion (3) (Same as Religious Studies 353.)

364 Contemporary Issues in African-American Education (3) 1954 to the present. Examines issues relevant to the current dilemma of providing quality education for the African-American student including professional school quotas, intelligence testing, homogeneous grouping, African-American college survival, busing, Black English/Standard English controversy. Writing-emphasis course. (Same as Curriculum and Instruction 364.)

371-372 African History (3,3) (Same as History 371-372.)

373 African Religions (3) (Same as Religious Studies 373 and Anthropology 373.)

379 Geography of Africa (3) (Same as Geography 379.)

420 Families: Race, Class and Culture (3) (Same as Child and Family Studies 420.)
421 Comparative Studies in African and African-American Societies (3) Comparative studies of African and African-American societies in such areas as education, religion, and social stratification. Includes the reflective views of those Africans who have faith in the future of Africa. Coreq: Consent of instructor. (Same as History 421.)

429 History and Philosophy of African-American Education (3) Focuses on events by African-Americans during slavery and Reconstruction, and children from the era of slavery to the Brown decision in 1954. Examine black perceptions of the importance of education and the contributions of African-Americans who seek education on the primary, secondary, college, or graduate level. Writing emphasis course.

431 Research Seminar in African-American Studies (3) Teaches basic approaches to the research process and research skills. Students design and implement a research project of their choice in the field of African-American Studies. Prereq: 201-202 and senior standing. Writing emphasis course.

442 Comparative Poverty and Development (3) Same as Sociology 442.

445 The African-American Experience From the Colonial Period to the Present (3) Same as History 445.

450 Issues and Topics in African-American Studies (3) Topics vary, but include a variety of problems, issues, and individuals from the field of African-American Studies. May be repeated. Maximum 6 hours.

452 African-American and African Politics (3) Same as Political Science 452.

461 African Prehistory (3) Same as Anthropology 461.

473 Black Male in American Society (3) Examines historical experiences and stereotypes, which have developed concerning African-American males in American society. Includes the impact of such critical factors as black feminism, violence, concepts of masculinity, the family, white males, white feminine, homosexuality, nationalism, and athletics on African-American males in America.

480 African-American Communities in Urban America (3) Evaluates the benevolent and historical influence of three major institutions: the church, the family, and the school upon the African-American struggle to survive. Includes political, economic, and social factors utilized by Black people in developing coping strategies and mechanisms. Writing emphasis course.

483 African-American Women in American Society (3) Focuses on historical and contemporary social, economic and political factors in American society as it affects African-American women. Topics are based on key readings of Women's Studies 483. Writing emphasis course.

491 Foreign Study (1-15) Prereq: 201-202 and consent of instructor.

492 Off-Campus Study (1-15) Prereq: 201-202 and consent of instructor.

493 Independent Study (1-15) Prereq: 201-202 and consent of instructor.

496 Biology of Human Variability (3) Same as Anthropology 486.

AGRICULTURAL AND EXTENSION EDUCATION (442)

201 Field Experience in Agricultural Education (1) Field experience in public school programs in agricultural and education. Satisfactory/No Credit grading only. Prereq: Consent of instructor. May be repeated. F, S, Sp

345 Agricultural Experience, Leadership and Adult Programs (3) Developing supervised agricultural experience programs, conducting leadership development activities through agriculture, and methods for adult education in agriculture. F

346 Strategies for Teaching and Program Planning in Agriculture (3) Methods and techniques for teaching agriculture, preparing teaching plans and courses of study, and developing methods of activities for agriculture. F

411 Fundamentals of Agricultural Extension (3) History, philosophy, organizational structure, clientele served, major areas of program emphasis-teaching methods, and relationships with other educational agencies. Sp

420 Methods of Teaching Agricultural Mechanics (2) Methods for vocational students. Special competencies for planning, conducting and evaluating agricultural mechanics programs. Prereq: Agricultural Engineering Technology 201 or consent of instructor. Sp

441 Agribusiness Management (3) Advanced decision-making in farm and agriculture businesses. Planning and organizing functions, analyzing investment alternatives, evaluating budgets and financial statements, marketing and profitability, technology and computers in business decisions. Prereq: 342. Agriculture 290, Statistics 302, and Accounting 202 or consent of instructor. F

450 Agricultural Price Analysis (3) Demand and supply mechanisms in agriculture; economic relationships; special problems in agriculture. Prereq: 345 and 346. Coreq: 435 for 443, 436 for 435. Sp

492 Agricultural and Extension Education Internship (2-8) Supervised work experience in approved county extension offices, agricultural businesses, or agriculture-related agencies. Coreq: Agricultural Education 245 and 346. Coreq: 435 for 436, 436 for 435. Sp

Agricultural Economics (047)

110 Orientation to Agricultural Economics and Business (1) Primarily for Agricultural Economics and Business majors in their first year. Introduce to current issues, subject matter, and opportunities in the field. Satisfactory/No Credit grading. F

210 Introduction to Agricultural Economics (3) Application of economic principles of demand, supply, price determination, and market structure to agriculture, natural and social resources, rural community development, and international trade and development. Economic aspects of current issues and problems associated with production, marketing, consumption, resource use, and government intervention in the agricultural, rural, and international sectors. Prereq: Economics 201. F, Sp.

320 Intermediate Agricultural Economics (3) Application of microeconomics to agriculture. Production, consumption, and government programs which affect the food and fiber industries. Prereq: 210 or consent of instructor. F

324 Farm Business Management I (3) Principles and procedures for determining most profitable farm organization and system of operation: nature of managerial processes; farm record and their use; budgeting; economic aspects of acquisition and management of capital, land, labor and machinery resources. Prereq: Economics 201 and Junior standing. F, Sp.

350 Marketing of Agricultural Products (3) Survey of U.S. food and fiber markets from the farm to the food and fiber industries. Prereq: 210 or consent of instructor. F

410 Seminar in Agricultural Economics and Business (1) Primarily for Agricultural Economics and Business majors in their senior year. Analysis of contemporary problems in the field. Discussion of career objectives, opportunities, and placement process. Assignments for written and oral presentation. F

412 Agricultural Finance (3) Macroeconomics, financial objectives, acquisition of debt and equity funds, capital investments, capital allocation, debt repayment, credit analysis, loan analysis, borrowing costs, cost of capital, sources of agricultural credit, and financial intermediation. Prereq: 200 or consent of instructor. F

420 Introduction to Agricultural Trade and Marketing (3) Introduction to real and monetary aspects of international trade and marketing of agricultural commodities. Prereq: 320 or consent of instructor. F

430 Agricultural Policy (3) Values, goals, and policy process. Economic rationale and effects of policy, historical development of environmental policy, farm policy, agricultural commodities policy, credit, food, and trade policy. Prereq: 320 or consent of instructor. F

440 Agricultural Production Economics (3) Application of microeconomic theory to problems of resource allocation. Must be selected in consultation with agricultural firms; economics interpretation of technical oilagricultural production relationships. Prereq: 320 or consent of instructor. Sp

442 Agribusiness Management (3) Advanced decision-making in farm and agriculture businesses. Planning and organizing functions, analyzing investment alternatives, evaluating budgets and financial statements, marketing and profitability, technology and computers in business decisions. Prereq: 342. Agriculture 290, Statistics 302, and Accounting 202 or consent of instructor. F

450 Agricultural Price Analysis (3) Demand and supply mechanisms in agriculture; economic relationships; special problems in agriculture. Prereq: 345 and 346. Coreq: 435 for 436, 436 for 435. Sp

460 Rural Economic and Community Development (3) Historical and theoretical perspectives on problems facing rural communities, focusing on community and nonfarmer sectors; models and tools for analyzing rural development. Prereq: 210 or consent of instructor. F

470 Natural Resource Economics (3) Nature of natural resources; economic efficiency as a basis for natural resource use; externalities in natural resource use; factors influencing environmental quality; alternative public policy tools for influencing natural resource use or improving environmental quality. Prereq: 210 or consent of instructor. Sp

492 Off-Campus Internship (1-3) Supervised experience at department-approved internship site. May be repeated to a maximum of 3 hours. Prereq: Junior standing. Sp, Su

493 Independent Study (1-3) Directed individual or team research and report writing. Special courses in specific topics. Student must arrange with instructor before registering. May be repeated. Maximum 6 hours. Prereq: Junior standing. E

AGRICULTURAL ENGINEERING (066)

105 Fundamentals of Engineering in Bio-Resource Systems (3) Application of basic engineering principles as related to bio-resources; problem solving and reporting techniques; engineering tools; measurement techniques. Not available for credit if 1954 has previously been received for Basic Engineering 191. 1 hour and 1 lab. F

201 Career Opportunities (1) Activities and opportunities in the fields of specialization; required training for each area; projected career activities. 1 hour. F

243 Material and Energy Flows in Biological Systems (3) Introduction to Mass and energy balances, and energy use and economy principles. Study of production and use of energy in plants, animals and microorganisms. Topics include: terrestrial energy balance; enzymes and reaction rates; plant and animal budgets; animal energy budgets and waste production; mathematical descriptions of microbial growth; and introductory chemical reactor theory. Emphasis on problem formulation, solving and reporting. Prereq: Introduction to Chemical Engineering 121 and 131, thermodynamics, chemical engineering, and calculus. F

303 Transport Processes in Biological Systems (3) Analysis of biothermal systems with emphasis on thermal energy and mass transfer. Thermodynamics, conduction and convection heat transfer, and mass transfer. Prereq: Thermodynamics. F, Sp

311 Processing Food and Biological Materials (3) Application of basic engineering sciences to processing and storage of biological materials. Prerequisites: calculus, differential equations, mathematical reasoning, and computer programming. Prereq: Engineering Science 341 or Civil Engineering 343. 3 hours. Prereq: Engineering Science 333. 2 hours and 1 lab. F

320 Structures and Environment (2) Environmental control systems; ventilation, heat and moisture balances; heat loads and insulation; functional requirements of agricultural buildings, housing, and process areas. Prereq: Junior standing. 1 hour and 1 lab. Sp

331 Power Units and Machinery (3) Internal combustion engines and off-road vehicle power transmission systems. Ergonomics and operator environment. Functional and structural analysis and performance characteristics of machinery. Prereq: Mechanical Engineering 331 and Engineering Science and Mechanics 321. 2 hours and 1 lab. F
420 Soil and Water Conservation (2) Hydrologic, agronomic, and biological principles applied to resource management problems including flood and erosion control, drainage, and water quality. Prereq: Plant and Soil Science 301. Coreq: 341. Same as Plant and Soil Science 312. S


400 Professional Development (1) Engineering ethics; professional registration; opportunities for professional development; continuing education. 1 hour. F

403 Engineering Design Fundamentals (3) Nature of design, functional analysis, creativity, analyses and synthesis; geometric and kinematic requirements; plan mechanism, force, stress, deflection, time analyses applied to design project. Prereq: Senior standing. Design content: 3 hours. 1 hour and 2 labs. F

413 Component Design and Machine Synthesis (3) Synthesis of design; structural, kinematic, power, control-system development; preparation of design drawings, specifications, model of device; written and oral report on project. Design content 3 hours. Prereq: 403. 1 hour and 2 labs. Sp

423 Irrigation and Waste Management System Design (3) Design of irrigation and agricultural waste management systems with consideration given to plant response, waste characteristics, and impact on crop yield and water quality. Design content: 3 hours. Preq: 340, 341. 1 hour and 2 labs. F

430 Mobile Hydraulic Power System Design (2) Functional and operational characteristics of mobile hydraulic system components including pumps, valves and actuators; analysis and synthesis of power transmission and control circuits. Prereq: Engineering Science and Mechanics 341. 1 hour and 1 lab. Sp, Ao

433 Bioprocess System Design and Analysis (3) Design of processing, storage and handling systems for biological materials. Mass and energy balances, product and waste characteristics, equipment specifications, economic analysis, safety and human factors. Design content: 3 hours. Preque: 311. 1 hour and 2 labs. Sp


470 Special Problems in Agricultural Engineering (1-3) Selection, analysis solution and report of project. May be repeated. E

480 Selected Topics in Agricultural Engineering (1-3) Current trends and problems in agricultural engineering. May be repeated. E

AGRICULTURAL ENGINEERING TECHNOLOGY (067)

202 Materials and Fabrication (3) Properties of materials including wood, metals, concrete, plastics and lubricants; drafting and plan reading; fabrication techniques and processes involving hand tools, power equipment, and arc and gas welding. 1 hour and 2 labs. Sp

212 Surveying (3) Measurement of distances, angles, and areas; differential and profile leveling; topographic surveying and mapping; area computation. Preque: Math 119 or consent of instructor. 1 hour and 1-3 labs. F

422 Food and Process Engineering Technology (3) Application of engineering principles to agricultural and food processes. Fluid handling, drying, evaporation, thermal processing, heating and cooling, refrigeration systems and materials handling. Preque: Physics 121, Mathematics 121, 2 hours and 1 lab. F

432 Agricultural Machinery and Tractors (3) Agricultural machinery and power units; adaptation to agricultural practices; management considerations; field efficiencies; crop protection and servicing. Preque: Mathematics 121, 2 hours and 1 lab. Sp

442 Agricultural Waste Management and Pollution Control (3) Waste renovation fundamentals; characteristics of animal manure, techniques for collecting, transporting, storing, and utilizing livestock waste. Preque: Mathematics 121. 2 hours and 1 lab. F

452 Small Internal Combustion Engines (3) Theory, concepts and selection of internal combustion engines; theoretical cycles, selection, operation, adjustment, troubleshooting and repair of single-cylinder engines. Preque: Physics 121 or consent of instructor. 2 hours and 1 lab. Sp

452 Agricultural Chemical Application Technology (3) Equipment for application of liquid, solid, and gaseous agricultural chemicals; system components; operational characteristics; calibration; selection and maintenance; safety considerations; materials handling and disposal methods. Preque: Physics 121 or consent of instructor. 2 hours and 1 lab. Sp

AGRICULTURE (088)

101 Perspectives in Agriculture and Associated Natural Resources (3) Historical development, current national and international issues, and trends for the future. 3 hours.

290 Microcomputer Applications to Problem Solving (3) Use of the microcomputer to analyze and report problems related to agricultural sciences and natural resources. Introduction to word processing, spreadsheets, databases, presentation graphics, and other applications software as needed for problem analysis and reporting. 2 hours. Preq: 340, 480. 1 hour and 2 labs. Sp

317 Agriculture and Natural Resources Honors Seminar (1) Discussion of selected topics, issues and problems influencing national and international food, agricultural and natural resources systems. Primarily for College Scholars students. May be repeated for a maximum of 8 hours. Satisfactory/No Credit. F, S

480 Agricultural Management Systems Analysis (3) Interdisciplinary management oriented course for the application of systems analysis concepts to planning and operation of farm business. Team work, application of technical knowledge to a practical farm situation and evaluation of internships among various subsystems. Open to juniors and seniors by invitation only.

AIR FORCE AEROSPACE STUDIES (094)


103-104 Leadership Laboratory (1,1) Leadership experiences and orientation to active duty. Instruction: the functional environment in which the Air Force operates; Air Force as a profession; and the environment in which the Air Force officer works. Coreq: 101-102. Satisfactory/No Credit only.

201-202 Air Force Aerospace Studies (1,1) Introduction to study of air power from a historical perspective starting before the Wright Brothers and continuing into the 1980s.

203-204 Leadership Laboratory (1,1) Intermediate leadership experiences and orientation to active duty. Instruction: the functional environment in which the Air Force operates; Air Force as a profession; and the environment in which the Air Force officer works. Coreq: 201-202. Satisfactory/No Credit only.

205 Field Training (Academic Program) (1-4) Role of United States military forces in contemporary world, with particular attention to United States Air Forces, its organization and mission, various component forces of U.S. military power, role of organization and mission in the context of larger military structures. 201-202. Coreq: 201-202. Satisfactory/No Credit only.

301-302 Air Force Aerodynamics Studies (3,3) Air Force leadership at junior officer level, including theoretical, professional, and legal aspects, with attention to communication skills, management fundamentals. Coreq: 401-402. Coreq: 301-302. Satisfactory/No Credit only.

303-304 Leadership Laboratory (0,0) 401-402 Air Force Aerospace Studies (3,3) Role and function of professional officer in a democratic society, socialization process, public attitudes, and value orientations associated with professional military service; requisites for maintaining national security forces; decision-making processes of Department of Defense, political, economic, and social constraints affecting formulation of U.S. defense policy; impact of technological and international developments upon strategic preparedness; emphasis on developing communicative skills. Coreq: Air Force ROTC approval and completion of 301-304. Coreq: 403-404.

403-404 Leadership Laboratory (0,0)
220 Anatomy and Physiology of Farm Animals (3)
Skeletal and joint systems; blood and blood circulation; nervous, endocrine, cardiovascular, respiratory, and digestive systems; demonstrations of physical-chemical phenomena; laboratory. Prereq: 120. 2 hours and 1 lab. F, S

250 The Animal Industry and Market Evaluation (3)
Structure and production principles of food animal and horse industries. Criteria for food animal and horse evaluation. Market classes and grades of cattle, poultry and pork. Appraisal of animal units based on production and economic principles, feeding and growing programs, health programs, handling and marketing of animal units. Prereq: 320. 2 hours and 1 lab. F, S

280 Farm Animal Management Practices (3)
Integration of herd management and production practices into cattle, horse, poultry, sheep, and swine enterprises. Application of animal husbandry practices for optimal production, health and management practices. Prereq: 260 and consent of instructor. 2 labs. F, S

300 The Physiology of Reproduction and Lactation (3)
Biology of sex and sexual differentiation, functional anatomy of male and female, reproduction and lactation, gamogenesis, neuroendocrinology, and endocrinology of reproduction and lactation, sex cycles, folliculogenesis, ovulation, spermatogenesis, fertilization, embryonic development, implantation, parturition, initiation of lactation and maintenance of the dry period, artificial control of reproduction and lactation. Prereq: Biology 120. 2 hours and 1 lab. F, S

330 Animal Nutrition, Feeds, and Ration Formulation (4)
Properties, functions, action, interaction, and deficiency symptoms of essential nutrients; properties and functions of feedstuffs and principles of ration formulation. Prereq: Chemistry 110 or Chemistry 130 and Math 121. 2 hours and 2 labs. F

340 Principles of Animal Breeding (3)
Genetic and environmental bases of animal variation. Selection and mating systems as mechanisms of genetic change. Planning breeding programs for commercially important domestic species. 2 hours and 1 lab. F

361 Meat Animal Evaluation (2)
Visual and objective appraisal and evaluation of beef cattle, sheep and swine for functional efficiency. Prereq: 260. 2 labs. F

362 Dairy Cattle Evaluation (2)
Comparative judging, oral reasons, breed classification programs, economic value of conformation traits. Prereq: 260. 2 labs. Sp

363 Judging Poultry and Poultry Products (2)
Grading of poultry and poultry products according to USDA standards; factors influencing quality. Prereq: 260 or consent of instructor. 2 labs. Sp

364 Horse Evaluation (2)
Evaluation of horses for soundness and quality and the relationship of form to function in various breeds of horses. 2 labs. Sp

380 Animal Health Management (3)
Characteristics, symptoms, prevention, and treatment of major diseases and parasites. Immunization, health regulations and health practices for all farm livestock species and poultry. 2 hours and 1 lab. Sp

381 Animal Production Systems (3)
Fundamentals of production and management systems in beef, dairy, pork, and poultry programs. Application of principles of nutrition, breeding, production and management into enterprise systems. Decision making management practices and information resources, enterprise evaluation, and comparison of production systems. 2 hours and 1 lab. No credit for majors. F

420 Advanced Reproduction (3)
Collection, evaluation, and preservation of ovum, spermatozoa and embryos; application of methods of natural breeding and techniques of artificial insemination for improvement of livestock; transfer; hard sire and dam evaluation; pregnancy determination; gestation and parturition; infertility; recent advances in theriogenology. Prereq: 320. 1 hour and 2 labs. F

430 Advanced Ration Formulation (2)
Advanced ration formulation for beef and dairy cattle, sheep, horses, swine, poultry, laboratory, zoo, and companion animals. Mathematical and computer solutions and applications to formulating complete and selective feeds for production, maintenance, and early age needs and introductory computer science course. 2 labs. Sp

440 Advanced Animal Breeding (2)
Computer simulation of genetic improvement involving traits in swine, beef, and dairy cattle, evaluation of alternative breeding strategies; industrial programs in swine, poultry, sheep and beef. Prereq: consent of instructor. 1 lab. F, S

451 Advanced Beef Cattle, Dairy Cattle, Horse, Poultry, Sheep and Swine Judging (1) Specialization in judging; evaluation, selection and presentation of oral reasons. Prereq: consent of instructor. 1 lab. F, S

461 Beef Cattle Production and Management (3)
Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices and improvement programs. Management evaluated in terms of production response and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses or consent of instructor. 2 hours and 1 lab. F

482 Dairy Cattle Production and Management (3)
Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices and improvement programs. Management evaluated in terms of production response and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. Sp

484 Poultry Production and Management (3)
Integration of principles of nutrition, breeding, physiology, and marketing into complete production and management programs. Structure of industry, enterprise establishment, systems of production, production practices and improvement programs. Management evaluated in terms of production response and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. Sp

485 Horse Production and Management (3)
Integration of principles of nutrition, breeding, physiology and ethology into complete production and management programs. Types of enterprises, management of feed and pasture, and performance evaluation of horses in breeding and foaling, farm structures and equipment. Prereq: consent of instructor. 2 hours and 1 lab. F

492 Companion, Zoo and Lab Animal Management (3)
Handling, care, and housing of domestic animals. Prereq: 130 or consent of instructor. 2 hours and 1 lab. F

498 Animal Science Field Study (1-6)
Field experience approved by the department. Prereq: 320. 1 hour and 2 labs. F

499 Community Service and Citizen Science (3)
Community service projects, education, and outreach activities involving hands-on learning. Prereq: consent of instructor and Department Head. 3 hours. F

500 Animal Science Teaching Assistant (1)
Assist the primary instructor in laboratory instruction and demonstrations. Prereq: Senior standing and consent of the instructor. 1 hour. F

505 Seminar (1)
Review of literature and oral and written presentation on special topics and current research in Animal Science field. Prereq: Senior standing. 1 hour. F, S

496 Veterinary Medical Technology (1)
For Animal Science and Pre-Veterinary Medicine Majors only. Consent of the instructor and completion of at least 60 credit hours. Students will observe and assist clinicians in the College of Veterinary Medicine as they carry out day to day activities in the large and small animal clinics. 1 lab. Sp

ANTHROPOLOGY (122)

110 Human Origins (3)
Survey of humanity's background, fossil primates, fossil humans, and living races of humanity. F

120 Prehistoric Archaeology (3)
Introduction to methods and techniques used to identify prehistoric cultural patterns. Prereq: Anthropology 110 or 120 and Math 121. 3 hours. F

121 Cultural Ecology (3)
Examination of the relationship between cultural and environmental factors in the past. Prereq: Anthropology 110 or 120. 3 hours. F

122 Prehistory of the Americas (3)
Survey of the prehistoric cultures of the Americas. Prereq: Anthropology 110 or 120. 3 hours. F

180 Primate Behavior (3)
Investigation of the behavior of nonhuman primates. Prereq: Anthropology 110 or 120 or consent of instructor. 3 hours. F

210 Principles of Biological Anthropology (3)
Mechanisms of biological evolution and adaptation in living and prehistoric humans. Prereq: 110. F

220 Prehistory of Tennessee (3)
Survey of prehistoric Indian cultures from earliest dated human cultures to rising of complex civilizations. 3 hours. F

320 Anthropology of Religion (3)
Same as Religious Studies 302. F

396 Genetics and Society (3)
Same as Botany 306. F

399 North American Indians (3)
Comparative overview of Indian cultures of North America. Topical coverage ranges from prehistory to contact to assimilation. Prereq: Consent of the instructor. 3 hours. F

410 Peoples of Mesoamerica (3)
Pre-Columbian and Hispanic cultures of Mexico, Guatemala, Belize, El Salvador, and Honduras. Patterns of cultural continuity and cultural change throughout Mesoamerican history. Prereq: Consent of the instructor. 3 hours. F

415 African-American Anthropology (3)
Same as African-American Studies 315. F

436 Alcohol, Health and Culture (3)
Socio-cultural perspectives and consequences of alcohol use in various cultural groups. 3 hours. F

446 Independent Study in Animal Science (1-3)
With department consent. 1-3 hours. S/N.C.

486 Lamb and Wool Production and Management (3)
Integration of principles of nutrition, breeding, physiology, and marketing systems of production, production practices, and improvement programs. Management evaluated in terms of production response and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. Sp

487 Animal Breeding and Management (3)
Integration of principles of nutrition, breeding, physiology, and marketing systems of production, production practices, and improvement programs. Management evaluated in terms of production response and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses. 2 hours and 1 lab. Sp

488 Animal Science Field Study (1-6)
Field experience approved by the department. Prereq: 320. 1 hour and 2 labs. F

489 Animal Science Field Study (1-6)
Field experience approved by the department. Prereq: 320. 1 hour and 2 labs. F

493 Independent Study in Animal Science (1-3)
With department consent. 1-3 hours. S

494 Animal Science Teaching Assistant (1)
Assist the primary instructor in laboratory instruction and demonstrations. Prereq: Senior standing and consent of the instructor and Department Head. 1 hour. F

495 Veterinary Medical Technology (1)
For Animal Science and Pre-Veterinary Medicine Majors only. Consent of the instructor and completion of at least 60 credit hours. Students will observe and assist clinicians in the College of Veterinary Medicine as they carry out day to day activities in the large and small animal clinics. 1 lab. Sp
Courses of Instruction

319 Caribbean Cultures and Societies (3) Anthropological approaches to key aspects of Caribbean history, socio-cultural pluralism, racial and class stratification, patterns of economic development, and local and national-level political processes. Prereq: 130 or consent of instructor. Writing-emphasis course. (Same as African-American Studies 319.)

320 American Cultures (3) Anthropology in the study of our own society, including such topics as ethnic communities, social classes, power structures, etc. Writing-emphasis course.

350 North American Prehistory (3) Prehistoric cultures of North America from initial occupation of the continent to European contact. Writing-emphasis course.

381 Historical Archaeology (3) Historical archaeology of Euro-American, African-American, and Asian American cultures in the United States from 16th to 20th centuries.

362 Principles of Archaeology (3) Research strategies used in developing method and theory, constructing historical cultures, identifying site function and settlement subsistence patterns, and evaluating explanations of cultural change. Prereq: 120 or consent of instructor.

373 African Religions (3) (Same as Religious Studies 373 and African-American Studies 373.)

400 Readings in Anthropology (1-6) Problem-oriented directed readings in anthropology. Prereq. Anthropology major or consent of instructor. May be repeated. Maximum 6 hours.

410 Principles of Cultural Anthropology (3) Exploration and illustration of major concepts, theories, and methods in cultural anthropology, with application to analysis of specific ethnographies. Prereq: 130.

411 Linguistic Anthropology (3) Basic linguistic concepts applied to research in cultural anthropology, particularly investigation of relationships between language and culture. Prereq: 130 or Linguistics 200. (Same as Linguistics 411.)

412 Folklore in Anthropology (3) Introduction to anthropological study of folklore, using folklore and folklore materials from various tribal, peasant, and complex societies. Prereq: 130 or consent of instructor.

413 Dynamics of Culture (3) Definition and in-depth study of major forms of culture change, ranging from evolution and diffusion to religious revitalization and political revolt. Continuity and change in diverse cultural settings examined through use of archaeological, ethnographic, and contemporary cases. Prereq: 130.

414 Political Anthropology (3) Examination of the organization and dynamics of power and politics in both stateless and state-level societies. The role of symbols, rituals, art, law, and producing and reproducing power relations. The relationship between actors (individuals and structures) and the enculturation of traditional political forms and systems within modern states. Prereq: 120 or consent of instructor. Writing-emphasis course.

430 Fieldwork in Archaeology (3-9) Practicum work in archaeological data recovery and analytical techniques. Prereq: Consent of instructor. May be repeated. Maximum 9 hours.

431 Ethnographic Research (3) Conceptual and practical exploration of methods and techniques cultural anthropologists use in fieldwork. Prereq: 130 or consent of instructor.

435 Historical Archaeology Laboratory (3) Laboratory procedures for the processing, identification, and interpretation of artifacts from historical sites. Artifactual material from historic East Tennessee sites will be used for class projects. Prereq: 361 recommended.

440 Cultural Ecology (3) Concepts and methods in studying dynamic interaction between prehistoric and present day cultures and their environments. Topics include ecological theory, methods of analysis, and review of selected studies. Prereq: 120, 130, 410, or consent of instructor.

450 Current Trends in Anthropology (3) Analytical, integrative review of current directions of research and theory in anthropology.

459 Selected Topics in Anthropology (3) Theoretical issues in anthropology for undergraduate students. Top-

ics may include practical experience or laboratory study of anthropological materials. May be repeated. Maximum 6 hours. Prereq: Either 110, 120, 130 or consent of instructor.

461 African Prehistory (3) African cultural history from the earliest evidence of human activity to the time of European contact. Emphasis on the stone age of Africa south of the Sahara. Prereq: 120 or consent of instructor. (Same as African-American Studies 461) Writing-emphasis course.

462 Early European Prehistory (3) Origins and evolution of human culture in Europe through the beginnings of settled life. Prerequisite: Anthropology major or consent of instructor. Writing-emphasis course.

463 Rise of Complex Civilizations (3) Development of complex societies in Old World from origins of agricultural economics to rise of States. Focus on Mesopotamia, Neolithic, and Metal Age Irfways in Africa, Europe, and Asia. Prereq: 120 or consent of instructor. Writing-emphasis course.

464 Principles of Zoosearchaeology (3) Basic osteological studies of major vertebrate groups, with emphasis on the aboriginal's use of animals in subsistence and culture. Identification and interpretation of archaeologically derived molluscan and vertebrate remains, with introduction to laboratory use of comparative collections. Prereq: 120 or consent of instructor.

465 Urban Archaeology (3) Field archaeology and interpretation of archaeological remains on historic urban sites in the United States. Course content includes lectures and field and laboratory research on urban sites in East Tennessee. Prereq: 361 recommended.

480 Human Osteology (4) Intensive examination of the human skeleton. Prereq: 110 or consent of instructor. 3 hours and 1 hour lab.

481 Meseology I: Museums, Purpose and Function (3) (Same as Art 481.)

482 Meseology II: Exhibition Planning and Installation (3) (Same as Art 482.)

483 Meseology III: Field Projects (1-12) (Same as Art 483.)


491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Primate Behavior (3) Social organization and behavior of selected primates including group composition, size, and structure; patterns of mating; other social interactions; communication, and cultural behavior. Application of primate studies to human ethology. Prereq: 110 or consent of instructor.

495 Human Paleontology (4) Introduction to human fossil record from the earliest human remains to the earliest representative of modern human form. Prereq: 110.

496 Biology of Human Variability (3) Introduction to human populations; human adaptation, biological features of major human races, relationships of major groups to one another. Same as African-American Studies 496.

499 Human Response to Environmental Stress (3) Explores the physiological response of stress from the physical environment and the physiological, anatomical and behavioral responses to this stress.

ARCHITECTURE (139)

101 Introduction to Architecture (3) Scope and definition of architecture; history of architecture; role of architecture in building industry, and allied design professions; Architectural design as a creative process. Orientation to courses and programs of the school. Coreq: 171. F

102 Visual Design (2) Principles of visual design and techniques of representation. Coreq: 172. Sp

111 Architecture and the Built Environment (3) An introduction to architecture and the built environment for non-architecture majors. Significance of our surroundings, forces that create them. Creative aspects of design. Survey of examples from local to global. Strategies for individual and collective design. Prereq: 101. F

171 Design Fundamentals I (3) Definition, ideas, and processes of design. Sketch design studies and free-hand drawing. Introduction to drafting techniques; graphic and visual skill development. Coreq: 101. F


180 Introduction to Architecture (2) Introduction to the fundamentals of construction, materials and statics in a lecture/seminar format.

181 Introduction to Graphic Skills (4) Introduction to freehand drawing and anthropographic techniques emphasizing visualization and simulation. The work will be explored and developed in studio (4 credit hour studio).

182 Introduction to Basic Design (6) Introduction to basic design principles in both two and three dimensions. The introduction to fundamental design formal and developed in the studio (1 credit hour seminar and 5 credit hour studio).

211 History and Theory of Architecture I (3) Architectural thought and ideas of building and community form. Ancient through High Renaissance in Italy, France and Spain. Prereq: History 151, 152. F

212 History and Theory of Architecture II (3) Architectural thought and ideas of building and community form. English Renaissance, late Renaissance in Italy, France and Spain through the mid-twentieth century. Prereq: 211. Sp


215 Architectural History/Theory I (3) Introduction to architectural form, ideas and traditions in a lecture/discussion format. Prereq: M. Arch Admission.

216 Architectural History/Theory II (3) Exploration of the ideas and forms of architecture in a lecture/discussion format. Prereq: M. Arch Admission.

231 Computer Applications in Architecture (3) Survey of the role of the computer in architecture, its potentials and limitations. Recent developments in computer graphics with specific applications and demonstrations. F, Sp

232 Introduction to Architectural Technology (3) Places of building technology in architectural design. Introduces concepts and theory of structures; building materials and construction; and environmental controls. Coreq: 271. F


281 Principles of Architectural Form (5) Principles of architectural form emphasizing building configuration and order. Design of simple buildings which explore possibilities of site, use, shape and color. (1 credit hour seminar and 5 credit hour studio). Prereq: 162 or equivalent.

282 Principles of Architectural Design (6) Principles of architectural design emphasizing site, function, circulation, structure, context and expression of building (1 credit hour seminar and 5 credit hour studio). Prereq: 281.

312 Materials and Methods of Construction (3) Properties of interior and exterior building materials and their relation to construction methods and detailing. Theory of material selection and specification and the role muscle and methods play in the design process. Prereq: 232. Sp

323 Advanced Computer Applications (3) Computer applications in architecture with special emphasis on environmental control systems and/or structural calculations. Coreq: 231.

324 Architectural Computer Graphics (3) CAD applications in architecture, focusing on the Auto Cad environ-ment. Prereq: 231.
171 Introduction to Twentieth Century Art (3) History of development of modern art from Surrealism through Abstract Expressionism, Pop Art, Post-Painterly Abstraction, Op Art, Kinetic Art, Happenings, Environments, Conceptual Art, Minimal Art, and Super Realism.

172 Western Art (3) Major monuments in Western Art with emphasis on European prehistory through the Middle Ages. Writing-emphasis course.

173 Western Art (3) Major monuments in Western Art with emphasis on Europe and America from 1400 to the early 20th century. Writing-emphasis course.

183 Asian Art (3) Art of Central and Southeast Asia, India, China, Tibet, and Japan from prehistory through common Buddhist forms and into modern media. Writing-emphasis course.

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For non-majors only. Course may be repeated, maximum may not be repeated. Maximum 12 hours. Writing-emphasis course.

201 Two-Dimensional Fabric (3) Mixed media approach for conceptual fashion works. Dye/solvent transfer printing, mono-printing, screen printing, radiograph, multimedia, hand/machine stitched drawing.

202 Two-Dimensional Fiber (3) Mixed media approach for woven imagery. Tapestry, non-tapestry methods, traditional/non-traditional media, small scale works.


209 Special Topics in Fiber and Fabric (3) Student or instructor-initiated course to be offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.


212 Drawing II: Life Drawing (3) Development of drawing and observational skills with special emphasis on structure and proportion of the human figure and of the figure in environment. Prereq: 211. May be repeated. Maximum 6 hours.

213 Painting I: Introduction (3) Capacities of oil and acrylic painting on canvas. Prereq: 101, 103 for art majors; none for non-majors.

214 Painting II (3) Techniques of expression in oil and/or acrylic. Prereq: 213 for art majors; 191 for non-art majors. May be repeated. Maximum 6 hours.


216 Watercolor II (3) Capacities of transparent watercolor with emphasis on composition, surface, space, and concept. Prereq: 215 for art majors; Art 191 for non-art majors. May be repeated. Maximum 6 hours.

218 Special Topics in Drawing/Painting (3) Student or instructor-initiated course offered at convenience of department to enhance and expand the painting, drawing, and watercolor curriculum. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

219 Special Topics in Fiber and Fabric (3) Student or instructor-initiated course to be offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

221 Ceramics I: Handbuilding (3) All ceramic handbuilding techniques including forming methods, glazing, clay preparation, firing, small and large scale pieces. Ceramic history through slide lectures.

222 Ceramic II: Throwing (3) Thrown ceramic forms including functional techniques, materials, and techniques glazing and firing methods. Prereq: 221 for art majors; 191-Ceramics for non-art majors.

229 Special Topics in Ceramics (3) Student or instructor-initiated course to be offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

231 Photography I (3) Art of black and white photography. Field and studio shooting, history of photography, basic developing, and enlarging techniques.

239 Special Topics in Photography (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

241 Sculpture I (3) Problems which explore basic materials and techniques including clay modeling, plaster construction, moldmaking, limited work in plastics, wood, or metal.

242 Life Sculpture (3) Modeling techniques in clay and wax, working from figure. Possibilities of expression with human figure as seen in clay and wax. May be both observational and material handling technique. Prereq: 101, 103, or consent of instructor. May be repeated. Maximum 6 hours.

243 Metal Cast Sculpture I (3) Metal casting methods in bronze or aluminum. May include lost wax, styrofoam and ceramic shell casting methods. May be repeated. Maximum 6 hours.

245 Steel Sculpture I (3) Problems to introduce steel as a material for the creation of sculpture. Development of welding techniques.

246 Mixed Media Sculpture I (3) Use of two or more materials, and a variety of sculptural techniques, joined to create dimensional form. May include carving, modeling, moulding, construction, and found objects.

249 Special Topics in Sculpture (3) Student on instructor-initiated course offered at convenience of department. Prereq. Determined by department for individual topic. May be repeated. Maximum 12 hours.

251 Beginning Graphic Design I (3) Introduction to typography, layout and creative problem solving. Survey of graphic design and applied techniques with emphasis on professionalism. Prereq: 101, 103, 183.

252 Beginning Graphic Design II (3) Continuation of typography, layout and creative problem solving; and introduction of production techniques with emphasis on professionalism. Prereq: 251.

256 Individual Projects in Graphic Design/Illustration (3) Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

259 Special Topics: Graphic Design/Illustration (3) Student on instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

262 Intaglio I (3) Metal plate intaglio printing in traditional and contemporary techniques of etching, dry-point, drypoint, aquatint, and photoetching. May be repeated. Maximum 6 hours.

263 Lithography I (3) Stone and aluminum plate lithography applying traditional and contemporary techniques of crayon, tusche, tone, and state proof. May be repeated. Maximum 6 hours.

264 Screen Printing I (3) Screen printing as a fine art medium including development and application of various basic stencils in compositional printing. May be repeated. Maximum 6 hours.

266 Special Topics in Printmaking (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

271 Special Topics in Art History (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

274 Papermaking Workshop (3) Papermaking as a medium for two and three-dimensional art. Includes sheet forming, imbedding, laminating, embossing, pulp dyeing, inlaying, casting, and other related techniques. Emphasis on development of a personal form.

279 Film Design I (3) Introductory theory and practice of film making. Emphasis on graphic elements through use of motion picture camera. (Same as Cinema Studies 292.)

285 Intermediate and Color (3) Further exploration of basic techniques of two-dimensional design, with emphasis on composition and color theory and technique. Prereq: 101, 102.

285 Special Topics (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

300 Inter-area Portfolio Review (0) Review of prior studio work. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.


311 Drawing III (3) Development of personal drawing techniques and concepts through class problems. Prereq: 212 and 312 or consent of instructor. May be repeated. Maximum 6 hours.

312 Drawing Portfolio Review (0) Review of prior work in drawing. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

313 Painting III (4) Individual expression with varied media on canvas. Prereq: 214 and 314 or consent of instructor. May be repeated. Maximum 8 hours.

314 Painting Portfolio Review (0) Review of prior work in painting. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

315 Watercolor III (4) Individual expression with varied water-based media on paper. Prereq: 216 and 316 or consent of instructor. May be repeated. Maximum 8 hours.

316 Watercolor Portfolio Review (0) Review of prior work in watercolor. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

320 Ceramics Portfolio Review (0) Review of prior work in ceramics. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.


331 Photography II (4) Individual expression in photographic medium. Prereq: 231. May be repeated. Maximum 8 hours.

339 Sculpture Portfolio Review (0) Review of prior work in sculpture. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

341 Sculpture II (3) Further exploration and development of sculptural concepts and materials. Prereq: 241 and 340 or consent of instructor. May be repeated. Maximum 6 hours.

343 Metal Casting II (3) Further exploration of casting methods for bronze and aluminum. Prereq: 243 and 340 or consent of instructor.

345 Steel Sculpture II (3) Further exploration of construction in steel and other metals. Prereq: 245 and 340 or consent of instructor.

346 Mixed Media Sculpture II (3) Further problems in the sculptural use of two or more distinctive materials. Prereq: 246 and 340 or consent of instructor.

350 Graphic Design/Illustration Portfolio Review (0) Review of prior work in graphic design illustration. Successful completion required prior to registration for junior and senior courses. Prereq: 252 or consent of instructor. Satisfactory/No credit only.


352 Intermediate Graphic Design II (3) Concepts of corporate graphics. Problems include all areas of graphic design and illustration. Prereq: 351.

353 Black and White Illustration (3) Black and white media and techniques as applied to product and editorial illustration. Prereq: 365.

354 Color Illustration (3) Flat and process color media and techniques as applied to product and editorial illustration. Prereq: 353.

356 Introduction to Computer Enhanced Design (1) The computer as a graphic design tool. Prereq or Coreq: 351.

360 Printmaking Portfolio Review (0) Review of prior work in printmaking. Successful completion required prior to registration for senior and graduate courses. Prereq: Consent of department. Satisfactory/No credit only.

372 Intaglio II (4) Color intaglio printing from a single metal plate, including a la poupée, chine colle, and relief rolls. Prereq: 362 and 360. May be repeated. Maximum 8 hours.

374 Art of Northern Europe, 1600-1675 (3) Concentration on Northern European art from the 17th century through the Baroque period. Special studies of artists such as Rembrandt, Vermeer, Poussin, Rubens, and Hals. Prereq: 313. May be repeated. Maximum 12 hours.

384 Art of Southern Europe: 1575-1700 (3) Concentration on Southern European art from the 17th century through the 18th century. Special studies of artists such as Velazquez, the Eight, and Copley to emergence of the Baroque. Prereq: 313. May be repeated. Maximum 12 hours.

411 Drawing IV (6) Individualized pursuit of personal drawing techniques and concepts, supplemented by individual and group critiques and weekly life drawing sessions. Prereq: 311. May be repeated. Maximum 12 hours.

413 Painting IV (6) Advanced painting stressing individual concept and personal expression with varied media. Prereq: 313. May be repeated. Maximum 12 hours.


419 Special Topics in Drawing and Painting (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

421 Ceramics: Individual Projects (3-6) Special topic each semester, e.g., low fire ceramics, alternative firing methods, specialized clay techniques. Individual direction stressed. Prereqs: 321 and 322. May be repeated. Maximum 12 hours.

422 Ceramic: Advanced Projects (3-6) Each student is responsible for developing a thematic investigation of a specific concept using appropriate materials, methods, and presentation. Prereq: 421. May be repeated. Maximum 12 hours.

423 Ceramics: Surface Design (3) High and low fire glaze techniques. Use of stains, slips, underglazes, airbrush, and lusters, etc. Relationship between form and surface emphasized. Individual direction expected. Prereqs: 321 and 322.

424 Ceramics: Clay and Glazes (3) Clay chemistry, clay bodies, glaze theory, glaze calculation, intensive formulation, mixing and testing of clay bodies and glaze formulas. Prereqs: 321 and 322.


428 Special Topics in Ceramics (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

431 Photography III (3-6) Individual development of photographic problems and techniques. Prereqs: 324 and 331. May be repeated. Maximum 12 hours.

439 Special Topics in Photography (3) Student or instructor initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

441 Advanced Sculpture (3-6) Individual development of sculptural problems and techniques. Prereq: 6 hours of 300 level sculpture. May be repeated. Maximum 12 hours.


452 Advanced Graphic Design II (3) Advanced theory and techniques of visual problem solving for printed materials. Prereq: 352.

453 Advertising Illustration (3) Concepts of advertising illustration media and techniques as applied to projected illustration. Prereq: 451.

455 Senior Portfolio Seminar (3) Assembly, organization and editing the professional portfolio. Resume construction and design, presentation with the department. Prereq: or Coreq: 452 or 454.

456 Graphic Design/Illustration Practicum (1-12) Practical work experience in the design or illustration field. Open by permission of the department. Prereq: Senior standing and consent of instructor. May be repeated. Maximum 12 hours.

459 Special Topics in Graphic Design/Illustration (3) Student or instructor-initiated course offered at discretion of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

462 Intaglio III (3-6) Exploration of individual projects through advanced color printing methods and combinations with other print media. Prereq: 362. May be repeated. Maximum 12 hours.

463 Lithography III (3-6) Exploration of individual projects through advanced color edicoting methods from stones, aluminum plates, etc. Prereq: 363. May be repeated. Maximum 12 hours.

464 Screen Printing III (3-6) Individual development of screen printing problems and techniques. Emphasis upon greater development of image and personal concept. Prereq: 364. May be repeated. Maximum 12 hours.

469 Special Topics in Printmaking (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department for individual topic. May be repeated. Maximum 12 hours.

471 History of North American Art (3) Survey of American art, history, architecture, sculpture, and design from prehistory to 1900.

472 History of 20th Century American Art (3) Development in architecture, painting, and design from 1900.

473 19th Century American Painting (3) From West and Copley to emergence of "The Eight".


482 Museology I: Museums, Purpose and Function (3) Purposes, functions and development of museums of art, history, culture, and applied science. (Same as Anthropology 481.)

483 Museology II: Exhibition Planning and Installation (3) Exhibition concept development and implementation. Exhibition design and installation techniques. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

484 Museology II: Field Projects (1-12) Special field projects including restoration, preservation, registration, and research. Prereq: Consent of instructor. May be repeated. Maximum 12 hours.


486 Art of Indian Asia (3) History of Indian art with consideration of the art of Central Asia and Southeast Asia. Writing emphasis course.

488 Studies in Art History (3) Concentration in individually selected area. Prereq: 12 hours of art history and consent of instructor. May be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Individual Problems (3) Prereq: Consent of instructor. May be repeated. Maximum 12 hours.

495 Visiting Artist Seminar (2) Study and discussion of contemporary art issues conducted by visiting artist(s) during each semester. (Does not apply toward unit or history requirement.) May be repeated. Maximum 8 hours.

496 Advanced Airbrush (3) Advanced techniques of airbrush drawing; skills and use in illustrations emphasized. Prereq: 396.

499 Special Topics (3) Student or instructor-initiated course offered at discretion of department. Prereq:
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200 Special Topics (2-4) Student or instructor-initiated course offered at convenience of department. May be repeated.

210 Drawing (2-4) Beginning to intermediate. May be repeated.

220 Ceramics (2-4) Beginning to intermediate. May be repeated.

230 Photography (2-4) Beginning to intermediate. May be repeated.

240 Painting (2-4) Beginning to intermediate. May be repeated.

250 Metal Design (2-4) Beginning to intermediate. May be repeated.

260 Fibers (2-4) Beginning to intermediate. May be repeated.

270 Fabric (2-4) Beginning to intermediate. May be repeated.

280 Enameling (2-4) Beginning to intermediate. May be repeated.

290 Wood (2-4) Beginning to intermediate. May be repeated.

400 Curriculum Planning and Teaching Strategies (3) Program development, instructional methods, and student motivation. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp, Su

410 Pre-Internship Seminar (1) Orientation describes the 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. F, Sp

411 Internship I: Grades K-12 (2-6) Test of materials 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. Satisfactory/No Credit only. F

412 Internship II: Grades K-12 (2-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 411 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp

413 Special Topics (3) May be repeated. Maximum 6 hours.

490 Special Topics (3) May be repeated. Maximum 9 hours.

491 Foreign Study (1-15)

492 Internship I: Grades K-12 (3-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 410 and admission to Teacher Education Program. Satisfactory/No Credit only. F, Sp

493 Independent Study (3) May be repeated. Maximum 9 hours.

ASIAN LANGUAGES (144)

131-132 Elementary Chinese I, II (5, 5) Must be taken in sequence. F, Sp

151-152 Elementary Japanese I, II (5, 5) Must be taken in sequence. F

161-162 Elementary Persian (4, 4) Taped language program. Must be taken in sequence.

195 Japanese Language and World Business (2) The course will examine the importance of foreign trade at the local, state, and national level. An interdisciplinary team of faculty from the Colleges of Business Administration and Arts and Sciences will provide an overview of the content of this unit and international cultural awareness in world business. Restricted to students majoring in the Language and World Business major or minor. Prereq: Consent of instructor. F

231-232 Intermediate Chinese I, II (5, 5) Prereq: 131-132 or equivalent or consent of instructor. Must be taken in sequence.

251-252 Intermediate Japanese I, II (5, 5) Prereq: 151-152 or consent of instructor. Must be taken in sequence.

311-312 Chinese Literature in English Translation (3, 3) 311-Classical literature. 312-Vernacular and modern literature. Writing-emphasis course.

313-314 Japanese Literature in English Translation (3, 3) 313-Classical/Traditional; masterpieces of poetry, fiction, and drama from 1800-1900. 314-Modern; masterpieces of fiction from 1800. Writing-emphasis course.

331-332 Advanced Chinese I, II (4, 4) Prereq: 231-232 or equivalent or consent of instructor. Must be taken in sequence.

351-352 Advanced Japanese I, II (4, 4) Includes conversation, drill, and composition practice with native speaker as well as reading and translation. Prereq: 251-252. Must be taken in sequence.

411 Readings in Chinese Literature (3) Prereq: Mastery of intermediate-level Chinese or consent of instructor. May be repeated. Maximum 9 hours.

451 Readings in Japanese Literature (3) Prereq: Mastery of intermediate-level Japanese or consent of instructor. May be repeated. Maximum 9 hours.

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.

ASIAN STUDIES (145)

101-102 Asian Civilization (3, 3) Comparative study of development of religion, social institutions, and high culture in India, China, Japan, and the Islamic World. 101-India and the Islamic World. 102-China and Japan. Writing-emphasis course.

121-122 Elementary Modern Standard Arabic I, II (5, 5) Literary Arabic, language of the press, broadcast

ling, literature and formal situations. Meets every day, three days with instructor and two with native informant in addition to language lab. Must be taken in sequence.

141-142 Elementary Modern Hebrew I, II (4, 4) Taped language program. Must be taken in sequence. Enrollment by permission of instructor.

161-162 Elementary Persian (4, 4) Taped language program. Must be taken in sequence. Enrollment by permission of instructor.

211-222 Intermediate Modern Standard Arabic I, II (5, 5) Literary Arabic, the language of the press, broadcasting, literature, and formal situations. Meets every day, three days with instructor and two with native informant in addition to language lab. Must be taken in sequence. Prereq: 121-122 or equivalent or consent of instructor.

241-242 Intermediate Modern Hebrew I, II, (4, 4) Taped language program. Prereq: 141-142 or equivalent or consent of instructor. Must be taken in sequence.

261-262 Intermediate Persian (4, 4) Taped language program. Prereq: 161-162 or equivalent or consent of instructor. Must be taken in sequence.

319 Islamic Literature in English Translation (3) Selections from the Koran, classic Turkish and Persian poetry, and classical Arabic, Persian, and Turkish prose, including history, philosophy, mysticism, and belles-lettres.

321 Spoken Lebanese-Palestinian Arabic (4) Informal Arabic for use in daily life. Emphasis on appropriate response and understanding of contextual culture. All work is oral, including exams, but grammar is based on standard (written) Arabic. Prereq: 121-122 or consent of instructor.

322 Advanced Modern Standard Arabic (4) Advanced grammar and readings in modern Arabic. Prereq: 221-222 or consent of instructor.

323 Classical Islam (3) (Same as Religious Studies 330).

333 Islam in the Modern World (3) (Same as Religious Studies 333).

471 Selected Topics in Asian Studies (3) Content varies. May be repeated. Maximum 9 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

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 theories of the origin and evolution of our 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 beginning of the universe in light of modern astrophysics and particle physics. A minimum of mathematical training. Must be taken in sequence. 4 hours lecture-demonstration and 2 lab. 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 the beginning of the universe in light of modern astrophysics and particle physics. Principles for interpretation of astronomical observations are reinforced in laboratory. Must be taken in sequence. 4 hours lecture and 2 lab. Only one of these sequences 151-152, 161-162, or 217-218 may be taken for credit.

217-218 Honors: Introductory Astronomy (4, 4) Introduction to astronomy and astrophysics. 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 accounting lab; three hours lab; Coreq: Mathematics 140 or 130 or equivalent. Credit given for only one sequence of lower division astronomy. This sequence satisfies the Arts and Sciences requirement for a natural science with laboratory.

411 Astrophysics (3) Development of analytical physical models of the galactic structure of the universe, stellar and interstellar matter, and planetary systems. Topical and interdisciplinary approach includes consideration of quasars, pulsars, black holes and current developments in the areas of astrophysics and cosmology. Preq: Physics 232 and consent of instructor.

490 Special Topics in Astronomy (1-3) Topics of current interest in Astronomy and Astrophysics. May be repeated for credit with consent of department. Maximum 9 hours.

AUDIOLOGY AND SPEECH PATHOLOGY (160)

126 Speech for Foreign Students (3) Sounds and intonation patterns of American English and relation of spelling to sound. Designed to improve students' ability to speak and understand English. Satisfactory/No credit.

304 Introduction to Communication Disorders (3) Nature, etiology, and incidence of speech, hearing, and language disorders.

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

306 Speech Science II: Anatomy and Physiology (3) Anatomy, physiology, and embryological development of the speech production mechanism. Preq: 305.

320 Speech and Language Development (3) Speech and language development in the normal child.

331 Articulation Disorders (3) Etiology, diagnosis, and treatment of articulatory defects. Preq: 304, 305, or consent of instructor.


431 Stuttering (3) Nature, appraisal, and treatment. Preq: 304 or consent of instructor.

433 Observation of Clinical Practice (1) Preq: 320, 331 or consent of instructor.

434 Clinical Practice in Speech-Language Pathology II (1-4) Preq: 433 and consent of instructor. Enrollment limited; other hours must have prior departmental approval. May be repeated. Maximum 4 hours.


445 Clinical Practice in Audiology (1-4) Preq: 473 and 404. May be repeated for credit. Maximum six hours.

445 Problems in Speech Pathology (1-3) Preq: Consent of instructor.


465 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: pure tone, speech, masking and overview of special auditory tests. Preq: 461.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Auditory Rehabilitation/Rehabilitation of the Hearing Impaired (3) Introduction to psychosocial aspects, amplification components/characteristics, assistive devices, speech acoustics, speech perception, speechreading, prosthetics, hearing, speech habits of children, communication impairments/handicaps/remediation of adults, effects of aging/remediation on the elderly, and case studies. Preq: 305 and 473, or equivalents or consent of instructor.

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. Preq: Consent of instructor and senior standing.

BIOCHEMISTRY (188)

310 Physiological Chemistry (4) Biochemical principles underlying physiological events in animals. Metabolism of carbohydrates, lipids, proteins, and nucleic acids. Role of vitamins as coenzymes and prosthetic groups. Action of drugs and hormones. Preq: Chemistry 100-110 or 120-30, Biology 110-20 or Zoology 230. Not available for credit if credit has been previously received for Biochemistry 410 or 420. F (Same as Nutrition 310).

410 Cellular and Comparative Biochemistry (4) Electrolyte behavior; chemistry and structure of proteins, enzymes, and nucleic acids; energy conversion; catalysis; energy capture; synthetic metabolism; nuclear acid function, protein synthesis, and biochemical genetics; regulation of biochemical processes. Preq: Chemistry 350-60 and 69 and Biology 110-20. Three lectures and discussion. F, Sp.


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

452 Independent Research in Biochemistry (1-6) Designed to improve students' ability to speak and understand English. Satisfactory/No credit.

453 Independent Research in Biochemistry (1-6) Designed to improve students' ability to speak and understand English. Satisfactory/No credit.

454 Independent Research in Biochemistry (1-6) Designed to improve students' ability to speak and understand English. Satisfactory/No credit.

461 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; electrochemistry; kinetics including enzyme-catalyzed reactions; 481-Elementary quantum chemistry; interactions of light with biological molecules; optical and magnetic spectroscopy; light scattering; case studies of selected macromolecules. Preq: Mathematics 142, Chemistry 360-369 and Biology 120 or consent of instructor. 471-F, 481-Sp. (Same as Chemistry 471-481.)

BIOLoGY (190)

110-120 General Biology (4,4) Biology 110 - Biology of cells; chemical basis of life; cell structure and function; energy metabolism; cell division; Mendelian and molecular genetics; kingdoms of monera, protista, and fungi. Biology 120 - Plant and animal anatomy (tissues, organs, and organ systems), physiology, growth, and reproduction; ecology, population genetics; behavior; and evolution. Recommended, but not required to be taken in sequence. Students who receive credit for 110-120 may not also receive credit for Botany 110-120 or Honors Zoology 117-118.

120 Cell Biology (4) Organization and function of the cell. Preq: 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 hour discussion each week. May be taken in any sequence or combination with 210 and 230.

220 General Genetics (4) Classical and modern principles of heredity. Preq: 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.

230 General Ecology (4) Relations between organisms and their environment, including human environmental problems. Preq: 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 laboratory 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 tree identification; basic organization and function of cells; respiration; photosynthesis; genetic mechanisms (including meiosis, mitosis, Mendelian inheritance); survey of plant kingdom (bacteria, algae, fungi), mosses, ferns, conifers, and flowering plants. 120-Prethesis, growth, anatomy, growth regulation, reproduction; integrated principles of life and mechanism of evolution; ecology; importance to humans and environmental concerns. Students may not receive credit for both Botany 110-120 and Biology 110-120, Botany 118-128, or Biology 150. 110 - F, Su; 120 - Sp, Su.

305 Socio-Economic Impact of Plants (3) Significance of plants in origin and development of human culture and utilization of cultivated plants, and role of plants in present civilization. Occasional field trips. Sp, Su. Mini-Term

306 Genets and Society (3) Introduction to genetics, and advocacy and evolution with emphasis on their implications on human society. Prereq: Biochemistry 100 (Same as Genetics 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, III (3,3) Morphology, development, natural history, and evolution of various types of plants. Need not be taken in sequence. 310 - Surveys non-vascular plants (mosses, ferns, bryophytes), 320 - Surveys vascular plants (ferns, fern allies, gymnosperms, and flowering plants). 310 - F, Sp, Su; 320 - Sp, Su.

401-402 Field Studies in Botany: (Specific Topic to be announced) (1-3) Field experience and taxonomy of special plant groups. Selected field topics will vary and may include: Bryology, Lichenology, Pteridology, Agrostology, Mycology, Phycology, Aquatic vegetation, and Botanists in particular.
405 Topics in the Development of Chemistry (3) Historical development of topics such as the atomic theory; chemical industry; interrelationship of population, energy, and environment. Prereq: Chemistry 201 or consent of instructor. May be repeated. Maximum 6 hours. E

410 Advanced Chemical Experimentation (3) Laboratory course in application of modern experimental techniques to solution of chemical problems. Synthesis and characterization of organic and inorganic compounds, with emphasis on independent study and use of chemical literature. Prereq: 230, 320, and 360. 3 labs. F

420 Research in Chemistry (3) Open to seniors majoring in chemistry majoring in chemistry. Prereq: consent of instructor. May be repeated. Maximum 6 hours. E

420 Advanced Inorganic Chemistry (3) Atomic and molecular structure, bonding theories, descriptive chemistry of the elements, kinetics and mechanism of inorganic reactions, applications of modern techniques for characterization, coordination and organometallic chemistry. Prereq: 220 or 483. Sp

430 Radioactivity and Its Application (2) Radioactive materials in tracer and therapeutic applications. Radioactive decay, detection apparatus and techniques, tracer procedures, safety precautions in agriculture, biology, medicine, nutrition, etc. Not for credit by chemistry or physics majors or minors. Prereq: Mathematics 122 or equivalent and two courses from the following: 100, 110, 120-130, 121-131, 128-138, Sp

450 Advanced Organic Chemistry (3) Modern organic reactions of mechanistic, synthetic, and theoretical interest. Content reflects current trends in the area. Prereq: 360. F

471-481 Biophysical Chemistry (3.3) (Same as Biochemistry 471-481.)

473-483 Physical Chemistry (3.3) Students may not receive credit for both 473 and 483. Prereq: 360. 473 - Properties of gases; first, second, and third laws of thermodynamics; chemical equilibria; simple phase equilibria; properties of solutions; introduction to statistical thermodynamics. 483 - Kinetics of chemical reactions; introduction to quantum mechanics and applications to electronic structure of atoms and molecules; molecular spectroscopy. Prereq: 130 or 131, 138, Physics 231 or 222, and Mathematics 241 or 247.

479-489 Physical Chemistry Laboratory (2.2) Experiments on topics discussed in 471-481. Prereq or Coreq: Corresponding courses 471 or 473 for 479 and 481 or 483 for 489. 1 lab. E

484 Advanced Physical Chemistry (3) Topics from chemical dynamics, statistical thermodynamics, quantum mechanics of atomic and molecular systems, crystal structure and solid state. Prereq: 461 or 483. Sp

490 Introductory Polymer Chemistry (3) Fundamental principles of polymer science and technology. Emphasis in interdisciplinary field of polymer science. Relation of molecular structure to bulk properties of polymers. Prereq: 360. Prereq or Coreq: 461 or 483.

CHILD AND FAMILY STUDIES (245)

110 Introduction to Early Childhood Education (3) History, philosophy, current issues, programs, and coursework in early childhood education. Prereq: 220 or 461 or 463. 1 lab. E

205 Introduction to Family Life Programs (1) Community and school-based programs that focus on enhancing individual and family life. Includes observation experience. Satisfactory/No credit grading only.

210 Human Development (3) Conception through adulthood in various social, economic, and cultural contexts. Interrelationships among various aspects of development: physical, cognitive, emotional, social, normative, and nonnormative development.

211 Development in Infancy and Early Childhood (3) Developmental processes from conception to age three, including sibling relationships, interrelationships among cognitive, emotional, social, physical aspects of ontogeny; normative, nonnormative development. Includes observation.

213 Development in Middle Childhood and Adolescence (3) Developmental processes from ages 7 to 18, including sibling relationships, interrelationships among cognitive, emotional, social, physical aspects of ontogeny; normative and nonnormative development. Includes observation.

220 Marriage and Family: Roles and Relationships (3) Emphasis, Declining roles, changing relationships among family members across life cycle from various theoretical approaches; impact of gender roles on marital relationships, marriage, family development, communication, conflict resolution, family functions. Prereq: 220 or 461. Sp

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 family roles. Prereq: NTR 100, RCS 350, CFS 210, and 6 hours in major.

312 Adulthood and Aging (3) Adult lifestyle in society from youth through elderly: adjustment to internal, environmental changes through adulthood; considerations of 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. Prereq: 220 or consent of instructor.

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

350 Early Childhood Education I: Environments for Children (4) Classroom management, behavior guidance, organization of day care environments, communication, interpersonal skills, interaction with children, child stress reduction and management in classroom. Laboratory participation included. Prereq: 110 and 211 and admission to the Child Development major or consent of instructor.

351 Early Childhood Education II: Curricula and Program Development for Young Children (4) Planning effective early learning programs for young children, including development of appropriate experiences in art, music, number, logic, media, physical knowledge, planning, implementing, evaluation. Prereq: 345 and admission to the Child Development major or admission to the Early Childhood Education licensure program.

352 Diversity in Family-School-Community Relations (3) Techniques for developing community relationships including advocating for children and families from diverse cultures and populations. Includes observation. Pre or Coreq: 351 or consent of instructor.

353 Reading, Language, and Literacy (3) Theory and methods for creating learning environments for the development of language, emergent literacy, and reading and writing skills from infancy through eight years. Prereq: 352 or 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. Prereq: 220 or consent of instructor.

405 Development of Interpersonal Skills (2) Development of basic interpersonal skills needed to work with families and other professionals. Skills include active listening, self-disclosure, relationship-building, and negotiation. Prereq: 250 or consent of instructor.

420 Family Diversity (3) Cultural, socioeconomic, ethnic variations; emerging needs and programs. Prereq: 220, 320, Junior standing or consent of instructor. (Same as African-American Studies 420.)


430 Family Communication (3) Dynamics of interactions within family systems, and child-family relationships. Study of verbal and nonverbal communication processes, patterns, and problems. Prereq: 220 or Speech 320 or consent of instructor. (Same as Speech 432.)

450 Assessment in Early Childhood Programs (3) Physical, cognitive, social, language development in children with and without disabilities birth to 8 years; early development, assessment, and intervention field experiences in assessment. Prereq: 350 and admission to the Child Development major or admission to the Early Childhood Education licensure program. Prereq: or Coreq: 360.

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

455 Children's Stress and Stress (3) Theory and methods for understanding young children's life stresses, examining children's coping strategies, and designing appropriate intervention techniques and learning environments. Prereq: 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) Individual learning experience arranged for students under supervision of faculty. May be repeated with different topics. Maximum 6 hours. Prereq: 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 or mentor/coordinator. Includes weekly seminar. Prereq: 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. F and Sp student teaching begins on first day of registration and ends on last day of final exam period (student teaching follows the CDL calendar and does not include Fall or Spring break). Summer student teaching begins the day following Spring commencement. May be taken during student teaching semester. Exceptions must be approved by the course instructor and the student's advisor.

471 Practicum in Child Development Specializations (3-6) Supervised experiences working with children and families in community settings related to each student's child development specialization: child life, early childhood education, early childhood administration, early childhood special education, school-aged child care, and research. Prereq: Admission to the Child Development major or the Early Childhood Education licensure program and consent of the instructor. May be repeated. Maximum 6 hours. Satisfactory/No Credit only.

475 Day Care Administration (3) Theories, methods, and practices of administration of day care centers and community cooperating. Includes weekly seminar. Prereq: 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. F and Sp student teaching begins on first day of registration and ends on last day of final exam period (student teaching follows the CDL calendar and does not include Fall or Spring break). Summer student teaching begins the day following Spring commencement. May be taken during student teaching semester. Exceptions must be approved by the course instructor and the student's advisor.

479 Preparation Seminar (1) Orientation to practical placement, experiences and requirements. Must be completed term immediately preceding enrollment in 480. Prereq: Must meet progression requirements. Satisfactory/No Credit only.

480 Internship in Family Studies (3) Supervised experiences in community-based family life programs. Coreq or Prereq: Completion of Family Studies core, completion of the Instructional Program, and admission to Early Childhood Education licensure program.
461 Research in Child and Family Studies (3-6) Supervised research experiences. Prereq: 9 hours in Child and Family Studies, cumulative GPA of 3.0 or above. Junior standing, or consent of instructor. May be repeated. Maximum 12 hours.

485 Special Topics in Child and Family Studies (1-9) Person or professional involved in human development or family studies, Prereq: 9 hours in Child and Family Studies, Junior or Senior standing, or consent of instructor. May be repeated. Maximum 9 hours.

497 Honors: Child and Family Studies (3-6) Issues or topics affecting children and/or families, designed to meet particular interests of students. Prereq: 15 hours in Child and Family Studies, overall GPA of 3.25 or greater. Junior or Senior consent of instructor. Maybe repeated. Maximum of 6 hours.

CINEMA STUDIES

292 Film Design (3) (Same as Art 292)

281 Introduction to Film Studies (3) (Same as English 281)

312 Popular Culture and American Politics (3) (Same as Political Science 312)

323 German Film (3) (Same as German 323)

334 Film and American Culture (3) (Same as English 334 and American Studies 334)

392 Advanced Film Design (3-6) (Same as Art 392)

420 French Cinema (3) (Same as French 420)

421 Topics in Italian Literature and Cinema (3) (Same as Italian 421)

469 Sexuality and Cinema (3) Same as Women's Studies 469.

489 Special Topics in Film (3) (Same as English 489)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

CLASSICS (257)

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 and the origins and development of Greek myths and the rise of organized religion, from Bronze Age to about 560 B.C. Readings include Hesiod and Aesop's fables. Writing-emphasis course.

222 Classical Greek and Roman Mythology (3) Use of myth in history, literature, religion and philosophy of Greece and Rome from about 560 B.C. to about 350 A.D. Two topics are the latter half of the fifth century B.C. and the last quarter of the fourth century B.C. Includes Oriental influences 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 archaeology from prehistoric times to the Roman period (ca. 3000-1000 B.C.). For prehistoric times emphasis on architecture and art. For the fifth century B.C. includes Oriental influences into Greece and Rome, including early Christianity. Readings include Sophocles, Euripides, Roman poetry, and modern scholarship. 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 (100 B.C.-500 A.D.). Reconstruction of the Etruscan culture from tombs, paintings, and art facts, development of Roman architecture, and urban planning in Rome and the Roman Empire. Prereq: 220 or consent of instructor. Writing-emphasis course.

253-254 Greek and Roman Literature in English Translation (3-3)-253-Greek Literature. Major literature of ancient Greece from Homer to Monostorum, with emphasis on the 4th and 5th centuries B.C. Prereq: 220 or consent of instructor. Writing-emphasis course.

273 Medical and Scientific Terminology (3) Greek and Latin roots from which medical and scientific terminology is derived. Emphasis on analysis of terms, practice in use of Latin nomenclature.

331 Archaeology of the Aegean Bronze Age and Early Greece (3) Includes Troy, the Cycladic islands, the Greek mainland, Crete, and Cyprus ca. 3000-700 B.C. Finds from the site of Troy and early Greek civilization, and some evidence of the development of a coherent society and culture. Prereq: 101 and one of the following courses: 221, 381, or 403. Writing-emphasis course.

334 Cities and Sanctuaries of the Ancient Greek World (3) Archaeological survey of the development of the Greek city and sanctuary from prehistoric through the Roman period ca. 2000 B.C. to 200 A.D. Includes topography and plans of major sanctuaries, functions of buildings, development of city planning, quality of city life, religious rites and festivals. Prereq: 101 and one of the following courses: 221, 232, 233, 281, History 310. Writing-emphasis course.


382 Roman Civilization (3) Major aspects of ancient Roman civilization: politics, institutions, art and architecture, history, culture and daily life, emphasizing the writing-emphasis course.


401 Greek Poetry (3) Epic, lyric, drama. Authors vary. May be repeated for credit. Maximum 9 hours. Prereq: 261.

402 Greek Prose (3) History, philosophy, and oratory. Authors vary. May be repeated for credit. Maximum 9 hours. Prereq: 261.

422 Seminar in Classical Studies (3) Field of classical studies today: recent achievements in the areas of both philology and archaeology; impact of the deification of the emperor; new understandable the culture and politics of the "golden age" of Pericles and Augustus; Classical studies and the academic profession on the high school and college level. May be repeated. Maximum 6 hours. Writing-emphasis course.

431 Special Topics in Classical Civilization (1-3) Topics in art, literature, religion, and society of Greece and Rome. May be repeated up to three times with consent of department.

461 Studies in Classical Archaeology (3) Variable content course offering subject matter not taught in an existing course, or offering subject matter not covered in the existing survey. May be repeated. Maximum 9 hours. Prerequisites according to topic.

482 Roman Law (3) Development of Roman law through examination of cases from the writing of the Roman jurists, the world's first legal professionals, on understanding legal institutions in relationship to Roman society. Cases cover aspects of Roman property and commercial law.

491 Foreign Study (1-15)

COLLEGE SCHOLARS HONORS

317-318 College Scholars Seminar (1,1) Sequence in any order limited to and required of all College Scholars each year. May be repeated. Maximum 8 hours. Satisfaction/No Credit grading only.

491 College Honors: Foreign Study (1-15) See Director of Special Programs. Primarily for College Scholars.

492 College Honors: Off-Campus Study (1-15) See Director of Special Programs. Primarily for College Scholars.

493 College Honors: Independent Study (1-15) See Director of Special Programs. Primarily for College Scholars.

498 Honors: College Scholars Studies (2-12) Designed for College Scholars working on their senior thesis, project, or performance. May be repeated. Maximum 16 hours.

COMMUNICATIONS (259)

100 Introduction to Mass Communications (3) Overview of the mass communications environment, with emphasis on the role of the mass media in society, their uses and effects on individuals and society. Prereq: 101 and one of the following courses: 221, 222, 232, 233, 281, History 310. Writing-emphasis course.

200 Writing for Mass Communications (3) Information gathering and writing under deadlines for different media, including news and promotional copy. Preparation of news, advertising and promotional text. Grammar, usage, and style examinations. Prerequisites: 101, 102, and 103.

300 Mass Communications Research Methods (3) Social science research methods, especially sample and survey techniques, used by communications media. Applications to both internal decision-making and to external communication in media. Prereq: 200 or consent of instructor. F, Sp

400 Mass Communications Law and Ethics (3) Emphasis on legal issues directly affecting the mass media: legal, privacy, free press, fair trial, public interest, government regulations. Also includes ethical standards and practices of the mass media in America. Prereq: 200 or consent of instructor. F, Sp

COMPARATIVE LITERATURE (260)

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

202-203 Cross-Cultural Perspectives in World Literature (3,3) Literary perspectives and practices of different time periods and cultures. Variable content. Writing-emphasis course.

401-402 Special Topics in Comparative Literature (3,3) Variable content. May be repeated. Maximum 9 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

COMPUTER SCIENCE (266)


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

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


291 Lower-Division Special Topics (1-3) Topics vary. Programming languages, computer organization, programming and application software packages. May be repeated. Maximum 9 hours.
311 Discrete Structures (3) Propositional and predicate calculus, sets, graphs, trees. Prereq: Mathematics 222 and 102.

320 Problem Solving (3) General approaches to problem solving, with emphasis on formalizing intuitive heuristics. Structure of problems and goals, generation of alternatives, decision criteria, analysis and synthesis of information. Prereq: 111 and 112 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 and concepts and techniques. Format is 2 lecture hours 3 lab hours. Prereq: 111 and 112. 3 lab hours. Prereq: 111 and 112.

360 Systems Programming (3) Linkers, loaders, multitasking, I/O facilities, interrupt handling, monitors, editors. Prereq: 111 and 112. 3 lab hours. Prereq: 111 and 121.

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


411 Senior Thesis I (3) (Frontiers-of-computer-science 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, networking, telecommunications. 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 Computing (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.

493 Independent Study (1-15) Special project in area of student’s primary interest. Directed by Computer Science faculty, perhaps jointly with student’s faculty advisor. May be repeated for students with specific project to pursue in conjunction with a faculty member. Prereq: Minimum 24 units. May be repeated. Maximum 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.

COUNSELOR EDUCATION AND COUNSELING PSYCHOLOGY (267)

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

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

305 Laboratory in Educational and Counseling Psychology (1-3) Practice in acquiring knowledge and skill in areas such as interpersonal relations, career decision-making, communication and self-awareness. Individual and small-group format. Prereq: 111 and 112. 3 max semester hours. Satisfaction/No Credit or letter grade.

408 Special Topics (1-3) Instructor initiated course offered at the 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. E

410 Sex Role Development: Implications for Education and Counseling (3) Topics and research concerning the development of sexual role and its relevance in educational and counseling settings. (Same as Women’s Studies 310.) E

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

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

CULTURAL STUDIES IN EDUCATION (268)

290 Human Motor Behavior (3) Theories and principles explaining motor behavior; psychological factors related to and 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.)

302 School and American Society (3) Historical, philosophical, and social perspectives on contemporary educational issues. (Same as Education 302.)

321 History of Sport and Physical Activity in Western Culture (3) Study of sport and physical activity from ancient Greek period to modern times. Illustrating historical role in western culture. Provides background for growth of sport in education, and explores how modern collegiate divisions, a playing of titles, developed. Prereq: Progression to the major or consent of instructor.

356 Motor Development (3) Evolution of human motor behavior within the context of structural/functional changes, and with the respect to psychological, sociological, and social-psychological factors related to and affecting motor performance/learning. Emphasis on faculty research. May be repeated. Maximum 9 hours. Prereq: completion of core curriculum or consent of instructor.

364 Contemporary issues in African-American Education (3) (Same as African-American Studies 364).

372 Philosophy of Sport (3) Theories of reality and value as they apply to sport with emphasis on ethical issues. Prereq: Progression to 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.

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

415 Education in Cultural Perspective (3) Contribution of anthropological, historical, and developmental perspectives to understanding of educational processes; major conceptual frameworks; selected ethnographic research on process of schooling. F

446 Motor Development Laboratory (3) Application of selected perceptual-motor development, movement education, and pedagogical concepts to performance of task/lesson design and presentation of normally developing preschool or primary grade children. Participation in intra- or inter-disciplinary research projects. Prereq: Progression to major or consent of instructor.

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

DANCE (274)

101 Practicum: Dance Production (1) Supervised technical and promotional 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 (2) Instruction and practice in elementary classical ballet techniques. May be repeated. Maximum 4 hours.

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

249 Tap: Level I (2) Instruction and practice in intermediate tap dance techniques. May be repeated. Maximum 12 hours.

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. Prereq: 240 or consent of instructor.

380 Special Topics (1-3) Selected disciplinary or professional areas of dance. May be repeated.

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, method, 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 musical theater 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 in creation of performances of two works. Prereq: 440 or 454 or approval of instructor.

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

**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 permission of instructor 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 the 20th century. Senior standing or permission of instructor required for graduate credit. Different level of performance is expected of those registered for graduate credit.

**480 Dance in the 20th Century (3)** Survey of history and development 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.

**453 Directed Independent Studies (1-3)** Independent study in a subject of interest to the student and the instructor. Maximum 6 hours. Prereq: Consent of instructor.

**495 Dance Pedagogy (3)** Principles and methods of the teaching of dance with practical application in a mini-teaching experience. Prereq: Upperclass or graduate standing and approval of instructor. 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.

**484 Conservation Biology (3)** (Same as Zoology 484.)

**ECONOMICS (283)**

**106 Survey of Economic Ideas (3)** Ideas of major economists in context of socioeconomic conditions of their times. Emphasis on non-technical treatment. May not be substituted for Economics 201.

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

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

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


**321 International Economics (3)** Balance of payments, exchange rate determination, monetary and fiscal policies, monetary arrangements, comparative advantage, and nontrade distortions, protection arguments, regional issues. Prereq: 201.

**322 Economic Development (Third World) (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 of different states and societies and their impact on economic development. Prereq: 201. Writing-emphasis course.


**331 Government and Business (3)** Antitrust and regulatory economics, problems in regulation and social control of business organization, oligopoly models. Prereq: 201.

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

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

**351 Monetary Economics (3)** Role of money in the economy. Federal Reserve System. Evaluation of monetary and fiscal policies and money supply process. Prereq: 201.

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

**381 Econometrics (3)** Methods of specification, estimation, testing and forecasting of economic relationships. Includes specification of models, estimation methods, statistical inference of empirical results, forecasting procedures and computer econometric problems, such as multi-collinearity, heteroscedasticity, and autocorrelation. Prereq: 201. Statistics 201, Mathematics 121-122 or 141-142.

**400 Special Topics (3)** Topics vary. Prerequisite determined by department each time course is offered. Maximum grade is given to law students. May be repeated when topic varies. Maximum 9 hours. 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.

**415 History of Economics (3)** Methods of study of economic history. Origins and evolution of major doctrines. Classical and Neoclassical economics, economic theories of Keynes and his followers, some principal developments of the second half of the twentieth century. Major writing requirement. Prereq: 201 and consent of instructor.


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

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

**472 Public Finance: Taxation and Intergovernmental Relations (3)** Individual taxes and tax system, non-tax sources of revenue, fiscal federalism. Prereq: 201. Writing-emphasis course.

**482 Introduction to Mathematical Economics (3)** Application of basic mathematical tools (e.g. calculus, matrix algebra, etc.) to major topics of economic theory. Prereq: Economics 201 with a grade of B or better, Mathematics 141-142, 147-148.

**491 Honors Seminar (3)** Topics vary. Senior paper required. Prereq: Senior standing, 3.4 or higher GPA in economics and consent of instructor.

**493 Independent Study (1-3)** Topics to be assigned. May be repeated. Maximum 6 hours. Prereq: Consent of instructor. Maximum total credit 9 hours.

**202 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 or Coreq: Educational and Counseling Psychology 210 and Education 400; Prereq: Admission to Teacher Education.

**403 Professional Studies: Teaching and Curriculum Development (3)** Organization of curricula and classrooms development of curriculum goals related to instructional objectives, selection of appropriate instructional strategies and resources. Prereq: Coreq Educational and Counseling Psychology 210 and Education 400; Prereq: Admission to Teacher Education.

**EDUCATION IN THE SCIENCES, MATHEMATICS, RESEARCH, AND TECHNOLOGY (290)**

**203 Field Study in Education: Elementary (1-3)** Problems of persons in active service in the field, includes methods of teaching, curriculum materials, school-community relations, and school organizations. May be repeated. Maximum 6 hours. E

**304 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. F, S

**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 computers. Exposure to and experience with the use of educational software. May be repeated. Maximum 9 hours. Prereq: Admission to Teacher Education Program.

**352 Field Experiences in Teaching: Secondary I (1)** Field experiences in tasks related to teaching and teacher roles. Prereq: 352 and admission to Teacher Education Program. Satisfactory/No Credit only. E

**353 Field Experience in Teaching: Secondary II (1)** Field experiences in tasks related to teaching and teacher roles. Prereq: 352 and Admission to Teacher Education Program. Satisfactory/No Credit only. S

**355 Introduction to Secondary Schools (3)** Aspects of teaching in grades 7-12, including the role of the teacher, school, and role responsibilities of secondary school teachers and administrators. Prereq: Admission to Teacher Education Program. Sp, Su

**404 Problems in Improvement of Instruction (1-3)** Special conferences, workshops, or in-service programs. May be repeated. Maximum 6 hours. Satisfactory/No Credit grading only. E

**475 Utilization of Instructional Media (3)** Basic communication process, need for instructional media, instructional development, selection and utilization of basic media, and software production techniques. (Same as Library and Information Science 475) F, Sp, Su

**476 Instructional Media in Elementary Education (1)** Basic operation of audiovisual hardware, selection and utilization of materials, and basic production skills needed for effective communication in the elementary classroom. Media Lab experience in production of AV software. F, Su

**485 Teaching of Mathematics, Grades 7-12 (2)** Preparation of teaching plans, evaluation, materials for teaching mathematics, teaching techniques, and observed in schools. Prereq: Admission to Teacher Education Program.

**486 Introduction to Instructional Computing (3)** Classification of computer applications for teachers of all grades. An overview of computer operation and software for teachers of all grades. F, Sp

**493 Independent Study (1-3)** Topics to be assigned. May be repeated. Maximum 12 hours. E
370 Airplane Performance (3) Characteristics of preferred orbits, free and forced vibrations of single and multiple compressible flow (3) One-dimensional internal strain, pressure, temperature and flow measurements; standards; dynamic characteristics of instruments; Measurement (3) Fundamentals of measurement systems, recent trends in science and environmental education programs for secondary schools. Prereq: Admission to Teacher Education Program. F, Sp

ENGINEERING AEROSPACE (018)

345 Aerospace Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems: standards, dynamic characteristics of instruments; statistical data treatment; transducers; signal conditioning; noise; signal and flow measurements. Prereq: 362, ME 341, ECE 301. F, Sp

351 Compressible Flow (3) One-dimensional internal flow with shocks, friction and nonadiabatic conditions. Two-dimensional external flows. Prereq: MEch. E 332 and E 335.

362 Dynamics/Vibrations (3) Central forces, motion, transfer orbits, free and forced vibrations of single and multiple degree vibration systems. Prereq: ESM 231. F

363 Structural Analysis of Aerospace Vehicles (3) Fundamentals of structural analysis applied to configurations common to aerospace vehicles. Prereq: ESM 321. Sp


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

422 Aerodynamics (3) Theory and design of aerodynamic bodies for desired characteristics. Potential flow theory, viscous effects, compressibility effects. Subsonic, transonic, and supersonic airflow. Prereq: 370. F

423 Viscous Flow (3) Boundary layer theory; laminar and turbulent flow; compressibility effects; numerical solution methods. Prereq: 422 or ME 344 or consent of instructor.


425 Propulsion (3) Principles of propulsion devices; turbo-jet, ram jet and rocket engines. Prereq: 351. F


429 Aerospace System Design (4) Synthesis and design of aerospace systems including economic and technical aspects. Participation in team design effort including formal presentations and design report. Prereq: 425, 428. Sp

431 Mechanical Engineering/Aerospace Engineering Seminar (1) Topics related to engineering including ethics. Formal oral presentations by students on engineering topics. Prereq: Senior standing. F

449 Aerospace Engineering Laboratory (3) Designing, conducting, and reporting results of experimental exercises. Test standards and specifications. Analysis of data and formation of conclusions. 3 hours lab per week. Prereq: 345, 351.

470 Selected Topics in Aerospace Science (1-4) Current research problems and topics in aerospace science: topics in science and engineering for the several areas of aerospace science. Prereq: Consent of instructor. Sr or NC or letter grade. F, Sp

ENGINEERING BASIC (179)

100 Seminar (1) Overview of the College, engineering as a profession, ethics. Consideration of each major and the various engineering disciplines. Satisfactory/No credit.


121 Statics (3) Vectors, forces and moments; equilibrium force systems; free body diagrams, equilibrium, frames, trusses and friction. Coreq: Math 141.

131 Particle Dynamics (3) Kinematics, simple harmonic motion, Newton’s laws, work-energy, impulse-momentum, constrained motion, vibration, and the entire job-seeking process. Intended for last-semester juniors. Satisfactory/No Credit.

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: 200, Mathematics 231.

301 Chemical Engineering Data Analysis (3) Analysis of experimental data; identification of system extremes; statistical properties of samples; empirical modeling of processes; statistical process control; optimization techniques.


340 Mass Transfer and Separation Processes (3) Stagnation operation; application of chemical, graphical and computer methods to design of stagewise separa- tion processes. Different computer programs in numerical analysis and computer methods to design of diffusive processes. Applications include gas absorption, distillation, extraction, humidification, ion exchange and membrane separations. Prereq: 330.


360 Seminar (1) Presentation and discussion of topics in the practices of chemical engineering. Satisfactory/No credit.

403 Introduction to Optimization (3) Principles and applications of optimization techniques to chemical process design; unconstrained constrained optimization, 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 environmental and chemical computer models; new computer applications. Prereq: Sophomore standing.


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

450 Chemical Reactor Fundamentals (3) Homogeneous and heterogeneous reaction kinetics; idealized homogenous reactor models, both for closed and flow systems; reactions for non-isothermal residence time distributions; identification of scaling parameters; catalyst effectiveness factors and conversion in fixed 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- variable, deadtime, adaptive, and nonlinear control system design. Includes control and laboratory work. Lab. Prereq: 360.

469 Engineering Internship in Process Control (4) Selected 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.


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

ENGINEERING CIVIL AND ENVIRONMENTAL (254)

210 Engineering Surveys (3) Measurement through use of surveying techniques; theory of errors and their analysis; concepts of horizontal, vertical and angular measurements and control; construction surveys; and route surveys through plane 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 and demand, development of alternatives and the evaluation of civil engineering projects. Civil Engineering I: planning and applications of economic analysis. Prereq: Sophomore standing.

261 Structural Analysis (3) Reactions; shear and moment diagrams; forces in trusses; uniaxial stress and strain; area moments of inertia, torsion. Prereq: Basic Engineering.

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


442 Construction Methods and Equipment (3) Construction methods, equipment, and management. Use of computers in construction. Use of contract documents and job scheduling. Prereq: 361 or consent of instructor.


541 Traffic Engineering (3) Characteristics of driver, vehicle, and roadway and their interrelationship; traffic studies; basic considerations of traffic circulation and control; design of signalized intersections; safety analysis and design. Prereq: 210. 201, 251. 330.

453 Airport/Railroad Planning and Design (3) Airport master planning and railroad engineering. Runway configuration, airfield capacity, geometrics, and terminal layout and design. Railroad capacity, geometrics and system 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 earthquakes and wind forces; analysis of portals, building frames, and space frames; matrix methods; use of computer in structural analysis. Prereq: 361.

471 Introduction to Structural Design (3) Selection of structural steel beams, design of structural steel members for bending, shear, and combined loads, reinforced concrete beams; use of standard specifications. Prereq: 361.

472 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.

474 Reinforced Concrete Design (3) Reinforced concrete beams and floor slabs, columns with combined loads, and bending, flexing and retaining walls. Prereq: 471.

480 Water and Waste Transport (3) Theory and design of water distribution systems, and wastewater collection systems. Prereq: 360.

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

490 Water Resources Projects 4 Design Development of multi-purpose reservoir and dam project, including data acquisition, spillway and outlet works designs; environmental assessment and operation principles; dam safety concepts, including dam break analyses. Prereq: 360, 395.

494 Urban Drainage Engineering (3) Management of stormwater conveyance and control structures, application of hydrologic and hydraulic principles to design of drainage systems for urban, strip mining, and highway development; design of inlet structures, stitcher outlets, and detention/treatment basins; application of commonly-used computer runoff models, evaluation of land use changes of streamflow quantity and quality. Prereq: 380, 395.

495 Water Resources Development and Management (3) Institutional frameworks for water development, including water law, evaluation procedures for comparing and selecting among water resources development alternatives, multi-objective decision making for water resource development, socioeconomic and environmental impact assessment procedures, decision-making under risk and uncertainty. Prereq: 330 or consent of instructor.

496 Civil Engineering Systems Design and Management (3) Methods of data analysis and modeling of civil engineering systems to enhance resource allocation for specific application to problems of transportation, environmental, water resources, structural analysis material. Emphasis on micro-computer applications. Prereq: Senior standing or consent of instructor.

421 Portland Cement and Asphaltic Concrete (3) Aggregates and properties, tests of portland cement concrete, concrete admixtures, tests of asphalt and asphalt mixes, and nondestructive testing. Two lectures and 1 lab. Prereq: 361.

434 Geological Engineering (3) Influence of geologic origin and history on the engineering characteristics of rocks and soils; applications of geology in the planning, design, and construction of civil engineering projects. 2 lectures, 1 hour lab. Prereq: 330 or consent of instructor.


440 Civil Engineering Systems Design and Management (3) Methods of data analysis and modeling of civil engineering systems to enhance resource allocation for one and two storage elements. Prereq: All course work in the Freshman Engineering curriculum. Coreq: Phys 231 and Mathematics 251.

201 Circuits I (3) Fundamental laws of circuit analysis. Ohm's Law, Kirchoff's current and voltage laws, the law of conservation of energy, circuits containing independent and dependent potential and current sources. Prereq: 312, 361.


206 Electrical and Computer Engineering Computations (3) Complex analysis and phasor calculus; linear algebra; applications of complex numbers to electrical integration and solution of ordinary differential equations. Programming in C and use of the application language MATLAB. Coreq: or Prereq: 201.

265 Small Computer Systems (3) Structured assembly language programming; data collection under the control of the personal computer using A/D converters; D/A converter output to CRT displays; on-line, real time analysis using elementary elements; computer and software applications. Prereq: or Coreq: 202.

271 Electronic and Electro-Mechanical Devices (3) DC and AC Circuits, Transistors, Transformers, Motor Generators. For non-majors only. Prereq: Mathematics 231, Physics 231.


312 Linear System Analysis (3) Steady-state and transient analysis of continuous and discrete time systems, stability, block diagrams and signal flow graphs, introduction to feedback theory. Includes laboratory experiments and projects. Design content: 1 hour. Prereq: 311.


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

332 Electrical 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: 2 hours. 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, boundary conditions, electromagnetic waves, transmission line theory. Prereq: 201.

342 Communication Systems I (3) System analysis of communication systems. Topics include signal and system classification, Fourier and Hilbert Transform techniques, power spectrum, channel capacity, signal to noise ratio and sampling theory. Analog modulation techniques including linear, angle, and phase modulation with applications to quadrature and parallel data transmission. Includes laboratory experiments and projects. Prereq: 311.

351 Introduction to Logic Design of Digital Systems (3) Boolean algebra and logic design of combinational
and sequential circuits. Gate and flip-flop characteristics for TTL and CMOS technologies. Implementation of circuits using MSI, LSI, and VLSI. Basic microcomputer architecture and organization. Design content: 2 hours. Prereq: ECE 202 or 301.

361 Introduction to Plasma Engineering (3) Particle motion in magnetic and electric fields, collective motions of charged particles; plasma diagnostics and the Langmuir probe; plasma light sources and lasers; radar waves in a plasma; transition from multiple beams to a continuum; Vlasov and Landau theory; microwave generation in plasmas and traveling wave tubes; free electron and controlled ion beams; steady state power generation. Applications to fusion, energy, industry, and astrophysics. Design content: 1 hour. Prereq: 361 or consent of instructor.

463 Introduction to Fusion Energy (3) High temperature plasmas relevant to fusion plasmas, principles of magnetic confinement, tokamaks, stellarators, stability and optimization, plasma transport, plasma equilibrium, stability, and constraints on fusion reactors. Prereq: 361 for ECE majors, or consent of instructor. (Same as Nuclear Engineering 464.)

464 Introduction to Fusion Energy (1) Continuation of 463. Includes principles and phenomena of tokamak reactor, alternate magnetic confinement concepts, advanced fusion fuels, fusion technology, plasma engineering, and fusion reactor design studies. Includes design project which integrates material in 463 and 464. Design content: 2 hours. Prereq: 463 or consent of instructor. (Same as Nuclear Engineering 464.)

469 Plasma Laboratory (1) Experiments and design project illustrating material covered in 461 and 462. Design content: 1 hour.


493 Special Topics in Electrical and Computer Engineering (1-3) Topics relating to recent developments and advanced practice. May be repeated. Prereq: Consent of instructor.

494 Special Problems in Electrical Engineering (1-3) Problems in Electrical Engineering involving library and experimental research. May be repeated. Maximum nine hours. Prereq: Consent of instructor.

495 Senior Seminar (1) Topics vary. May be repeated. Maximum six hours. Prereq: consent of instructor and all ECE courses required in the junior year. Satisfactory/No Credit or letter grade.

ENGINEERING INDUSTRIAL (556)

200 Fundamental Computer Applications in Industrial Engineering (2) Techniques for using word processors and spreadsheet software to enhance professional productivity. Spreadsheets, word processing, graphics, and library IE programs in typical office environments. Includes FORTRAN programming and numerical analysis. Prereq: Basic Engr. 101.


300 Quality Control (3) Application of statistical methods to quality of products and processes. Design and use of sampling plans and control charts. Tolerancing and reliability, industry methods to promote and control the quality of products. Prereq: Statistics 251.

301 Operations Research (3) Introduction to mathematical programming includes classical optimization theory, linear programming (simplex method, transport

teristicsof materialsand processesused inmodern
jobevaluation,designofwagestructures,designofwork-placelayouts,flowcharts,activitychartsandmethods
411 Planningand Scheduling(3)Forecastingtech-
Time Studyor Work Factor. Theoryandapplication.
such as MethodsTime Measurement, BasicMotion
and measurement using predeterminedtimesystem
410 PredeterminedTime Systems (2)Work design
lines using systemsimulation. Prereq: 302, 401.
403 Production Facilities Design and Material Han-
design including analysis, improvement, and timing of work
and determining standard. Prereq: Non-industrial engineer-
ing students. Prereq: Junior standing.
400 Manufacturing Materials/Processes (3) Charac-
401 Integrated Manufacturing Systems (3) NC and CNC machining; SPC and production planning and control; computer-aided manufacturing; CIM; and computer-aided design. Prereq: MATH 101.
402 Production System Planning and Control (3) Theory and application of forecasting systems including regression and time series models. Independent demand inventory models, including development of safety stock, re-order points, and economic order quantities. Prereq: 101, 200.
403 Production Facilities Design and Material Handling (3) Design of production facilities including plant layout and analysis and planning for overall moving, packaging and storage of materials. This includes office layout and service areas. Principles applicable to design of facilities for such diverse groups as hospitals, banking, and industry. Prereq: 302, 401.
404 Senior Seminar (1) Discussions, lectures and trips to unify students' educational experience. Prereq: Senior standing in Industrial Engineering.
405 Engineering Economy (3) Methods and problems in discounted cash flow techniques. Decisions among engineering alternatives involving economic justification, capital recovery, general purpose of capital equipment. Consideration of inflation, taxes, economic life of equipment, and sensitivity of decision to changes in factors.
410 Predetermined Time Systems (2) Work design and measurement using predetermined time system such as Methods Time Measurement. Basic Motion Time Study or Work Factor. Theory and application. Prereq: 302.
411 Planning and Scheduling (3) Forecasting techniques, scheduling and planning. Performance measurement for job shop and flow shop scheduling. Techniques for generating production schedules and a comparison of different material Requirement Planning and Just-in-Time techniques. Prereq: 402.
412 Quantitative Methods in Project Management (2) Project planning, scheduling, and control based on networking and precedence diagramming methods. Inclusion of PERT/CPM type of scheduling, multi-project control, computer applications, and PERT method of handling uncertainty in activity time estimates.
414 Laboratory and Methodology in Human Factors Engineering (3) Practice oriented introduction to the fundamental principles of human factors problems. Instrumentation and measurement of human capabilities and limitations, 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. Supervised group project. Prereq: 304 and senior standing.
421 Informational Systems I (3) Systems engineering approach to design, development, implementation, and evaluation of human-computer interaction. Emphasizes information 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 in organizations including management and implementation issues; definition, identification and analysis of problems, capacity of variation; measurement issues; issues relevant to continuous improvement; tools and techniques for improvement; and use of statistical tools such as correlation and experimental design to improve system value. Course contains a lab component to provide hands-on experience. Prereq: IE 300 and senior standing or consent of the instructor.
494-495 Special Topics in Industrial Engineering (3,3) Recent developments in Industrial Engineering including new applications of existing computer and new technologies and 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) Thermome-
try, phase transitions, and properties of selected high tempera-
ture and high pressure materials. Prereq: Mathematics 231.
400 Manufacturing Materials/Processes (3) Characteriza-
401 Integrated Manufacturing Systems (3) NC and CNC machining; SPC and production planning and control; computer-aided manufacturing; CIM; and computer-aided design. Prereq: MATH 101.
402 Production System Planning and Control (3) Theory and application of forecasting systems including regression and time series models. Independent demand inventory models, including development of safety stock, re-order points, and economic order quantities. Prereq: 101, 200.
403 Production Facilities Design and Material Handling (3) Design of production facilities including plant layout and analysis and planning for overall moving, packaging and storage of materials. This includes office layout and service areas. Principles applicable to design of facilities for such diverse groups as hospitals, banking, and industry. Prereq: 302, 401.
404 Senior Seminar (1) Discussions, lectures and trips to unify students' educational experience. Prereq: Senior standing in Industrial Engineering.
405 Engineering Economy (3) Methods and problems in discounted cash flow techniques. Decisions among engineering alternatives involving economic justification, capital recovery, general purpose of capital equipment. Consideration of inflation, taxes, economic life of equipment, and sensitivity of decision to changes in factors.
410 Predetermined Time Systems (2) Work design and measurement using predetermined time system such as Methods Time Measurement. Basic Motion Time Study or Work Factor. Theory and application. Prereq: 302.
411 Planning and Scheduling (3) Forecasting techniques, scheduling and planning. Performance measurement for job shop and flow shop scheduling. Techniques for generating production schedules and a comparison of different material Requirement Planning and Just-in-Time techniques. Prereq: 402.
412 Quantitative Methods in Project Management (2) Project planning, scheduling, and control based on networking and precedence diagramming methods. Inclusion of PERT/CPM type of scheduling, multi-project control, computer applications, and PERT method of handling uncertainty in activity time estimates.
414 Laboratory and Methodology in Human Factors Engineering (3) Practice oriented introduction to the fundamental principles of human factors problems. Instrumentation and measurement of human capabilities and limitations, 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. Supervised group project. Prereq: 304 and senior standing.
421 Informational Systems I (3) Systems engineering approach to design, development, implementation, and evaluation of human-computer interaction. Emphasizes information aspects of IE systems. Study of data structures and database management systems. Prereq: 200 and senior standing.
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494-495 Special Topics in Industrial Engineering (3,3) Recent developments in Industrial Engineering including new applications of existing computer and new technologies and methodologies. May be repeated once. Prereq: Senior Standing and consent of instructor.

405 Structural Characterization of Materials (4) X-ray diffraction and fluorescence; scanning and transmission electron microscopy; microanalytical techniques.
421 Mechanical Behavior of Materials II (3) Descrip-
tion of stress and strain. Linear elastic constitutive equa-
tions, isotropic and anisotropic moduli in various mate-
rials; yield criteria; brittle fracture; cracking, plastic strain constitutive equations, forming operations and limit cri-
422 Chemical Process Metallurgy (3) Application of chemical thermodynamics to metallurgical processing. Ferrous and nonferrous pyrometallurgical refining, slagging, ferroalloys, 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 reactions on structure and properties of joints; design of joints. Prereq: 201.
443 Polymer Processing (3) Rheological measurement methods, plastic flow, extrusion and molding, injection molding, extrudate swell, selected applications, including screw extrusion, injection molding, synthetic fibers, including structure development, properties.
444 Plastics Fabrication and Design (3) Lectures, labora-
tories and field trips; unit operations of plastics fabrica-
tion; plastics classification, design and selection criteria; processing techniques; characterization laboratory. Sp
470 Environmental Degradation of Materials (3) Mecha-
nisms, measurement techniques and control of environ-
mental degradation processes in metals, polymers, ceramics and composites; materials selection and design considerations. Prereq: 302. Recommended for chemical engineering, mechanical engineering, civil engineering and engineering science and mechanics majors. F
472 Fundamental Principles of Composite Materials (3) Physical principles basic to the design, manufacture and application of fiber reinforced polymer, metal and ceramic composites. Prereq. 302 or equivalent. (Same as Engineering Science and Mechanics 426.) F
474 Biomaterials (3) Metals, polymers and ceramics utilized in orthopedic, cardiovascular, and dental surgical implant devices; corrosion and degradation problems; material properties of primary importance; tissue response to synthetic materials. Prereq: 201. Recommended for engineering students. F
475 Fracture-Safe Design (3) (Same as Engineering Science and Mechanics 425) F
491 Materials Design I (3) Analysis of materials re-
quirements and performance in engineering structures and components; design aspects of materials applica-
tions and processes, legal issues, failure analysis. Prereq: Senior standing. F
494 Special Project Laboratory (1-3) Group or individ-
ual investigation of problems in 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 materiales science and engineering with prior approval of a professor. May
ENGINEERING MECHANICAL (650)

331 Thermodynamics I (3) Energy and laws governing energy transformations; thermodynamic properties; thermodynamic cycles; applications to engineering problems. Prereq: Chemistry 120, Coreq: Mathematics 241.

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

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

344 Heat Transfer (3) Heat transfer by conduction, thermal radiation, free and forced convection. Prereq: 331, 341, 391.

345 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems; fundamentals of instrumentation; statistical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurement. Coreq: ECE 201.


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

431 Seminar (1) Topics related to engineering including ethics. Formal oral presentation by students on engineering topics. Prereq: Senior standing. F.

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

451 Systems and Controls (3) Analytical models of physical systems; comprised of combinations of mechanical, fluid, electrical, and thermal components; feedback control systems; transient and frequency response, stability analysis; non-linear control of linear systems; sampled data systems; digital filters. Prereq: CE 345, ECE 301, F.

455 Introduction to Machine Design (2) Engineering economics, optimization, design for automation, reliability, patents and product liability; design of mechanical engineering thermal-fluid systems. Participation in team design effort; requires design report. Prereq: ME 353.

456 Introduction to Thermal Design (2) Engineering economy, optimization, design for automation, reliability, patents and product liability; design of mechanical engineering thermal-fluid systems. Participation in team design effort; requires design report. Prereq: ME 353.

465 Elements of Machine Design II (3) Application of strength and stress related properties; design factors, theories of failure to design of machine components. Prereq: 451, Mechanical design experiences. Prereq: Materials Science 201, EES 231, F.

466 Machine Design (4) Design of complete machine; documentation of complete specifications, design calculations, working drawings, and cost analysis. Written and oral report. Prereq: 332, 344. F.

471 Refrigeration and Air Conditioning (3) Vapor compression and absorption cycles; heat pump systems; psychrometric processes; air washers; cooling towers; solar radiation; building heat transmission. Prereq: 332, 344.

475 Thermal Engineering (3) Thermal systems with emphasis on turf, infantry, ground vehicles, fluid conveyors, combustion and system analysis and design including second law and economic analysis. Prereq: 332, 344, F.

479 Thermal Engineering Design (4) Design of a complete thermal-fluid system including economic, technical and optimization aspects. Participation in team design effort including formal presentations and design report. Prereq: 475, 476, 477.


494-495 Selected Topics in Mechanical Engineering (1-1,4) Problems and topics related to development and practice in mechanical engineering. Prereq: Consent of instructor. F, S, Su.

ENGINEERING NUCLEAR (716)

201-202 Seminar (1) Topics related to nuclear engineering. Satisfactory/No credit.

203 Thermodynamics I (3) First law analysis of open and closed systems; properties of ideal gases and fluid transport; heat transfer processes. Prereq: Coreq: Mathematics 142.

301 Introduction to Nuclear Engineering (3) Nuclear systems, radiative decay, cross section, flux, health physics, reactor theory. Prereq: Physics 232, Mathematics 231.

304 Nuclear Engineering Laboratory (3) Radiation detection and counting instrumentation, counting statistics, half-life and decay concepts, radiographic techniques, introduction to reactor physics, core properties, heat transfer experiments. Prereq: Coreq: Mathematics 200.

305 Energy Transport (3) Development of differential and integral energy conservation; convection and conduction heat transfer including numerical methods; application to nuclear reactor fuel elements, reactor cores, and heat exchangers. Prereq: 404.

306 Designing for Energy Transport (3) Radiation heat transport; hydrodynamics and heat transport in boiling and condensing systems; boiling crises; fuel element and heat exchanger thermal design; steam generator design. Prereq: 406.

324 Thermal Science (3) Fluid statics; conservation equations of mass, momentum, and energy; applications to fluid machinery; heat transfer processes, heat conduction, thermal radiation, free and forced convection. Prereq: Coreq: Mathematics 233.

351 System Modeling and Simulation (3) Development of mathematical models of dynamic systems and dynamic simulation. Includes model formulation, transient analysis, transfer functions, frequency response, stability, state space methods, and control. Prereq: Coreq: Mathematics 231.

403 Nuclear Engineering Laboratory (3) Cross-section measurement, diffusion properties of neutrinos, critical loading experiments, control rod calibration, statistical weight, shielding and properties of materials, and critical experiments. Prereq: Coreq: Mathematics 231.

404 Nuclear Fuel Management (3) Topics related to nuclear fuel cycle including mining and milling, fuel fabrication, in-core management, reprocessing and waste disposal. Economic and regulatory issues. Prereq: 470.

405 Reactor Dynamics, Control and Safety (3) Reactor models, transient analysis, safety analysis, control systems, and safety systems. Prereq: 470.


421 Introduction to Nuclear Criticality Safety (3) Fundamentals of nuclear criticality safety; criticality accident safety standards; overview of experiments, computing methods, and applications. Prereq: Coreq: Mathematics 231.


429 Seminar in Nuclear Engineering (3) Seminar topics. Prereq: Senior standing, consent of instructor. May be repeated.

ENGINEERING SCIENCE AND MECHANICS (335)

231 Dynamics (3) Kinematics of rigid bodies; center of mass; kinematics of systems of particles; mass moments of inertia; kinematics of rigid bodies; Newton’s laws, work, energy, impulse-momentum. Prereq: Basic Engin. 191, Mathematics 142.

271 Introduction to Biomedical Engineering (3) Overview of biomedical engineering: anatomy, physiology, biochemistry, biofluids, biotechnology, 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, singularity functions, energy methods, thick-walled pressure vessels, inelastic bending and torsion, thermal failure and fatigue. Prereq: Basic Engin. 121.

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/efficiency. Prereq: Coreq: 331.

342 Fluid Mechanics II (3) Basic conservation laws of fluids; hydrostatics; integral forms, energy, work; similarity, viscous/turbulent flow through pipes, open channel flow; turbomachinery performance/efficiency. Prereq: Coreq: 331.


343 Interdisciplinary course (3) (Same as CEE 343) (Same as Materials Science 302)
time and cyclic dependent properties. 3 hours or 2 hours and laboratory. Prereq: 321, Materials Science 201.

423 Fracture-Safe Design (3) Critical view of variables controlling fracture toughness: part and flaw geometry, temperature, constraint, rate, section size, and testing. Identification and characterization of fracture toughness by stress intensity factors, strain energy release rates, J integral, COD data, strain at failure, and fracture toughness test; use of fracture toughness data in design. 3 hours or 2 hours and laboratory. Prereq: 321 and Materials Science 201. (Same as Materials Science 472.)

426 Fundamental Principles of Composite Materials (3) (Same as Materials Science 473.)

431 Fundamentals of Vibrations (3) Free and forced vibrations of damped and undamped lumped parameter systems; energy methods, free vibration of continuous bodies. Prereq: 231, Mathematics 231.

433 Dynamic Systems (3) Three dimensional dynamics of particles and rigid bodies: gyroscopes; variable mass systems; central force motion; Lagrange's equations; stability; transfer functions. Prereq: 231.

435 Engineering Acoustics (3) Concepts of acoustics, measures of sound and their units; noise generation and transmission, noise control principles and applications, materials and procedures for noise abatement. Prereq: 431.

442 Fluid Mechanics II (3) Differential forms of the boundary value problem: isentropic flow, shocks, duct flows with heat transfer and friction; open channel flow, critical flow, energy methods; internal and external flows, boundary layers, elementary turbulent closure models. Prereq: 341, Mathematics 231.

452 Computational Mechanics (3) Integration of fundamental physical laws, mathematical methods 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: 321, ECE 301, BE 201. a maximum of C average in 321, 331, and 341. Coreq: ME 344.

454 Computational Mechanics in Design (3) Computational techniques applied to engineering design problems. Prereq: 451, 452, 453.

461 Experimental Stress Analysis (3) Theory, techniques, and instrumentation of resistance strain gages; theory and techniques of brittle coating methods; introduction to other strain measuring devices. 2 hours and laboratory. Prereq: 321, ECE 301.


465 Dynamic Data Acquisition (3) Use and calibration of instrumentation for measuring and recording dynamic events; Fourier analysis, transfer function analysis, digital signal conditioning. Prereq: in addition to those for 463. laboratory section. Parameters estimation with applications to modal vibration analysis. 2 hours and laboratory. Prereq: 451, ECE 301.

471 Clinical Engineering and Bioinstrumentation (3) Function and characteristics of health care delivery systems including hospital organization and health care economics; development and management principles for a hospital-based clinical engineering program. Biomedical instrumentation system operational characteristics; performance of transducers, signal conditioning, data readout and storage devices; evaluation of commercially available systems, selection and procurement methods, custom-designed systems, equipment monitoring and control programs for hospitals. Ethical issues and professional engineering. Prereq: 271, ECE 301.

473 Biomechanics (3) Mechanical properties of living tissues; biomechanics of injury; mechanics of prosthesis, including orthotic and prosthetic devices; biomechanical problems related to impact. Prereq: 321.

475 Design of Artificial Internal Organs (3) Design, development and evaluation of artificial internal organs; analysis of transport processes in therapeutic devices for organ replacement; review of currently available devices; federal regulation and ethical considerations. Prereq: 341, Mathematics 231.


494-495 Special Engineering Science Topics (1-3, 1-3) Problems related to recent developments and practices. May be repeated once for credit. Prereq: junior or senior standing; consent of instructor.

ENGLISH (339)

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, argumentation, research projects, and collaborative group work. 3 hours or 1 hour of laboratory. Prereq: 101.

102 English Composition II (3) Critical strategies for reading and writing about literature; emphasis on the clinching of an argument, the development of style and voice; typical assignments include analytical essays, annotated bibliographies, journals, quizzes and collaborative projects; two individual conferences required. Students wishing additional help with writing should also register for English 104. A, B, C, NC grading.

103 Writing Workshop I (1) Self-paced Writing Center tutorial for students writing additional instruction while enrolled in English 101 or having ACT English and composite scores at or below 18 (or SAT verbal/ composite scores at or below 500/700). 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. SNC grading.

104 Writing Workshop II (1) Self-paced Writing Center tutorial for students wanting additional instruction while enrolled in English 102 or students advised to enroll by their 102 instructors. Individual instruction in mechanics, paragraph development and essay structure. 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. SNC grading.

118 Honors English Composition (3) For students whose ACT English, critical reading, and essay scores are above 25 (or SAT verbal/composite scores at or above 550/1060). Grading scale and workload are same as in regular sequence though course proceeds at an accelerated pace. Practice in argumentation, critical reading, literary interpretation, and research methods. May include the study of a long work of literature in addition to regular sequence. Consent of instructor. Students receiving a grade below B in 118 will complete the necessary work for the 101 class for which they are currently enrolled. Prereq: S/NC grading.

121 English Grammar Review for Non-Native Speakers of English (3) For students whose ACT English and Composite scores are at or below 350/700. Individual instruction in mechanics, paragraph development and essay structure. Extensive practice in reading and writing. To receive credit, students must participate at least two hours per week and must also pass the 118 class in which he or she is currently enrolled. Prereq: S/NC grading.

124 English Grammar Review for Non-Native Speakers of English (3) For students whose ACT English and Composite scores are at or below 350/700. Individual instruction in mechanics, paragraph development and essay structure. Extensive practice in reading and writing. To receive credit, students must participate at least two hours per week and must also pass the 118 class in which he or she is currently enrolled. Prereq: S/NC grading.

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

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

127 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.

128 Honors Introduction to Drama (3) Enriched section of 126 designed for students with a 3.25 or higher GPA.

129 Honors Introduction to Fiction (3) Enriched section of 127 designed for students with a 3.25 or higher GPA.

130 Writing and Business Communication (3) Writing emphasis course.

128 Honors Introduction to Drama (3) Enriched section of 126 designed for students with a 3.25 or higher GPA.

130 Writing and Business Communication (3) Writing emphasis course.

129 Honors Introduction to Fiction (3) Enriched section of 127 designed for students with a 3.25 or higher GPA.

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 Civil War. 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.

234 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.

235 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 perceptive 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.

259 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.

269 Honors Introduction to Film Studies (3) Enriched section of 291 designed for students with a 3.25 or higher GPA.

281 Honors Introduction to Film Studies (3) Enriched section of 291 designed for students with a 3.25 or higher GPA.

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

301 British Culture to 1600 (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course.

302 British Culture: 1600 to present (3) English literature in the context of parallel developments in art, architecture, music, and social and intellectual history. Writing-emphasis course.

303 American Literature I: Colonial and Romantic (3) Writing-emphasis course.

304 Black American Literature and Aesthetics (3) Black American literature and aesthetics since 1899, with emphasis on cultural evaluations and the principles of being "American." Writing-emphasis course.

305 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
Writing position papers, briefs, and memoranda, students learn issue identification and argument. Critical reading and discussion of both professional and student writing. Development of legal research techniques. No prior legal knowledge necessary.

498 Senior Honors Paper (3) Intended for (but not limited to) students with a 3.2 or better GPA, this is an individualized project in the student major, culminating in a written study or creative project that is more substantial than what can be accomplished in a standard course. See the Director of Undergraduate Studies in English for details.

ENTOMOLOGY AND PLANT PATHOLOGY (341)

306 Forest Protection (3) Biological, economic, and legal considerations of fire, pathogens, insects, vertebrates, wind, and pollutants in the forest ecosystem. One or more all day or overnight field trips may be required. 2 hours and 1 lab. (Same as Forestry 306.) Sp, F

313 Plant Pathology (3) Introduction to the microorganisms and environmental conditions causing disease in plants. Biology of pathogens. Host-pathogen interactions, disease development and principles of control. Prereq: Six hours of Biological Science. 2 hours and 1 lab. (Same as Botany 313.)

321 Economic Entomology (3) Structure, life history, habits, and economic control of important insect pests of farm, garden, orchard, and household. Six hours of Biological Science. 2 hours and 1 lab. Sp, F

325 Veterinary Entomology (3) Identification, biology, and control of arthropods that attack major livestock species. Introduction to entomology, methods of insect control, major pest species groups and problems associated with specific host production operations. Prereq: Biology 122 or equivalent. 2 hours and 1 lab. F, E

EXERCISE SCIENCE (347)

100 Orientation to Exercise Science (1) Overview of discipline and professional areas for incoming Exercise Science majors. Taken first semester in student's major.

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

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 recommendations for change toward reasonable health-related goals. (Same as Physical Education 276.)

322 Fitness Activities (2) Methods of instructing and leading group fitness activities, including: exercise to 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 (3) Prevention of athletic injuries through conditioning, practice and competition, recognition and immediate treatment of injuries. Prereq: 332 and progression to the Exercise Science major or consent of instructor.

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

332 Applied Anatomy (3) Structure and roles of bones, muscle, nerves, and other basic body systems. Emphasis on nature of disability and implications for programming. Prereq: Exercise Science majors must have a cumulative GPA of 2.5 to register for this course.

412 Practicum in Adapted Physical Activity (1) Working with individuals in education or clinical settings; where an emphasis is placed on teaching gross and fine motor skills. Prereq: Coreq: 411.

414 Fitness Testing and Exercise Prescription (3) Relationship of physical fitness to everyday function; body composition, strength and flexibility, measurement and evaluation of fitness in normal populations. Prereq: Zoology 230; or Coreq: 414. Prereq: Must have a cumulative 2.5 GPA. (Same as Health 414.)

422 Applied Kinesiology (3) Study and emphasis of human movement with emphasis on biomechanical principles and their application to movement and neuromuscular fitness. Prereq: 325. Exercise Science majors must have a cumulative 2.5 GPA.

426 Exercise Science Practicum II (1-6) Supervised exercise experience in exercise/fitness areas. May be repeated for a maximum of 10 hours. Satisfactory/No Credit grading only. Prereq: 260, 332, 341, 414, progression to the major and consent of instructor.

480 Physiology of Exercise (3) Lecture and class discussion of factors relating to the body in muscular work. Topics include physiologic aspects of fatigue, training and adaptation to environment. Prereq: Zoology 230 or 440; 2 lectures and 1 lab. (Same as Zoology 480.)

490 Exercise Physiology/Fitness Internship (12-15) Full-time practice experience in connection with an approved fitness agency. Satisfactory/No Credit grading only. Prereq: 442, 426, 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. Satisfactory/No Credit or letter grade.

FINANCE (349)

Accounting 201-202, Economics 201, and Statistics 201 are prerequisites for Finance courses. Finance 301 is prerequisite to all 400 level courses.

301 Financial Management (3) Principles of financial management. Investment, financing and asset management functions of the firm.

421 Investment Analysis (3) Principles and concepts of asset valuation in competitive and efficient financial markets. Basic analytical tools are developed and used to study valuation of different types of securities. Major writing requirement. Prereq: 301.


430 Financial Markets (3) Role of short and long term financial markets; the process of capital formation and allocation. Theories and mathematics of interest rates in money and capital markets. Prereq: 301.


460 Advanced Topics in Financial Management (3) Contemporary issues in corporate finance, liquidity and current asset management, corporate growth and control, international financial markets, and pension fund management. Prereq: 301, 450.

470 Risk Management and Insurance (3) Identification, measurement and management with regard to business and personal risks facing the firm. Emphasis on selecting and implementing insurance programs for personal risk management. Topics include insurance, insurance contracts, types of insurers and their services. Prereq: 440.

471 Estate and Financial Planning (3) Process of estate accumulation, safekeeping, and distribution, with particular emphasis on impact of insurance and taxation. Prereq: 301.

481 Real Estate Finance and Investment Analysis (3) Principles of financing and investing in real property. Utilizes discounted cash flow models and ratio analysis. Current federal tax law applicable to real property. Limitation of partnerships and other business ventures. (Same as Urban Studies 481.) Prereq: 301.

482 Urban Development and Finance (3) Economic analysis of determination of urban land value and use, and discussion of current urban problems in the United States. Primary and secondary mortgage markets and economic analysis of the effects of these markets on urban development. (Same as Urban Studies 482.) Prereq: 301.

FIRST YEAR STUDIES

100 Academic Prelude (1) Introduction to the intellectual and cultural resources of the university in its diverse forms. Designed for entering students. Satisfactory/No Credit grading only. F

101 Approaches to the University (2) Integration into the academic life of the campus, including the nature and purpose of a college education, career planning, the organization of university disciplines, and assessment of special needs in areas such as time management, study skills, counseling, and financial aid. Satisfactory/No Credit grading only. Meets twice weekly.

410 Peer Mentoring Seminar (2) Designed to prepare the undergraduate student to meet the freshman student. Includes theories of helping, the development of mentoring skills, and development of mentoring theories of the college student and investigator. Emphasis on the process of transition. Meets weekly.

FOOD SCIENCE AND TECHNOLOGY (390)

140 The Food Industry (3) Role of the food industry in providing an adequate, safe food supply for the United States and international markets. Interaction of the food industry with governmental agencies and consumers. 2 hours and 1 lab. F

269 Meat Evaluation and Grading (2) Grading standards for quality and yield; principles for evaluating beef, pork, lamb, and application of standards for institutional meat cuts. Prereq: Meat Evaluation and Grading or other livestock judging. (Same as Animal Science 269.) S

350 Dairy Products I (3) Procurement, processing and distribution of milk, milk products, cheese, eggs, and commercial baking and dairy products. Prereq: 360 or consent of instructor. 2 hours lecture and 1 lab. S

360 Meat Science (2) Categorization of meats. Meat carcasses, muscle structure and composition, cut identification, and quality. Prereq: Meat Evaluation and Grading or other livestock judging. (Same as Animal Science 360.) F

369 Meat Science Lab (1) Slaughter and processing methods for beef, pork, lamb and poultry. Prereq: 360 or concurrent enrollment. Sp

401 Food Technology and Science Seminar (1-2) Review of scientific literature and written reports. May be repeated; maximum 3 credit hours. Prereq: Senior standing or consent of instructor. F, Sp

410 Food Chemistry I (3) Reactions of proteins, enzymes, and carbohydrates in foods. Study of chemical interactions of food materials. Prereq: Chemistry 110 or equivalent. 2 hours and 1 lab. F

411 Food Chemistry II (3) Reactions of inorganic compounds, carbohydrates, lipids and vitamins in foods. Prereq: Chemistry 110 or equivalent. 2 hours and 1 lab. Sp

420 Food Microbiology (2) Physical, chemical and environmental factors moderating growth and survival of foodborne microorganisms; pathogenic and spoilage microorganisms affecting quality of foods and their control. Prereq: Microbiology 210. F


430 Sensory Evaluation of Food (3) Principles and methods of sensory evaluation of foods. Prereq: Basic statistics. 2 hours and 1 lab. F

440 Preservation of Food (3) Prevention of deterioration and spoilage of foods. Methods of preservation.
FORESTRY (396)

301 Forest and Wildland Resource Economics (3) Production functions, supply-demand and market analysis; non-market programs and projects; economic analysis and decision models; investment and financial analysis; managerial economics; taxes; forest products marketing. Prereq: Economics 201 or consent of instructor. F

302 Forest Protection (3) Coreq: 322, 323, 324, 326 and 329. Same as Entomology and Plant Pathology 306. Sp

321 Wildland Recreation (3) Philosophical foundation of recreation; planning, development, and management of forest recreation resources; interpretation of forest resources. Overnight weekend field trips may be required. F


324 Forest Resource Analysis (3) Growth and yield practices; selection cutting; goal setting under multiple use concepts; approaches to regulation; financial aspects of forestry with computer simulation. Prereq: Forestry, Wildlife and Fisheries 301. Coreq: 305, 322, 323, 325, 329 and 330. Sp


331 Wood Properties and Uses (2) Wood as a biological material; detailed examination of the woody cell wall; influence of environmental and site conditions on wood formation; physical and chemical properties of wood and the relationship of the woody cell wall to these properties; wood use in important commercial products; day field trip may be required. Prereq: Botany 110 or consent of instructor. Coreq: 332 for Forestry majors. Sp

332 Wood Identification (1) Cell structure and arrangement as a tool for species identification; microscopic and hand lens identification of important commercial softwoods, hardwoods and foreign woods; laboratory procedures for making temporary slides for microscopical examination; standard use of reference collection of wood samples; day field trip may be required. Prereq: Forestry, Wildlife and Fisheries 311 or consent of instructor. Coreq: 331 for Forestry majors. Sp

FOREST AND WILDLIFE (398)

211 Introduction to Forestry, Wildlife and Fisheries (3) History of natural resource policies and practices; social perspectives and attitudes concerning natural resources and their use; techniques of integrated natural resource management, ecological principles; current policies, social trends, and forest and wildlife resource use. Day-long field trips may be required. Sp

250 Conservation (3) Use and abuse of wildlife resources; historical perspectives and management of forests, wildlife, and fish of North America including aspects of outdoor recreation and pollution problems. Sp

300 Current Issues in Sustainable Natural Resources (1) Current resource related public issues. Coreq: 301; speaker each week; student discussion and interaction with speaker; some written work required; topics and speakers vary; may be repeated. May be repeated. Maximum 3 hours. Satisfactory/No credit only. Sp

311 Dendrology and Silvics of North American Trees (3) Identification, classification and nomenclature of important North American trees and woody shrubs; forest associations; silvical 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 population characteristics; expert level sampling techniques. Lab: 1 hour and 1 lab. F

315 Forest Soils and Watershed Management (3) Soil information, properties, weathering, chemical processes, and chemical test for soil analysis. Prereq: Statistics 201. Coreq: (for Forestry majors) PSS 210 and 312. 1 hour 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 animals and their habitats. Biological, social and economic aspects of their management. Prereq: 211 or 250 and consent of instructor. F

410 Wildlife Habitat Evaluation and Management (3) Ecological relationships between wildlife and their habitat; evaluation, modeling, and management of wildlife habitat. Prereq: Forest 209 and 223. Weekend field trips required. Prereq: 317 or Biology 250. 2 hours and 1 lab. F

416 Planning and Management of Forest, Wildlife and Fisheries Resources (3) Integrated forest and wildlife management. Students design and implement 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 admittance to French 211. Since 150 is a review of elementary French, students who receive credit in this course may not also receive credit for any other 100 level French course and therefore also forfeit the six hours of elementary language credit awarded through placement examination. For enrollment purposes. E

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 Arts and Sciences 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 taking 200 level courses in 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 performance on ACT. Class held to a maximum of 15 for individual attention. Students follow enriched program with emphasis on advanced grammar and vocabulary, including literary selections. Students with a grade of A in 211 may enter 218 with permission of instructor. Credit not given to students receiving a grade of A or B in the course. F

291-292 French Literature in English Translation (3,3) From the origins through the Age of Voltaire. Song of Roland, Balzac, Flaubert, Diderot, Balzac, French classical period, and Voltaire. 292: Diderot, 19th and 20th centuries; Flaubert, Rimbaud, Sartre. Camus. May not be counted toward the major or minor. Emphasis on classical period. F
419 Practicum in Cartography/Remote Sensing (2-6)
Supervised practice in design and production of maps and other graphic materials in the cartographic sciences and laboratory practice. Writing emphasis course. Prerequisite: departmental approval prior to registration. S/NC or letter grade.

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

425 Historical Geography of the United States (3)
Survey of the changing human geography of the United States focusing on the processes of settlement and development. Emphasis on changing population patterns, development of agricultural regions, and patterns of urban-industrial development. Prerequisites: 361 or consent of instructor. Writing emphasis course.

433 The Land-Surface System (3)
Characteristics of surface form, water, vegetation, and surface materials, and their interrelationships. People as evaluators and agents of change. Prerequisite: 131-132 or consent of instructor.

434 Climatology (3)
General circulation systems leading to world patterns of climate. Climatic change and modification and their influence on climate. Prerequisites: 131-132 or consent of instructor. Writing emphasis course.

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

439 Plant Geography of North America (3)
Characteristics and distribution of major plant communities of North America. Prerequisites: 101-102 or 112 or 320 or consent of instructor. (Same as Urban Studies 441.)

443 Rural Geography (3)
Geographical appraisal of rural areas and their external relations, including rural change and urban fringe. Prerequisites: 101-102 or 141 or 340 or consent of instructor. (Same as Urban Studies 441.)

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. Prerequisites: 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. Prerequisite: 141 or 340 or consent of instructor.

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

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

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

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

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

GEOLOGY (424)

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

102 Earth, Life and Time (4)
Fossils, evolution and ancient environments, plus a review of 4.6 billion years of earth history. Includes case histories, maps, and laboratory exercises. 3 lecture hours and one 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. Prerequisite: 101. 3 lecture hours and one 2-hour lab or field period. Fulfills laboratory science sequence requirement for College of Arts and Sciences.

107 Honors: The Dynamic Earth (4) Laboratory and field emphasis to understanding physical processes, 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 Arts and Sciences guidelines. Students may not receive credit for both Geology 101 and 107.

108 Honors: Earth, Life and Time (4) Laboratory and field emphasis to understanding fossils, evolution, and ancient environments throughout 4.5 billion years of earth history. 3 lecture hours, 1 2-hour lab, and 2 field trips. Prerequisite of Geology 101, or permission of the instructor. Students may not receive credit for both Geology 102 and 108.

201 Biodiversity: Past, Present, and Future (3) Introduction to how biodiversity has changed through time, especially past mass extinctions and current extinctions from human activity. Topics include measurement of biodiversity, how biodiversity relates to evolution, 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 disturbances such as habitat destruction and pollution. No prerequisite. May not be applied toward the Geology major.

203 Geology of National Parks (3) Geologically spectacular landscapes and geological history of national parks of the world. Student 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.

310 Mineralogy (4) Introduction to crystallography, crystal chemistry, x-ray diffraction, optical mineralogy, and the structures of rock-forming minerals. Laboratory includes hand specimen identification, x-ray diffraction techniques, and microscopic identification of minerals. Prerequisite: 101-102 or 190-191 or equivalent. 3 lecture hours and 1 lab.

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

325 Geological History of Land Organisms (3) Origin and development of terrestrial organisms in space and time with emphasis on the fossil and present record of land plants and vertebrates. Prerequisite: Elementary biology sequence or consent of instructor. 2 lecture hours and one 2-hour lab or field period.

330 Igneous and Metamorphic Petrology (3) Classification and properties of igneous and metamorphic rocks, the processes that produce them, and the tectonic environments in which they form. Prerequisite: 310. 2 lecture hours and one 2-hour lab.

340 Stratigraphy and Sedimentation (3) Stratigraphic principles and practical applications to physical sedimentary processes and interpretation of depositional environments. Prerequisite: 101, 102 and 310. 2 lecture hours and one 2-hour lab or field work.

345 Geology of East Tennessee (1) Geology of the Southern Appalachians in Tennessee. Prerequisite: Completion of major core courses or consent of instructor. 1 lecture hour plus field trips.

370 Structural Geology (4) Common geologic structures (folds, faults, cleavage) and their genesis. Laboratory includes map interpretation, stereonets, and 3-D plotting. Prerequisite: 101, 102, 310, Mathematics 141-142, and one of the following: Physics 151 or Basic Engineering 101.

381 Minerals and Energy Resources: Geologic Constraints and Environmental Impacts (3) Distribution and estimation of mineral and energy resources. Writing emphasis course. Geologic environmental impact of exploitation and utilization of conventional and alternate resources.

401 Quantitative Methods in Geology (3) Applications of calculus and differential equations to the physical earth sciences. Emphasis on the equation in simple cases. Mechnical modeling and solving problems. Prerequisite: Geology 101 or 105. 3 lecture hours.

410 Advanced Mineralogy (3) Crystal chemistry of the rock-forming minerals. Interpretation of x-ray and single-crystal diffraction patterns. Laboratory exercises emphasize thin section and x-ray diffractometry methods of mineralogy. Prerequisite: 310. 2 lectures, one 2-hour lab.

425 Paleoclimatology (4) Principles of ecological analysis as applied to fossil and fossil assemblages with emphasis on data collection and interpretation. Laboratory is designed around preparation of scientific reports based on field and laboratory analysis. Writing emphasis course. 3 lecture hours and one 2-hour lab.

421 Invertebrate Paleontology (4) Survey of invertebrate animal phyla, with emphasis on skeletal structure and preservation, functional morphology, ecology, and stratigraphic distribution. Prerequisite: Completion of major core courses or consent of instructor. 2 lecture hours and two 2-hour labs.

440 Field Geology (5) Summer field course for advanced undergraduate geology majors and first-year graduate students in geology. Taught off-campus and requires full-time enrollment of the student for two or more weeks. Taught off-campus, and requiresthe full time of the student for 2 or more weeks. Taught off-campus, and requiresthe full time of the student for 2 or more weeks.

440 Field Geology (5) Summer field course for advanced undergraduate students. Taught off-campus, and requires the full time of the student for at least 6 weeks. Taught off-campus, and requires the full time of the student for at least 6 weeks.

455 Basic Environmental Geology (3) Applications of the geological sciences toward a comprehension of the effects of geological processes on the environment and the effects of human activities on the earth's environment. Prerequisite: 12 hours of geology courses. 2 lecture hours and one 3-hour lab or field period.

460 Principles of Geochemistry (3) Application of chemical principles to geologic problems. Emphasis on crystal chemistry and related topics, including mineral structure and behavior and the structure and behavior of elements in the Earth's crust. Prerequisite: Chemistry 120-130, recommended but not required. 3 lecture hours.

475 Physical and Chemical Systems of the Earth (3) Development of the physical earth from the solar nebula to the present. Formation, composition and evolution of the hydrosphere, atmosphere, and geosphere, the influence of earthquakes, volcanism, plate tectonics, geodynamics, chemical and isotopic processes of the interior, and the role of the Earth's atmosphere. Historical perspective on major controversies of the past, and problems unresolved today. Writing emphasis course. Prerequisite: 16 hours of geology courses numbered above 300. Physics 211-222. 3 lecture hours.

471 Fieldwork in Geophysics (3) Summer field course for advanced undergraduates or graduate students. Taught off-campus, and requires the full time of the student for 2 or more weeks. Geophysical Investigations applied to the solution of a problem in tectonics, hydrogeology, or the environment. Prerequisite: 470 or consent of instructor.

475 Physical and Chemical Systems of the Earth (3) Development of the physical earth from the solar nebula to the present. Formation, composition and evolution of the hydrosphere, atmosphere, and geosphere, the influence of earthquakes, volcanism, plate tectonics, geodynamics, chemical and isotopic processes of the interior, and the role of the Earth's atmosphere. Historical perspective on major controversies of the past, and problems unresolved today. Writing emphasis course. Prerequisite: 16 hours of geology courses numbered above 300 and above. 2 lectures and 1 discussion period.

480 Principles of Economic Geology (4) Ore-forming processes, classification of mineral deposits, survey of different types of mineral deposits with examples, and metallogenesis. Prerequisite: 310. 3 lecture hours and one 2-hour lab.

480 Principles of Economic Geology (4) Ore-forming processes, classification of mineral deposits, survey of different types of mineral deposits with examples, and metallogenesis. Prerequisite: 310. 3 lecture hours and one 2-hour lab.

480 Principles of Economic Geology (4) Ore-forming processes, classification of mineral deposits, survey of different types of mineral deposits with examples, and metallogenesis. Prerequisite: 310. 3 lecture hours and one 2-hour lab.
485 Principles of Geohydrology (3) Ground water flow, aquifer analysis, ground water contamination, and ground water management. Prereq: 101 or equivalent, or consent of instructor. (Same as Chemistry 210-120 or equivalent, and Mathematics 141-142 or equivalent. (Same as Civil Engineering 465.)

490 Special Problems in Geology (1-3) Directed study or special topics. Prereq: Consent of instructor. May be repeated without limit.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

GERMAN (433)

101-102 Elementary German (3,3) Language laboratory required. Must be taken in sequence. Not available to students eligible for German 150.

111 Language Laboratory (0)

112 Language Laboratory (0)

150 Elementary German Transition (3) This course is designed to prepare students for enrollment in German 201. Prereq: Two years of high school German and a placement score below the level required for admittance to German 201. Since 150 is a review of elementary German, students who receive credit in this course may not also receive credit for any other 100 level German course and therefore also forfeit the six hours of elementary language credit awarded through placement examination.

199 German Language and World Business (2) The course content will vary. It will emphasize the importance of foreign trade at the local, state, national, and international level. An interdisciplinary team of faculty from the Colleges of Business Administration and Arts and Sciences 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.

201-202 Intermediate German (3,3) Must be taken in sequence. Prereq: 102 or 150 or appropriate placement exam score.

301-302 Introduction to German Literature (3,3) Prereq: 202 or equivalent. Need not be taken in sequence.

305 Readings in German (3) Topics in both literary and non-literary fields. Students or student groups are encouraged to suggest topics for future courses. May be repeated twice with approval of department. Prereq: 202 or 261.

311-312 Conversation and Composition (3,3) Prereq: 202 or equivalent.

323 German Film (3) A study of the German cinema from the earliest days to the present. Writing-emphasis course. (Same as Cinema Studies 323.)

331-332 Elements of German for Upper-Division and Graduate Students. Students of language, elementary and advanced readings and a final 10,000 word translation project. Open to graduate students preparing for language examination, and upper-division students desiring reading knowledge of the language. Undergraduate credit only. No credit for students who have completed 101-102 or 107. 332 may be repeated only once for credit. A, B, C, no credit grading.

363 Modern German Culture (3) German culture from the mid-nineteenth century to the present: customs, art, music, literature, society, state. Readings in English for non-majors and in German for majors. Major credit, but no foreign language credit. A writing-emphasis course. Fulfills Upper-level Distribution Requirement for Foreign Studies for those who have not satisfied the history requirement with Western Civilization. Writing-emphasis course.

411-412 Advanced Conversation and Composition (3,3) Prereq: 311-312 or equivalent or consent of department.

420 Selected Topics in German Literature from 1750 to the Present (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

421 German Lyric Poetry (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

422 German Drama (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

423 German Narrative Prose (3) Prereq: 6 hours of 300 courses excluding 331-332 and courses in English translation, or equivalent.

424 German Literary Movements (3) Major periods in the development of German literature since 1750, with emphasis on the problems and pitfalls of periodization.

425 Introduction to Descriptive Linguistics (3) (Same as Russian 424, French 425, Spanish 425, and Linguistics 425.)

426 Methods of Historical Linguistics (3) Phonetics, distinctive feature analysis, sound change, nature of sound change, principles of reconstruction and fundamental assumptions about language change through time. Historical and prehistory of linguistic changes, language families, Proto-Indo-European and other proto languages. Prereq: 6 hours of upper-division foreign language courses excluding courses in translation or graduate reading courses. (Same as Russian 426, French 426, Spanish 426, and Linguistics 426.)

435 Structure of the German Language (3) Contrastive English-German segmental and suprasegmental phonemes, contrastive English-German linguistic structures, selected topics in advanced German grammar and syntactic analysis. Prereq: 6 hours of upper-division German language courses excluding courses in translation and graduate reading courses. (Same as Linguistics 435.)

436 History of the German Language (3) Development of the German languages: Old High German, Middle High German to New High German, Internal and external linguistic historical perspectives. Prereq: 6 hours of upper-division German language courses excluding courses in translation and 331 or 332. (Same as Linguistics 436.)

465 Business German (3) German used in fields of business, government, administration and economics. Prereq: 6 hours of upper-division German excluding courses in translation and 331 or 332.

490 Internship (1-15) Career-related experiences in the business, government, administration and economics field. May be repeated. Maximum six hours.

GREEK (257)

121-122 Beginning Greek (3,3) Must be taken in sequence.

261 Intermediate Greek: Grammar Review and Readings (3) Systematic review of Attic Greek and readings from selected authors. Prereq: 121.

264 Intermediate Readings in Greek (3) Content varies. Prereq: Classics 261.

401 Greek Poetry (3) Epic, lyric, drama. Authors vary. Prereq: 261.

402 Greek Prose (3) History, philosophy, and oratory. Authors vary. Prereq: 261.

405-406 Selected Readings from Greek Literature (3,3) For advanced students in Greek, the study of plays, the historical writings, the poetry of ancient Greece in the original Greek. May be repeated for credit. Maximum 9 hours. Prereq: 401-402 or consent of instructor.

HEALTH (449)

110 Personal Health and Wellness (3) Information and behavior necessary to approach health and wellness scientifically and to develop confidence in judgments affecting personal health and wellness.

200 Seminar in Human Sexuality (2) Problems and responsibilities of being male and female as they relate to sex and relationships.

225 Alcohol/Drugs and the College Student (2) Problems related to use and abuse of alcohol and drugs, particularly harmful to health and wellness. Covers alcohol, tobacco and other substances. Satisfactory/No Credit only. F, Sp.

230 Cardiopulmonary Resuscitation (2) Theory and skills to implement basic life support techniques. Cardiac arrest due to such conditions as heart attack, drowning, electrocution, suffocation, poisoning, drug intoxication, and vehicle injuries. Health and safety implications of this disease, and prevention of heart disease. (Satisfactory/No Credit only. F, Sp.

300 Health Education, Promotion, and Behavior (3) Health education goals, roles, target populations in school, community and health care settings. Health careers and opportunities; health behavior and intervention techniques; health appraisal techniques; health promotion strategies.

305 Health of Adolescents (3) Profile of health needs, interests, and behaviors of adolescents and attention to the roles and functions of practitioners relating to youth and young culture.

306 Health Instruction in Elementary Grades (3) School health program for the elementary grades. Teachers become familiar with organizing and presenting health content, materials, health curricula, and community resources, and implementing healthy lifestyles. Prereq: Admission to Teacher Education Program. F, Sp.

310 Advanced First Aid and Emergency Care (3) Theories and practices of first aid and emergency care. Provides essential information for developing functional first aid capabilities of lay persons. Course leads to Advanced First Aid certification. Applicant must be at least 18 years old for certification. E

325 Health Education Program Planning (3) Principles of curriculum development, administration, implementation, methodology, and evaluation.

330 Wellness Through Health, Leisure and Physical Activity (3) Emphasis on taking personal responsibility for one's health. Includes topics related to the healthy lifestyle, and provides specific guidelines of how to change inappropriate behaviors. (Same as Physical Education 330.) Sp.

375 Health Communications (3) Communication strategies for health educators in various settings. Emphasis on interpersonal relationships, public relations, leadership, small group processes, health teams, and effective use of media.

400 Consumer Health (3) Major consumer health care providers and health care services; selecting, purchasing, evaluating and financing medical and health care services/products. (Same as Public Health 400.) Sp.

405 Alcoholism and Alcohol Education (3) Factors which make alcoholism a serious health and safety problem. Various types of instructional/educational and intervention programs.


414 Fitness Testing and Exercise Prescription (3) (Same as HPS 414.)


425 Women's Health (3) Factors influencing women's health and women as consumers in nation's health service delivery systems. Study of health problems/concerns of women and techniques for prevention, maintenance and/or correction. (Same as Women's Studies 425.) E.

430 Suicide and Crisis Intervention (3) Factors which make suicide a serious health problem. Assessment, intervention, and prevention techniques.


465 Aging and Health (3) Aging process in a health perspective as it relates to health promotion and wellness of the aged. F, Sp.
Courses of Instruction

470 Special Topics (1-3) For advanced students, teachers, school administrators, nurses, and other para-medical personnel. Lectures, demonstrations, films, field trips, and supervised research in special healthfulness or health promotion issues. May be repeated. Maximum 12 hours.

475 Directed Independent Study (1-3) Individual identification and study of a healthfulness or health promotion issue with the supervising instructor. May be repeated. Maximum 12 hours. E

481 Internship I: Grades 7-12 (2-6) Methods and theories of teaching. Internship is completed in local public schools. Application for internship should be made in advance to Teacher Education Program. Prereq: 410 and admission to Teacher Education Program. Satisfactory/No Credit only.

482 Internship II: Grades 7-12 (3-6) Demonstration of professional competence in classroom management, and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp

483 Field Practice (10) Off-campus health internship or field practice in an educational or other agency with qualified professional. Prereq: Consent of instructor. Satisfactory/No Credit only. E

HISTORY (462)

151-152 Development of Western Civilization (3,3) Historical development of the western world, 15th Ancient world to 1715. 152-1715 to present. Writing-emphasis course.

157-158 Honors: Development of Western Civilization (3,3) Consent of department required. 158- Sp Writing-emphasis course. Students will attend the appropriate 151-152 lectures and the designated honors discussion section.

161-182 A History of World Civilization (3,3) Historical surveys of world civilization. 161-Origins to 1500. 162-1500 to present. Writing-emphasis course.

195-196 African-American History: An Introduction (3,3) African-American experience to 1890. Traditional African societies from which African-Americans emerged; evolution of prejudice and racism in America; institution of slavery; free Negroes; Civil War and Reconstruction. 196: African-American experience from 1890. The African-American struggle for political, social, and social equality; leaders of the struggle, their philosophies and programs; responses of Black community institutions to the challenges of the 20th century; the rise of the urban ghettos; the Civil Rights and Black Power movements.

251-252 History of the United States (3,3) Settlement to 1877. 252-1877 to present. E

255-256 Introduction to Latin American Studies (3,3) Society, economic development, and political development of Latin America with special emphasis on dominant culture patterns, social changes, and impact of nationalism. 251—Pre-Colonial and Colonial periods through Independence. 252—Latter 19th century and the Modern period: Writing-emphasis course. (Same as Latin American Studies 251-252.)

257-258 Honors: History of the United States (3,3) Consent of department required. 257-F: 258-Sp Students will attend the appropriate 251-252 lectures and the designated honors discussion section.

307 Honors: Introduction/Historical Problems (3) Historical analysis, philosophy of history, principles and techniques of research emphasizing the roles of climate and tradition and frames of reference and the problems of evidence, interpretation and objectivity. Required of students working for honors in history. Prereq: Consent of instructor.

310-311 The Ancient World (3,3) 310-Development of Greek democracy: its successes and failures; political crisis of the fourth century B.C.; emergence of hellenistic civilization. 311-Origins of Roman imperialism and its consequences: militarism, empire, socioeconomic changes, constitutional crises, emergence of military and political autocratry.

312-313 Medieval History (3,3) 312-Early Middle Ages; 313-Later Middle Ages. 312: From the Roman Empire to the Hundred Years' War. 313: From the Hundred Years' War to the end of the 15th century. (Same as Medieval Studies 312-313.)

314 Renaissance Europe (3) The period traditionally seen as a transition from medieval to modern world, interrelationship of cultural, social, economic, political and intellectual developments, with an emphasis upon humanism. Writing-emphasis course.

315 Reformations Europe, 1500-1680 (3) The period during which Europe witnessed religious, economic, disposition and insecurity, political centralization, intellectual skepticism, the origins of modern science, war and the Thirty Years War. (Same as History 315.)

316 Early Modern Europe, 1650-1800 (3) Dynamic conflict of a search for order in an age of revolutions, seen in the continued push for political centralization, the impact of the scientific revolution, the intellectual flowering known as the "Enlightenment", and the English and French revolutions.

319 Modern Europe, 1750-1914 (3) Political, industrial and intellectual revolutions against tradition. Topics such as the modern population explosion, urbanization, the political emergence of the middle class and the masses, nationalism, imperialism, racism and anti-Semitism in social thought and politics. Writing-emphasis course.

320 Contemporary Europe, 1900-1945 (3) The transformation from industrial to post-industrial society and the transformation of the European nation-state. Topics such as war and depression and the consequent political and social instability; totalitarian control; de-colonization; the impact of Freud, Einstein and existentialism; welfare state and foreign policies of European unification. Writing-emphasis course.

321 New Testament Origins (3) (Same as Religious Studies 321.)

322 Christian Thought (3) (Same as Religious Studies 322.)

320-331 History of England (3,3) 320-to 1688. 331-1688, the present, medieval, church, church reform, England, origins of Anglo-American law, the monarchy and parliaments, government, the Reformation, 17th Century revolution, coming of age of the British Empire, cultural and industrial re-formation; conflict, class conflict, empire, the welfare state, world wars, economic crisis.

323-332 History of France (3,3) 323-The emergence of modern France, the Revolution to 1789. 332-France from the Revolution, 1789 to present.

343-355 History of Germany (3,3) 343-Germany I, 1871. The First Reich's Fortune and Failure. The development of the German lands, from the medieval empire to its disintegration, through dynastic and religious realignments, to the Austrian-Prussian dualism in the time of Frederick the Great and Maria Theresa, culminating with the Congress of Vienna of 1815. 355-Germany II, 1871. 351- Up to 1919. The quest for Nationalism. The evolution of modern Germany through revolution, industrialization, church, church reform, nationalism, the political and social instability; totalitarian control; de-colonization; the impact of Freud, Einstein and existentialism; welfare state and foreign policies of European unification. Writing-emphasis course.

360-361 History of Latin America (3,3) 360-Colonialism and Independence, 1500-1825. 361-National Development, 1825 to present. (Same as Latin American Studies 360-361.) Writing-emphasis course.

362-363 History of East Asia (3,3) 362-East Asia: History and Culture to 1600. Chiefly China and Japan; Korea and Vietnam also included. Confucianism, Buddhism, social structure, political tradition, and Japanese feudalism. Comparison and contrast with Western history and culture. 363-Eastern Asia since 1600. China, Japan, Korea and Vietnam. Comparative modernization, cultural and economic development, nationalism, and Japan's militarism and post-war economic success. Writing-emphasis course.

364 History of China (3) Changes and continuities of the world's longest uninterrupted civilization with a quarter of the human race, since the origin of civilization, and the complex and differences between China and Western civilizations; Chinese revolutions in historical context.

365 History of Japan (3) Japanese history from mythological origins to the postwar age, with emphasis on politics and society. Topics include the influence of disease on society, Japanese Feudalism, popular culture in the 700's, the Meiji Restoration, and Japanese militarism.

366 Ancient Near Eastern Civilization (3) Bronze and Iron Ages. Origin of civilization; institutional structures; imperialism, cuneiform traditions and their perpetuation. (Same as Ancient Mediterranean Civilizations 366.)

369-370 History of the Middle East (3,3) 369-Islam and spread of Islamic civilization to the sixteenth century. 370-The Middle East from the sixteenth century to the present. Impact of the West and background of current problems in the area. Writing-emphasis course.

371-372 African History (3,3) 371-Ethnic groups of the southern and western regions of sub-Saharan Africa and the conflict and change occurring there from 1000 A.D. to the World Wars. 372-Dynamics of African independence since 1919. Achievement of independence by western African nations and the failure of Africans in the south to absorb modern knowledge, urbanization, industrialization, and formation of a national identity within the twentieth-century African context. (Same as African-American Studies 371-372.)

373 Historical Issues (3) Broad, thematic issues in historical perspective. Lecture-discussion. Especially suitable for non-majors, also open to majors.

374 The West and the World Since 1870 (3) Relationships between the West and Africa, Asia, and Latin America since 1870 across a broad spectrum of critical issues. Includes economic interdependence and underdevelopment, ideologies in conflict with non-Western values, and the problem of cultural identity in circumstances of cultural disruption. Writing-emphasis course.

375 Revolutions in Historical Perspective (3) Comparative history of major revolutions which transformed political, social, and economic structures and values, such as those in France, Russia, China, Mexico, and Iran. Contrasts and common patterns in their causes, phases and outcomes. Major theories of revolutions. Writing-emphasis course.

380 American Issues: War and the Peaceful Ideal (3) Exploration of the dual American ideal to express abhorrence to war and imperial conquests and, to engage in war and exercise economic or political domination over other peoples. Topics include relationship between leaders, and domestic and international
424 Studies in Elementary Education (1-3) Variable topics on teaching in Early Elementary (K-3), Middle Elementary (4-8), and Skills (K-8). Prereq: Admission to Teacher Education Program and permission of instructor. May be repeated. Maximum 8 hours. E
429 Language Arts/Reading Instruction in Elementary and Middle Schools (3) Language and language development as a basis for teaching of reading (listening-speaking) and aspects of reading (reading process-readiness and writing). Not open to students who have had recent course in language arts methods. Prereq: Admission to Teacher Education Program. F, Sp
430 Elementary and Middle School Developmental Reading Instruction (3) Word recognition (including phonics), comprehension, evaluation, and materials. Not open to students who have had recent course in reading methods. Prereq: Admission to Teacher Education Program. F, 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 & Instruction 422 and Admission to Teacher Education Program. Coreq: 430. Satisfaction/No Credit only. Sp

432 Psychology and Education of Students with Moderate/Severe Disabilities (6) Nature and characteristics of persons with moderate/severe disabilities and the educational strategies appropriate for these persons. Prereq: 310, 320, 429 and Admission to Teacher Education Program.

454 Teaching Strategies and Issues in Social Studies Education (3) Goals, objectives, techniques, materials, evaluation; directed observation in public schools; preparation of teaching plans and materials; simulated teaching experiences. Prereq: Admission to Teacher Education Program.

456 Speech and Language Basis of Learning Disabilities in the Classroom (3) Normal communication development; understanding of speech and language impairments in school-age students; integration of oral/written communication skills into existing curriculum for high incidence special education students. Sp

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: Elementary (3-6) 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

472 Internship II: Elementary (3-6) Demonstration of professional competence in planning, instruction, and classroom management. Internship is completed in local public schools. Prereq: 471 and Admission to Teacher Education Program. Satisfactory/No Credit only. Sp

473 Student Teaching in the Elementary School (3-10) Semester equivalent to Educational Curriculum and Instruction 4810 or 4820. Intended for students in the four year program or equivalent. Not to be substituted for Educational Curriculum and Instruction 4711. Internship I or 472 Internship II. Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and 203 (1). Satisfactory/No Credit only.

492 Directed Independent Study (1-3) Tutorial and specialized area. Prereq: consent of instructor. May be repeated. Maximum 12 hours. Satisfactory/No Credit grading or letter grade.

493 Independent Study (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

494 Supervised Readings (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

495 Special Topics (1-3) Variable topics on teaching in Early Elementary (K-3), Middle Elementary (4-8), and Skills (K-8). Prereq: Admission to Teacher Education Program and permission of instructor. May be repeated. Maximum 8 hours. E

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

HUMAN ECOLOGY (520)

100 Special Topics in Human Ecology (1-3) Topical 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 use and five software programs: operating systems, word processing systems, data base systems, spreadsheet programs and graphic programs; design of a management information system; spreadsheet modeling and database. Prereq: Declared major in College of Human Ecology.

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

350 Special Topics: Human Ecology (1-3) Study in a selected professional area within the College of Human Ecology. Topics vary. May be repeated. Maximum of 6 credit hours.


445 Field Experience in Community-Based Programs (1-15) Placement in Home Economics-related programs or organizations includes seminars. May be repeated. Maximum 15 hours. Prereq: Consent of instructor. Satisfactory/No Credit only.

490 Directed Study: Human Ecology (1-3) Topic arranged by individual student under supervision of faculty. May be repeated with different topics. Maximum 8 hours. Prereq: Junior or Senior standing in a major in the College of Human Ecology and consent of instructor.

497 Honors: Human Ecology (3-6) Topics or topics arranged by students within the College of Human Ecology to meet particular interests of the student. Prereq: Consent of instructor. May be repeated. Maximum 6 hours.

HUMAN RESOURCE DEVELOPMENT (529)

161 Graphic Communications (3) Drafting as a means of communication in technology. Orthographic and multiview drawing, conventional practices, pictorial techniques and applications, sheet metal development and auxiliary wire drawing. Sketching, dimensioning, board work, computer and drafting on CAD. F

163 Power and Energy Systems (3) Automotive technology and internal combustion engines. Includes 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

105 Woods Technology (3) Processes, tools, equipment, and products of the wood-products 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. Satisfactory/No Credit only. E

236 Technology and Shortage/Profitability (3) Proportion of credits for students planning to certify in business education and office technology who have typing and/or shorthand courses. Prereq: Department approval. E

261 Architectural Graphics (3) Graphic representation and architecture. Principles of construction working drawings for a residential dwelling, and CAD techniques. Prereq: 161 or consent of instructor. Sp

263 Basic Electricity/Electronics (3) Operation and characteristics of electrical systems and devices in

HOTEL AND RESTAURANT ADMINISTRATION (551)

120 Introduction to Hotel and Restaurant Administration (2) History and place of industry in national economics; basic operating systems, organization structure; problems in the hospitality complex.

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

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

320 Quantity Food Procurement, Production and Service (3) Principles of processing, 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: 320.

321 Quantity Food Procurement, Production and Service Laboratory (1) Application of principles in 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: 320.

325 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.

420 Field Experience in Hotel and Restaurant Administration (6) Supervises educational experiences selected tourism, food and lodging operations followed by a two-day seminar. Students enrolled in this course may not enroll in other courses during semester and may not enroll in any other course. Prereq: 320; Accounting 202 or consent of instructor.

425 Hospitality Sales and Marketing (3) Strategic marketing for lodging and restaurant organizations; includes property/product, market, and competition analysis; promotion; marketing; internal and external sales and promotion techniques. Prereq: 320, Marketing 301; progression into HRA program or consent of the instructor.

424 Advanced Hotel and Restaurant Administration (3) Integration of practical management level administrative procedures 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; progression into HRA program or consent of the instructor.

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

420 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 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; topics variable. Prereq: Junior or Senior Standing in Hotel and Restaurant Administration Program or consent of the instructor. May be repeated. Maximum 12 hours. E

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

497 Honors: Hotel and Restaurant Administration (1) Senior project. Prereq: Senior standing, consent of the instructor.
350 Related and Applied Theory in Occupations (1-15) Applicants must show evidence of bona fide occupational experience compatible with State Plan requirements. Written theory tests and a comprehensive portfolio of work are to be submitted for credit. Measured by value, evidence of competence and professional activities. May be repeated. Maximum 15 hours. Satisfactory/No Credit only. Prereq: Junior standing and departmental approval. E

351 Manipulative Skills in Occupations (1-15) Applicants must show evidence of bona fide occupational experience compatible with State Plan requirements. Written theory tests and a comprehensive portfolio of work are to be submitted for credit. Measures evaluated by technical specialist and departmental faculty. May be repeated. Maximum 15 hours. Satisfactory/No Credit only. Prereq: Junior standing and departmental approval. E

352 Practicum in Industrial Education (1-3) Upgrading experiences in non-traditional settings for technical teachers. May be repeated. Maximum of 6 hours. Satisfactory/No Credit only. E

354 Job Analysis Techniques and Curriculum Development (3) Instructional material development utilizing the techniques of job analysis. F

355 Microcomputer Applications in Technology (3) Use and applications of microcomputers for education, business, and industry. Implications and impact of microcomputers on occupations and everyday living. Open lab emphasizing hands-on experience in applications and programming. F

356 Lab Organization, Management, Maintenance, and Safety (3) Principles of classroom and laboratory organization, maintenance, safety, and management in vocational and technical laboratories. Sp

361 Graphic Reproduction Processes (3) Principles of printing, duplicating, photography, and other forms of graphic communication; includes laboratory experience in reproduction and related areas. Prereq: Basic graphic arts course and/or an equivalent background. F

363 Applications of Integrated Electronics (3) Electrical, electronic, and computer principles; including digital and analog fundamentals, troubleshooting and circuit analysis, and computer systems. F

366 Manufacturing Technology (3) Manufacturing system, including researching and developing products, preparing to produce, producing, marketing, and servicing products. Prereq: 165, 166. Sp

369 Plastic Technology (3) Characteristics and applications of plastics. Basic principles related to the production, use, and processing of plastics. Prereq: 105 and admission to Teacher Education Program. Pr

372 Job Analysis (3) Applied techniques of job analysis and evaluation of training requirements, performance standards and selection of training personnel. F

373 Instructional Techniques in Industrial Education (3) Application of learning theories, motivational techniques, and principles of instruction to technical, vocational, and related subjects. F

374 Planning Instruction for Human Resource Development (3) Selection, design, and development of performance-based training programs. Prereq: 372 or consent of instructor. F

401 Utilization of Community Resources (3) Strategies of utilizing community resources for the classroom, including the integration of community resources into the curriculum. Prereq: 372 or consent of instructor. F

404 Special Topics in Technological and Adult Education (1-3) Topics to be assigned. May be repeated. Maximum 6 hours. E

414 Individual Study in Technological and Adult Education (3) May be repeated. Maximum 6 hours. E

415 Coordination Techniques (3) Necessary procedures, policies, and responsibilities to implement, maintain, and evaluate a successful cooperative education program. F

420 Introduction to Adult Education (3) Brief history of adult education and requirements of the adult client. Includes opportunities for professional practice, except from traditional instructional settings. A

421 Adult Education Program Design and Management (3) Principles of administration and special application to adult education programs. F

422 Adult Development and Training (3) Application of adult development concepts to design and management of training programs for adults. F

430 Principles and Organization of Business Marketing Education (3) Historical background and development needs. Principles of educational and business marketing, curriculum implications, establishing evaluation criteria and goals. Prereq: Admission to Teacher Education Program. F

432 Methods and Materials in Business and Marketing Education (3) Teaching techniques, aids and evaluation in subject matter in the office of the department head. May be repeated. Maximum 6 hours. E

433 Methods in Accounting and Data Processing (3) Methods, materials, evaluation procedures, and recent research in accounting and data processing. Prereq: Admission to Teacher Education Program. F

436 Supervised Occupational Experience (3-9) Practical field experience in business and marketing settings under the supervision of a teacher and department representative. May be repeated to a maximum of 9 credits. E

439 Areas of Marketing (3) Marketing personnel development, operations and management as these affect the instructional leadership program in marketing education. Sp

440 Special Topics in Business and Marketing Education (1-3) Topics to be assigned. May be repeated. Maximum 9 hours. E

454 Training Aids Development (3) Study and preparation of instructional aids and non-print media commonly used by technical instructors and trainers. F

455 Performance-Based Evaluation (3) Assessing the effectiveness of training through the development of performance-based measures. Evaluation of incumbent teacher job performance. F

456 Organization and Operation of VICA/HOSA (3) Planning, organizing and implementing youth-club activities in vocational-technical programs. A

464 Methods and Media in Technology Education (3) Methods and media used in teaching technology education in secondary schools. Prereq: Admission to Teacher Education Program. F

465 Materials and Processes (3) Materials relative to specifications, testing, and methods to classify and categorize materials and determine correct processes to match industrial product needs. Prereq: Consent of instructor. F

466 Course Construction in Technology Education (3) Selection and development of courses of instruction, instructional objectives, project/product selection, assignments and evaluation. Prereq: Admission to Teacher Education Program. F

470 Training for Human Resource Development (3) Organization and management of training, including roles and functions performed and the needs, costs, benefits, and productivity of training systems. F

471 Principles of Supervision (3) Problems of motivation, communication, interpersonal relationships and leadership. Sp

479 Internship in Human Resource Development (5-10) Assessing, planning, implementing, and evaluating the effectiveness of training programs in an industrial setting. May be repeated to a maximum of 10 semester hours. Satisfactory/No Credit only. E

481 Student Teaching: Grades 7-12 and Adults (10) Full-time experience in classroom and laboratory teaching and related responsibilities under the supervision of a master teacher in the content area. Satisfactory/No Credit only. Prereq: Admission to Teacher Education Program. E

HUMAN SERVICES (532)

220 Introduction to Human Services (3) Focus on related societal values and contemporary issues in human services. Emphasis on the various professions, settings, and roles of people working in the field. Identifies the complexities of human needs and social problems. F

330 Thinking About People (3) Development of thoughtful, informed and empathic attitudes toward human beings—those providing services as well as those receiving service. Prereq: 220. F

380 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. F

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 used during the field experience. Prereq: Progression to the major. 220, 330. Coreq: 440. F

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

440 Human Services Field Work (6) Practical field experiences in appropriately organized and directed human services settings. Develops specific helping skills; involvement in roles and function of social services; and provides direct services in a supervised learning situation. For majors only. Prereq: Progression to the major; 220, 330, 440. Satisfactory/No Credit only. F

441 Human Services Field Work II (6) Practical field experiences in appropriately organized and directed human services settings. Develops specific helping skills; involvement in roles and function of social services; and provides direct services in a supervised learning situation. For majors only. Prereq: Progression to the major; 380, 420, 440. Satisfactory/No Credit only. Sp

450 Special Topics in Human Services (3) Issues, methods, values, and trends with implications for helping practitioners, such as legal and ethical issues, and self-awareness education. May be repeated. Maximum 9 hours. F

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)
INCLUSIVE EARLY CHILDHOOD EDUCATION (542)
410 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit grading only. Sp
445 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom organization and management practices for teaching young children; relationship of kindergarten to total elementary school. Prereq: Admission to Teacher Education Program. E
450 Education of the Gifted and Talented Children (3) Psychometric and behavioral studies of giftedness. Analysis of past and present practices in reference to curriculum and program implementation. Prereq: Admission to Teacher Education Program. Sp
471 Internship I: Special Education (3-15) Testing methods and theories of teaching. Internship is complete when the student is judged ready to begin a supervised teaching experience in the public school. Application for internship should be made upon admission to the Teacher Education Program. Satisfactory/No Credit grading only. F
493 Independent Study (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. May be repeated. Maximum 12 hours. E

INFORMATION SCIENCES (560)
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. F
102 Technologies for Information Retrieval (3) Principles, selection, and use of computer-based information management applications; software identification and task appropriate uses; telecommunications, utilities, and memory management systems; multiple operating system environments. Undergraduate credit only. E
310 Information Seeking: Resources and Strategies (3) Selection, evaluation, use, and decision making; emphasis on planning, executing, and evaluating information searches. Focus on topic of student's major. Undergraduate credit only. E
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 engaging reading. Undergraduate Credit only. E
350 Information Consumer (3) Informationinsociety, forencouraging reading. Undergraduate Credit only. E
490 Information Environment (3) Generation, production and communication resources including e-mail, gone-mail, faxes, XEROX, data base, protocol software, cost estimating, construction drawings related to space planning, one hour lecture and two hour studio. Prereq: Coreq: 350, 400, or consent of instructor. F
491 Foreign Study (1-15) Registration by permission of the director of the internship program. Prereq: Consent of instructor. F
493 Directed Studies in Information Management (1-4) Advanced research in information systems forjuniors or seniors. May be repeated. Maximum 8 hours. Consent of instructor. F
497 History of American Interior Architecture (3) Nineteenth century. Prereq: 370 or consent of instructor. E
498 History of the Contemporary Interior Architecture (3) Twentieth century. Prereq: 370 or consent of instructor. F

INTERDISCIPLINARY PROGRAMS (581)
300 Selected Topics (1-3) May be repeated. Maximum credit 6 hours. May be repeated. Maximum credit 6 hours. E
400 Selected Interdisciplinary Topics (1-12) Acceptable for major or minor credit in any Interdisciplinary Program with the consent of the Director of Interdisciplinary Programs and the respective chairperson. May be repeated for credit maximum of 12 hours. Letter grade or S/N grading. E
491 Foreign Study (1-15) Registration by permission of the director of Interdisciplinary Studies. E
492 Off-Campus Study (1-15) Registration by permission of the director of Interdisciplinary Studies. E
493 Independent Study (1-15) Registration by permission of the director of Interdisciplinary Studies. E

INTERIOR DESIGN (582)
140 Introduction to Interior Design (2) Orientation to the profession; relationship to allied fields; contemporary developments; philosophical approaches. Open only to majors in interior design and architecture. E
150 Visual Studies (4) Classification and properties of two and three-dimensional organizations; design principles; visual and spatial elements within simple and complex visual systems; role of movement in experiencing scale and volume in space. One hour lecture and three hour studio. Open only to majors in interior design and architecture. Coreq: 140. E
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-casual properties of behavior-environment systems. (Same as Urban Studies 200). Coreq: 140. E
240 Fundamentals of Interior Design II (4) Principles of spatial organization; creative problem-solving and communication techniques for micro-interior environments; perspective drawing, model building, experimentation with black and white media. One hour lecture and three hour studio. Prereq: or Coreq: 140, 150, 250, Arch 172, Math 202. E
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: or Coreq: 240, Art 205. E
260 Materials and Resources for Interiors (2) The development and application of materials and resources used in interior architectural space. Prereq: RCS 120. F
280 Micro-Computers for Interior Design (3) Introduction to computer-aided design; data-base, spreadsheets, drawing/editing software, cost estimating, construction drawings related to space planning. One hour lecture and two hour studio. Prereq: Coreq: 350, 400, or consent of instructor. F
340 Intermediate Interior Design I (5) Studying problems of intermediate complexity; integrates and extends previous experiences utilizing systematic design methodologies. Two hour lecture and three hour studio. Prereq: Coreq: 400, or consent of instructor. F
350 Intermediate Interior Design II (5) Comprehensive study problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Two hour lecture and three hour studio. Prereq: or Coreq: 350, Physics 122 or consent of instructor. F
440 Advanced Interior Design I (5) Non-residential studio problems of advanced complexity; integrates and extends previous experiences utilizing systematic design methodologies. Two hour lecture and three hour studio. Prereq: or Coreq: 400, or consent of instructor. F
460 Lighting for Interior Designers (3) Application of elements and principles of lighting and wiring to design of visual environment. Prereq: or Coreq: 350, Physics 122 or consent of instructor. F
470 History of the Contemporary Interior Architecture (2) Interior architecture, furniture, design philosophies, twentieth century; nineteenth century developments, Europe and America. Design as influenced by movements in the fine arts, technological advances, and cultural context. Prereq: ID 370 or consent of instructor. F
475 History of American Architecture I (3) Historical developments in interior architecture and decorative arts within cultural context, colonial era through nineteenth century. Prereq: 370 or consent of instructor. F
480 Furniture Design (4) Human factors data applied to design of body support, task support, storage and systems, construction drawings and scale models; advanced graphic design; materials and manufacturing processes. One hour lecture and two hour studio. Coreq: fourth year standing in interior design program or consent of instructor. F
485 Interior Design Synthesis (5) Advanced integrative design/research experience. Prereq: 450 or consent of instructor. F
491 International Study (1-15) Individual or group studio and/or study abroad; academic research, field investigation, or studio experiences. May be substituted for 420 in student's professional curriculum. Determination of credit based on particular international experiences. Prereq: Consent of instructor. F
493 Directed Studies in Interior Design (1-4) Student or staff initiated research or study studio investigation of special topic. Elective credit may be repeated. Maximum 8 hours. Prereq: Consent of instructor. F

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 OR CONSENT OF INSTRUCTOR. F
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 (3) This course will examine the importance of foreign trade at the local, national, and international levels. An interdisciplinary team of faculty from the colleges of Business and Arts and Sciences 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 foreign language 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 analysis of Italian prose; review of grammatical principles and their application in translation from English to Italian, both written and oral; exercises in conversation. Prereq: 212 or equivalent.

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

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

403-404 Literature of the Rinascimento (3,3) From Poggio to Tasso, the Quattrocento 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 investigate the relationship between literature and cinema and to achieve a greater understanding of Italian culture since 1930. Films will be shown in English with Italian subtitles. 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 organizations and institutions. Not available to 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 designing newspapers and magazines. Emphasis on concise word use and lucid expression. Prereq: 212 or equivalent.

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

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

310 Feature Writing (3) Skills of journalism for writing feature articles for newspapers, magazines and company publications. Critiquing of students’ work in workshops and written classroom exercises. Prereq: typing proficiency.


370 Public Relations Cases (3) Oral and written analysis of current case studies in public relations. Ethics, professional organizations, advertising, community and social forms of public relations. Methods of communication and persuasion. Prereq: 270, F, Sp

390 Communications Graphics (3) Principles and practice in the visual aspect of communications. Emphasis on graphic design, typography, illustration and photography. Prereq: 203 or consent of instructor.

403 International Communications (3) Development and operations of world mass communications channels and agencies. Comparative analysis of media, media practices, flow of news throughout the world. Print and broadcast systems studies in terms of relevant social, political and economic 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 and magazines. Survey of major periodical publications with emphasis upon study and use of rhetorical 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. Coverage of all major media; attention to problems in areas such as business, science, agriculture, the humanities. Prereq: 203 or consent of instructor.

415 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

430 Public Affairs Reporting (3) Reporting and writing about courts, government and public agencies. Event and issue-oriented journalism of politics and public affairs. Prereq: 360, F, Sp

433 Advanced Editing (3) Primary focus is on sensitivity to language and editing skills. Includes headline writing, layout, and production. Prereq: 205.

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 cultivating 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, technical, and medical journals, conferences, technical meetings, and interviews. Prereq: Consent of instructor. F, Sp

451 Environmental Reporting (3) Writing for news media on such topics as acid rain, methane, 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 or majors; consent of instructor.

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

456 Science Writing as Literature (3) Survey of important scientific writing for the general public across the spectrum of science, engineering, and medicine. Works by authors such as Isaac Asimov, Stephen Jay Gould, and Richard Selzer will be analyzed for literary qualities in a quest to understand why some science writing succeeds. Prereq: Consent of instructor.

460 Radio Communications History (3) Development of the press and the role of mass communications in American history. Newspapers, radio, television and magazines. F

470 Public Relations Campaigns (3) Research, planning, and preparation of 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. Students prepare content of publications, copy, layout, photography, printing, advertising and business. Planning course outlines and summaries for journalistic studies.

490 Advanced Photojournalism (3) Advanced principles and methods of black-and-white photography. Introduction to color photography. News and feature photographs, 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 6 credit hours. Prereq: Senior standing and consent of instructor. Satisfactory/No Credit grading only. E

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

LANGUAGE, COMMUNICATIONS, AND HUMANITIES EDUCATION (598)

141 Efficient Reading and Study Skills (2) Improvement of reading comprehension and rate, intensive vocabulary enrichment, study skills, and ability to evaluate content area subjects. Satisfactory/No Credit only. F, Sp

203 Field Study in Education (1-3) Problems of persons in active service in the field. Includes methods of teaching, curriculum materials, school-community relationships and school organizations. May be repeated. Maximum 8 hours. E

453 Adolescent Literature (3) Literature written or appropriate for adolescents.

455 Teaching of Foreign Language, Grades 7-12 (2) Instructional methods, lesson planning, peer-teaching, materials for teaching Foreign Language and culture; evaluation techniques. Required for certification in modern foreign languages and Latin. Prereq: Completion or near completion of foreign language hours for certification and admission to Teacher Education Program. Sp

456 Teaching Speech and Drama, Grades 7-12 (3) Purposes, techniques, materials and evaluation for teaching Speech and Drama in secondary schools. Required for certification in Speech. Admission to Teacher Education Program. F

459 Teaching English in the Secondary School (3) Techniques of teaching composition, language, and literature. Prereq: Admission to Teacher Education Program. F

460 Teaching Reading and Literature in the Secondary School (3) Teaching basic reading skills and literature. Sp

461 Developing Reading Skills in Content Fields (3) Techniques of reading and study skills in content areas of the school program. Extensive assessment of textbook. Emphasis on middle school and high school. F, Sp, Su

481 Internship I: Grades 7-12 (3-6) Methods and theories of teaching, internship is completed in the local public school. 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

482 Internship II: Grades 7-12 (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. Satisfactory/No Credit only. Sp

493 Independent Study (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

494 Supervised Readings (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E
LATIN (257)

111-112 Beginning Latin (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. Since 150 is a review of elementary Latin, students who receive credit in this course may not also receive credit for any other 100 level Latin course and therefore also forfeit the six hours of elementary language credit awarded through placement examination.

231 Intermediate Latin: Grammar Review and Readings (3) Prereq: 112 or 152 or placement through the Latin placement examination.

252 Intermediate Latin: Vergili'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, writing of Cicero's model. Prereq: 351-352 or consent of instructor.

431-432 Selected Readings from Latin Literature (3) For advanced students in Latin. Oratory, historical writings and poetry of ancient Rome; in the original Latin. May be repeated for credit. Maximum 12 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) (Same as History 251-252.)

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 and African-American Studies 319.)

326 Aspects of Spanish American Literature (3) (Same as Spanish 326.)

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) (Same as Spanish 401.)

402 Latin American Studies Seminar (3) (Same as Spanish 402.)

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.)

460 History of Brazil (3) (Same as History 460.)

461 Cuban Revolution in Historical Perspective (3) (Same as History 461.)

462 History of Mexico (3) (Same as History 462.)

463 Modern Latin American History in Film (3) (Same as History 463.)

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)

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 426, Russian 426, and Spanish 426.)

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

30 The Development of Synchronic Linguistics as a Science (3) Development of the first synchronic paradigm of linguistics. Impact of social sciences on the American School of Americanist methodology. Prereq: 6 hours of courses required for Linguistics concentration or consent of instructor.

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. Role of materials management and physical distribution; and activities such as customer service, order processing and information flow, transportation, warehousing, purchasing, inventory, and systems design and organization.

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

400 Special Topic in Logistics and Transportation (3-6) 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 purchasing, transportation, storage and control, and supply strategies. Materials management tools and organizational structures for various industries. Prereq: 301-302.

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


450 Computer Information Systems Analysis and Design (3) Design of operational/logical information systems for organizations based on evolving microcomputer hardware and network technologies. Data base design theory, procedural and standards/prototyping languages and 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. Major writing requirement. Prereq: 301, 302 and senior standing.

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

497 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)

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

301 Principles of General and Operations Management (3) Basic functions of general management and the concepts and techniques used in operations management. Includes lectures and discussion/problem solving sessions. Prereq: Statistics 201.

311 Labor Relations and Collective Bargaining (3) American labor history, structure and philosophy of contemporary unions, nature of collective bargaining, and dispute settlement. (Same as Economics 345.)

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 func-
tional areas in the formulation and implementation of strategy which will enable the organization to reach objectives. Major writing requirement. Prereq: Completion of business core courses and senior standing. Must be admitted to a business program.


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) Identifying, developing, implementing and evaluating personnel programs. Prereq: 301, senior standing.

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

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

471 International Management (3) Factors significant to the manager in international business activities. Prereq: 301.

493 Independent Study (1-6) Directed research on subject of mutual interest to student and staff member. May be repeated. Maximum six hours credit. Prereq: Accounting 201-202, Economics 201, Statistics 201, and Marketing 301 and consent of instructor.

497 Honors I (3) Topics may include non-business marketing applications, macroeconomic issues, market research, 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, coordinate systems and inequalities, systems of equations, introduction to exponential and logarithmic functions. The course is designed to prepare students for enrollment in Mathematics 110, 115, 119, 130, 201, and 202. Course does not count toward the total number of hours required for graduation, nor count toward any mathematics requirement. A, B, C, NC grading.

110 Algebraic Reasoning (3) A course in the applications of elementary mathematics to life in the modern world. Includes applications in financial mathematics, consumer mathematics, and other areas. Students preparing to take part 121 should take part 119 instead of 110. 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 scores are not sufficient for this course. Students who receive a grade of C or better in any course numbered 121 or higher may not subsequently receive credit for Math 119.

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 of 119 or 130.

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

130 Precalculus (4) Review of algebraic, logarithmic, exponential, and trigonometric functions for students who satisfy the course prerequisites for 141 or 151, but whose placement test scores indicate additional preparation is necessary. Students who have earned a grade of C or better in Math 130 may 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 the calculus courses, featuring computer demonstrations and exercises. Calculus background for 143 must also be registered for 141 or 147; students registering for 144 must also be registered for 142 or 148.

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

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 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 a grade of C or better in Math 251 may not subsequently receive credit for 200. Prereq: 142 or 148.

201 Structure of the Number System (3) Problem solving, sets and relations, numbers, decimals, fractions, percents, proportions, 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, 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.

231 Differential Equations (1) First course, emphasizing solution techniques. Includes first-order equations and applications, theory of linear equations, eigenvalues and eigenvectors. For students in the College of Engineering, the College of Business, and the College of Business Administration. Prereq: 142 or 148.

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.

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.

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, central limit theorem. Elements of statistical inference, estimation, and hypothesis testing. Prereq: 221, 224.

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. Includes integers and polynomial rings. Prereq: 251 or 257, and 221.

457-468 Honors: Abstract Algebra I, II (3,3) Honors version of 457-466. Prereq: 361 or consent of instructor.

460 Geometry (3) Axiomatic and historical development of neutral, Euclidean, and hyperbolic geometries, stressing proof technique and critical reasoning. Models of Non-Euclidean geometries. Prereq: 142 or 148, and 251, or consent of instructor.

461 Topology (3) Includes topology of line and plane, separation properties, compactness, connectedness, continuous functions, homeomorphisms, continuity, and topological invariants. Prereq: 341 or consent of instructor. (Same as Computer Science 471.)

472 Numerical Algebra (3) Direct and iterative methods for systems of linear equations. Solution of a simple nonlinear equation and nonlinear systems. Orthogonal decomposition, least squares and the algebraic eigenvalue problem. Prereq: 371 or consent of instructor. Recommended: 453. (Same as Computer Science 472.)

471 Numerical Analysis (3) Introduction to computational, instabilities, and rounding. Interpolation and approximation by polynomials and piecewise polynomials. Quadratic forms, eigenvalues, and orthogonal value problems of ordinary differential equations, including stiff systems. Prereq: 371 or consent of instructor. (Same as Computer Science 471.)

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 quality control 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 experience, approached from interdisciplinary points of view and including philosophy, religion, art and architecture, language and literature, social and political history. Writing-emphasis course.

260 Medieval Culture: Readings from the Early Middle Ages, 500-1000 (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, historical, lyric, epic, biographical. Includes Augustine's Confessions, Boethius' Consolation, 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) Critical analysis and interpretation of selected works from the later medieval period. Focuses on romantic, allegorical and mystical 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 1350 (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)

392 The Art of Italy, 1250-1450 (3) (Same as Art 392)

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

402 Petrarch and Boccaccio (3,3) (Same as Italian 402)

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

405 Medieval Literature (3) (Same as English 405)

406 Chaucer (3) (Same as English 406)

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)
MILITARY SCIENCE (688)


120 Basic Military Science II (3) Basic instruction in tactics, principles, and skills with emphasis on effective and ethical leadership. Includes field exercises. Letter grade only. Coreq: Military Science 110. F

420 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leading. Emphasis on military leadership. Letter grade only. Coreq: Military Science 310, 320, and 400. 410 or consent of instructor. F

430 U.S. Military History, 1754 to the Present (3) (Same as History 451.)

MUSIC EDUCATION (707)

200 Choral Laboratory (1) A laboratory course designed to afford conducting opportunities for student conductors and to acquaint students with a variety of choral literature. May be repeated. Credit by examination. Approval of the Director of Choral Activities and the Department of Music. Letter grade only. F

210 Class Woodwind Methods (2) Structure, use, techniques of playing and repair of principal instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. Letter grade only. F

220 Class String Methods (2) Structure, use, techniques of playing, care and repair of principal instruments in school instrumental organizations. Emphasis on techniques necessary for basic understanding and effective teaching of the instruments. Practical use of current instructional materials. Letter grade only. F

250 Functional Piano for Teachers (1) Piano skills for the general music teacher who does not have a keyboard instrument as the applied principal. Letter grade only. Coreq: Consent of instructor and admission to the Teacher Education Program. Letter grade only. F

260 Eurhythmics (1) Principles and practice of rhythm and movement. Letter grade only. Coreq: Music 250. F

300 Music for Elementary Teachers (2) Singing, rhythm activities, instrumental activities, music reading, and creative activities appropriate for the elementary grades. For elementary education majors only. F


420 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and leading. Emphasis on military leadership. Letter grade only. Coreq: Military Science 310, 320, and 400. 410 or consent of instructor. Letter grade only. F

430 U.S. Military History, 1754 to the Present (3) (Same as History 451.)
400 Student Teaching in Music (12) Full time teaching practicum in an approved public school. Prereq: admission to the teacher education program and completion of all Music Education courses required for the Bachelor of Music Education (B.Mus.Ed. or B.A. with a major in Music Education, Coreq: Music Education 401.

401 Senior Seminar (0) Issues related to the music teaching profession as experienced in Student Teaching. Coreq: Music Education 400.

420 Music Methods for the Junior High School and Middle School (3) Methods and materials for teaching vocal, instrumental, and general music at the junior high school or middle school level. Prereq: Admission to Teacher Education Program and consent of instructor. Letter grade only. Sp.

430 Music Methods for High School (3) Methods and materials for vocal and instrumental music at the high school level, including charting for the marching band. Prereq: Admission to Teacher Education Program and consent of instructor. Letter grade only. F.

440 Marching Band Techniques (2) Functions, organization, and direction of a school marching band. Letter grade only.

489 Internship II: Grades K-12 (0-4) 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 Special Topics in Music Education (1-3) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only. E.

493 Independent Study in Music Education (1-5) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only. E.

MUSIC ENSEMBLE (708)

301-501 Woodwind Choir (1,1) May be repeated. Maximum 12 hours.

303-503 Small Jazz Ensemble (1,1) May be repeated. Maximum 12 hours.

304-504 Jazz Ensemble (1,1) May be repeated. Maximum 12 hours.

305-505 Studio Orchestra (1,1) May be repeated. Maximum 12 hours.

306-506 Trombone Choir (1,1) May be repeated.

309-509 Tuba Ensemble (1,1) May be repeated.

310-510 Percussion Ensemble (1,1) May be repeated.

311-511 Marimba Choir (1,1) May be repeated.

312-512 Baroque Ensemble (1,1) May be repeated.

314-514 Brass Choir (1,1) May be repeated.

315-515 Chamber Music Ensemble (1,1) May be repeated. Maximum 12 hours.

316-516 Steel Band (1,1) May be repeated.

320-520 UT Singers (1,1) May be repeated.

330-530 Chamber Singers (1,1) May be repeated.

332-532 Collegium (1,1) May be repeated.

334-534 Saxophone Choir (1,1) May be repeated.

340-540 Opera Theatre (1,1) May be repeated.

350-550 Concert Band (1,1) May be repeated.

352-552 Campus Band (1,1) May be repeated.

354-554 Varsity Band (1,1) May be repeated.

356-556 Laboratory Band (1,1) May be repeated.

359-559 Marching Band (1,1) May be repeated.

370-570 Symphony Orchestra (1,1) May be repeated.

380-580 Concert Choir (1,1) May be repeated.

382-582 University Chorus (1,1) May be repeated.

383-583 Men's Chorale (1,1) May be repeated.

389-589 Women's Chorale (1,1) May be repeated.

399-599 Accompanying (1,1) May be repeated.

MUSIC GENERAL (698)

100 Fundamentals of Music (3) Theory and practice of basic elements of music. Writing-emphasis course.

110 Music Appreciation (3) Developing listening skills and understanding of music from the ancient world through the 20th century. For non-music majors. Writing-emphasis course.

120 History of Rock (3) Study and appreciation of rock music, its origins in black and rock and roll, its development and cultural dimensions to the present. Writing-emphasis course.

130 Music Performance (3) Individualized course of study combining participation in a university musical ensemble with collateral study of an instrument or voice. One hour of applied study (Music Performance 103-440) and ensemble rehearsals as scheduled (Music Ensemble 301-389). May be repeated once for credit. Requires payment of Applied Music fee. For non-majors only. Prereq: Performing ability on an instrument or voice.

140 Fundamentals of Performance (1-2) Private instrumental or vocal study, one or two half-lessons per week. (1 hour credit-elective, secondary or minor, two hours credit-major.) This course is designed to prepare students for enrollment in Music Performance 103-185. Cannot be used to satisfy applied music requirements at the principal level in the B.M. or the B.A. degree in Music. May be taken for a maximum of 4 credit hours per instrument. Academic years only. Prereq: audition. A. B. C. NC. Requires payment of Applied Music fee. F.

200 Solo Class (0)

301 Junior Recital (0)

401 Senior Recital (0)

411 Lecture Recital (0)

421 Special Topics in Performance (1-3) Prereq: Consent of department head. May be repeated. Maximum 4 hours.

431 Special Topics in Pedagogy (1-3) Prereq: Consent of department head. May be repeated. Maximum 4 hours.

MUSIC HISTORY (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 to 1750. Prereq: 200. Must be taken in sequence.

310 Introduction to African-American Music (3) Historical, analytical, and pedagogical procedures to individual instruction and performance; demonstration lessons by applied woodwind faculty and class members. Prereq: Consent of instructor.

340-350 String Literature and Pedagogy I, II (3,3) Survey of string techniques, issues, research and pedagogies. Topical presentations by the applied string faculty and guests. Development of the violon family of instruments and bows; survey of string literature, performances, 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 musical analyses in conducting. Prereq: Music Education 320 or equivalent.

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) Survey of string techniques, issues, research and pedagogies. Topical presentations by the applied string faculty and guests. Development of the violon family of instruments and bows; survey of string literature, performances, 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 relationship of different styles to the conductor's musical analyses 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 Analytical Jazz Styles (2) Individual improvisatory styles through analysis of their transcribed solos. Training and function of the ear in music transcription. 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, formulae 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 blues idioms. Prereq: Consent of instructor.

160 Introduction to Styles in Jazz Drumming (2) Examination of major conceptual approaches performed by major contemporary performers who have contributed significantly to the creation of principal jazz drumming styles. Prereq: 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 tonal styles. Prereq: 110.

310 Jazz Composition and Arranging (2) Prereq: Consent of instructor.
140 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 jazz, designing and administering jazz programs, and rehearsal techniques for 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.


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: 250 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: collateral teaching experience. Must be taken in sequence. Prereq: Consent of instructor.

460-470 The Organ and Its Literature I, II (2,3) Development of the organ and organ literature from the Middle Ages to the present; problems of style and interpretation; pedagogical literature and methods; organ design. Prereq or Coreq: Music History 220 and consent of instructor.

480 Teaching Class Piano (3) Historical survey and evaluation of teaching methods and methodology for college and/or adult beginning piano classes, with collateral teaching experience. Prereq: Consent of instructor.

485 Suzuki Piano Method I (2) Study of the psychology, procedures, and literature of the Suzuki piano method. Prereq: Consent of instructor.

490-491 Internship (2,2) Opportunity for pedagogy students to gain experience in teaching pre-college students under the supervision of experienced instructors.

495 Suzuki Piano Method II (2) Study of the psychology, procedures, and literature of the Suzuki Piano Method. Prereq: Consent of instructor.

MUSIC PERFORMANCE (713)

Admission by audition only. Prerequisite: Mus Gen 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 Tuba (1-4) May be repeated.

150-250-350-450-550 Percussion (1-4) May be repeated.

MUSIC THEORY (714)

110-120 Theory I, II (3,3) Materials of music including basic elements through triads and seventh chords and modulation. Essentials of music 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.

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) Short instrumental and mechanical compositions using conventional and new forms of notation. Prereq: 220 or consent of instructor. May be repeated for credit. Maximum 4 hours.

290 Recording Techniques (3) Theory and applications of tape recording, sound production and electronic systems. Topics include sound recordings, 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 of music from smallest structural units to large complex forms. Prereq: 220.

320 Instrumentation (2) Basic instrumentation for scoring for voice, brass, woodwind and string choir and percussion. To be taken by music and music education majors.

340 Introduction to Computer Music Transcription (3) Exercise in notation, playback and publishing incorporating elements of music, voice, instrument programming and analysis. Prereq: Consent of instructor.

390 Sound Synthesis Techniques (3) Theory and practice in synthesis of sound and electronic systems. Prereq: 220 or consent of instructor. Must be taken in sequence. Prereq: Consent of instructor.

emathematics and statistics topics include basic arithmetic operations, mathematical manipulations, and applied technical mathematics for use in radio active decay equa-
tions, dose calculations and concentration, volume and shielded determinations. Graphing, counting statistics, and other physical and chemical applications of mathe-
matics to nuclear medicine are included. May not be substituted for Physics 471 or 472.

411 Nuclear Instrumentation (3) Course concerns non-ionic radiation and maintenance. Qualifica-
tions include basic radiation detectors, their applications, functions, and limitations with overview of basic electronic, gas-filled detectors, stat-
istics and counting, solid and liquid scintillation detection systems, semi-conductors and instrument stabili-
zation, and quality control. Imaging topics are instrumen-
tation of imaging devices, including basic function, applica-
tion of principles and quality control. Quality assurance,
controls and maintenance requirements of nuclear instrumentation, radiation safety practices, and statistical analysis of quality control data.

412 Radiopharmacy (2) Emphasis on basic chemistry and radiopharmacology in nuclear radiopharmacy. Topics include radiopharmaceutical preparation and quality assurance, radionuclide production, and basic photographic film chemistry. Kinetics, biodistribution, and mechanisms of localization are also included. Plus guidelines and regulations governing radiopharmacy man-
gement and operation.

415 Physics for Nuclear Medicine II (3) Continuation of 410 with focus on radiology and radiation safety. Radiation Protection. Radiation dosimetry of radiation and matter, cellular and systemic responses to radiation, early and late somatic and genetic effects, biological effects of low level radiation, radiological image processing and dose calculations, and benefit versus risk factor. Radiation safety topics include exposure terminology, dose limit recommendations, ALARA, medical physics, federal and state regulations, radiation monitoring equipment, and methods and techniques for safe practice of nuclear medicine.

420-430-440 Clinical Nuclear Medicine I, II, III (4,4,4) Theories and applications of nuclear medicine methods in medical biophysics. Patient centered on the central nervous system, endo-
crine system, respiratory system and digestive system; II—hemopoietic and hematopoietic system, genitourinary system, musculoskeletal system, organ and tumor/imma-
natory imaging, cardiovascular imaging, non-imaging nuclear medicine; III—single photon emission tomography, positron emission tomography, clinical quality assurance, pediatric nuclear medicine, radionu-
cide therapy, and management and administration of nuclear medicine programs.

425 Computer Applications in Nuclear Medicine II (3) Computer systems, applications, and components in quantitation in nuclear medicine. Topics include acquisi-
tion modes and limitations, image processing methods, and integration with equipment and software. This course is offered with some attention to machine and language architecture and number-
ing systems.

450-460-470 Clinical Practicum I, II, III (4,4,4) Clinical instruction in nuclear medicine principles and methods. This course is offered as a practicum at UTMCK and other clinical sites. Clinical in-
struction activities in imaging, instrumentation, radio-
therapy, dose administration, radiation safety and pro-
tection, non-imaging procedures, patient care and prep-
arration, computer applications, radionuclide therapy, and basic administrative and management procedures.

475 Nuclear Medicine Registry Review (2) Preparation for Nuclear Registry Examination. Emphasis on 
phim emphasis on interpretation and reporting in technical critique sessions.

NURSING (172)

All upper division nursing courses, except 301 and 314, are applicable to the major (see PROGRESSION POLICIES AND
PROCEDURES) in the chapter material.

202 Health and Culture (3) An exploration of the beliefs and practices of various cultural groups within the United States, with particular emphasis on health care delivery systems. Implications for the helping professions are examined. This course has no prerequisites and is open to all upper division 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 111-112 and 6 semester hours of anatomy and physics.

302 Introduction to Professional Nursing (6) History, philosophy, and scope of nursing practice with emphasis on interprofessional practice. This course includes the study of professional role, collaboration, communication, and professional behavior. Emphasis is on the development of the role of the professional nurse and its relationship to the health care system. Students must be eligible for NURSING 401. Prereq.: Consent of instructor.

304 Nursing Assessment and Wellness Promotion (3) Developmental processes, the human body; positive and negative reactions to drugs and interaction effects between and among drugs. Prereq.: Consent of instructor.

306 Health Deviation Concepts I (3) Content related to the nursing process as applied to patients with physi-
ologic and mental health problems, including those with acute illnesses involving aberration of fluids and electrolytes, and dysfunction in selected physiologic systems, e.g., renal, cardiovascular, respiratory systems. Prereq.: Coreq.: 301.

311 Introduction to Nursing Research (3) Language of research, types of research designs, methodology, approaches. Analysis of findings. Evaluation of existing and ongoing nursing research studies. Prereq.: 302 or 305 or consent of instructor.

314 Wellness and Lifestyle (3) Models of wellness and health within the framework of modern psychology, eastern philosophy, and recent discoveries about the interaction of mind and body. Biopsychosocial interac-
tions of lifestyle and genetic risk factors for cardiovascular and malignant diseases, wellness potential, and potential longevity. Process of lifestyle changes will be facilitated by faculty. Open to undergraduate students in all colleges.

315 Clinical Nursing Practicum (1) Application of nursing theories, principles, and concepts to care of hospitalized clients. Prereq.: 301, 304, 305, 306. Prereq. or Coreq.: 316. For RN's only. Satisfactory/No Credit only.

316 Health Deviation Concepts II (6) Continuation of 302 with emphasis on the nursing process as applied to pa-
tients with chronic or persistent health problems. Explores implications and treatments for cancer, infections un-
derlying or associated with more complex and critical illnesses such as circulatory failure, cardiac dysrhythmias, neurologic damage. Prereq.: 301, 306. Sp.

320 Advanced Placement Credit: Care of the Adult Client (3) For registered nurses only. Satisfactory/No Credit only. Sp.

321 Advanced Placement Credit: Care of the Child-Bearing Client (3) For registered nurses only. Satisfactory/No Credit only. Sp.

322 Advanced Placement Credit: Care of the Child (3) For registered nurses only. Satisfactory/No Credit only. Sp.

323 Advanced Placement Credit: Care of Child with Mental Disorder (3) For registered nurses only. Satisfactory/No Credit only. Sp.

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 knowledge to behavioral concepts to the promp-
tion of comprehensive care nursing for hospitalized clients. 2 lectures, 4 lab. Prereq.: 301, 302, 304, 306; or Coreq.: 306. Sp.

325 Nursing of Children and Adults Theory (2) Theoretical content of 324. For RN's only. Prereq.: 301, 304, 305, 306. Sp.

401 Family Health Nursing (6) Nursing needs of fami-
lies in health and crisis situations. Development of positive and responsible care to families in the childbearing and childrearing phases of family development. Application of effective family interaction techniques and crisis intervention to provision of nursing care to families experiencing normal pregnancy and child birth and to those experiencing such health problems or complica-
tions 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. Interventions in health promotion, disease prevention, and control of commu-
nicable diseases. Epidemiological approach is used to identify aggregates within the population that are at risk for illness, disability, or premature death. Political, social, economic, environmental, and ethical issues related to community health nursing. 3lec., 1 sem., 2 lab. Prereq.: All 300 level clinical nursing courses.

405 Professional Nursing Seminar (2) Critical exami-
nation of legislative, legal, ethical, social, and educa-
tional issues and trends that have immediate or long-
range implications for professional practice. 3lec., 1 lab. Prereq.: All 300 level clinical nursing courses.

409 Nursing Management and Strategies (6) Man-
gement and leadership principles and their application to client care. Course topics include quality assurance programs, development of policies and procedures, models, nursing practice standards, and evaluation of nursing practice opportunities are provided for develop-
ment of quality improvement strategies. Prereq.: coreq.: 316, 325. For RN's only. Satisfactory/No Credit only. Sp.

411 Psychosocial Long-Term Nursing (6) Nursing needs of clients whose health problems are of a devel-
mental, behavioral, or long-term nature. Equal empha-
sis on prevention, wellness promotion, and rehabilita-
tion. Nursing laboratory/clinical experiences with a psychiatric and chronic illness emphasis in a variety of acute, extended care, and rehabilitation facilities. 3 lectures, 3 lab. Prereq.: All 300 level clinical nursing courses. F, Sp.

412 Psychosocial Long-Term Nursing Theory (3) Theoretical component of 411. For RN's only. Prereq.: 316, 325. Sp, F.

414 Community Mental Health Nursing (6) Nursing needs of clients and groups with psychosocial and/or learning health problems. Opportunities are provided for students who have taken 306 with emphasis on the nursing process to clients and groups in a variety of acute, extended care, and rehabilitation facilities. 3 lectures, 3 lab. Prereq.: All 300 level nursing courses. For non-nurse MSN students only. F.

415 Family/Community Health Nursing (6) Applica-
tion of nursing principles and concepts to care of those experiencing health problems or complications in the childbearing/rearing phases of development. Clien-
tal experiences are provided in a variety of hospital and community settings. 3 lectures, 3 lab. Prereq.: All 300 level nursing courses. For non-nurse MSN students only. F.

450 Physiological Principles (3) Concepts and prin-
cipals of norma physiologic function and the major organ systems. Emphasis on understanding normal function and for understanding pathophysiologic mecha-
nisms. Prereq.: RN status or consent of instructor. No credit for students who have taken 306, 316. F, Sp.

453 Oncology Nursing (3) In-depth exploration of cancer problem; relates cellular kinetics to theories of carcinogenesis and metastasis; treatment modalities and nursing interventions; psychological dynamics; potential longev-
y. Intensive clinical experience required. Prereq.: 411 or 412 or consent of instructor. Sp.

470 Special Topics (1-3) 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 theories of food related to functional and nutritional health through life cycle; international nutrition concerns and current 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.

300 Fundamentals of Nutrition (3) Nutrition in normal and altered health states through life cycle; nutritional analysis of diets. Prereq: Chemistry 110 or equivalent. Prereq or Concurrent Zoology 230. A student who has received credit for NTR 100 may not receive credit for this course. Sp.

302 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: Zoology 230 or consent of instructor.

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 and food components; Sensory evaluation concepts and techniques. Effects of processing on food. Prereq: 100, Chemistry 350. 1 hour and 2 labs.


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; examination, third party payments, dietetic practice; marketing dietetics; dietetic profession; public policy in dietetic practice. Prereq: Senior standing.

411 Nutrition in Disease (4) Metabolic processes of diseased organs and tissues; 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 nutrition programming; relationship of community food and nutrition problems to programs and services for families and communities with particular attention to disease prevention and intervention. Prereq: 310, Zoology 230. 1 hour and 2 labs.

413 Experimental Food Science (3) Individual and group laboratory experimentation in food science: microcomputer applications. Prereq: 312, PSSC 471. 1 hour and 3 labs.

414 Nutrition Drug Interactions (2) Nutrient effects on efficacy and toxicity of drugs and drug effects on absorption, metabolism of nutrients. Prereq: 300 or equivalent.


420 Food and Nutritional Analysis (4) Principles, procedures, and instrumentation for analysis of food and body fluids: Micro 310, 3 hours and 1 lab.

436 Practicum in Landscape Construction (3) Practical experience in landscape construction projects. Directed lab and field instruction in planting operations and basic landscape construction including interpreting and implementing landscape design drawings and specifications. Prereq: 350, Two three hour labs.

450 Special Topics: Nutrition (1-3) Development, issues and problems in Nutrition; topics variable. Prereq: Junior or Senior standing and 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. Letter grade only.

ORNAMENTAL HORTICULTURE AND LANDSCAPE DESIGN (740)

110 Environmental Horticulture (3) Basic plant sciences and their relationships to ornamental horticulture. Introduction to awareness and appreciation of ornamental plants, design and management of home landscapes, selection and use of herbaceous plants and turfgrasses. 3 hours. F.

120 Basic Landscape Plants (2) Identification, classification, adaptation, culture and landscape design uses of basic ornamental trees, shrubs, and vines. Prereq: 8 hours Botany or consent of instructor. 2 labs. E

230 Interior Plants (2) Identification, culture, design application, and landscaping uses of plants used in the interior space; introduction to interior space management. 2 labs. Sp.

280 Fundamentals of Landscape Design (3) History of landscape design as it relates to contemporary applications. Awareness and sensitivity to the landscape. Basic graphic skills and design theory with an emphasis on residential landscape planning, introduction to form, landscape materials, and planting design. Prereq: 110, 220 or consent of instructor. 1 hour and 2 labs. E

310 Greenhouse Operation and Management (2) Principles of greenhouse operation and management including greenhouse construction, control of environmental factors, regulation of plant growth and propagation, harvesting and business management. 2 hours and 1 lab. Sp.

320 Plant Materials (2) Identification, classification and design uses of ornamental plants including trees, shrubs, vines and herbaceous plants and generally exclude those covered in 220. Prereq: 220 or consent of instructor. 2 labs. Sp.

330 Plant Propagation (3) Physiology, methodology, and environmental requirements for propagation. Prereq: 110 and 8 hours Botany or consent of instructor. 2 hours and 1 lab. F.

340 Turfgrass Management (3) Practical turfgrass management; cultivar selection, identification, and establishment; basic applied fertility programs, mowing, irrigation practices, and thatch and compaction control; pest identification and basic controls. Prereq: 110, Plant and Soil Science 210 and 6 hours of Botany or consent of instructor: 2 hours and 1 lab. F.

350 Basic Landscape Construction (3) Basic materials and detailing. Introduction to the landscape construction and contracting industry; application of landscape materials, wood and concrete and masonry construction: site drainage, and landscape grading. Prereq: 280. 2 hours and 1 lab. F.

360 Practicum in Landscape Construction (3) Practical experience in landscape construction projects. Directed lab and field instruction in planting operations and basic landscape construction including interpreting and implementing landscape design drawings and specifications. Prereq: 350, Two three hour labs.

370 Grounds Maintenance (3) Identification and understanding of maintenance tasks: transplanting, soil amendments, growth control, irrigation, climate protection and pest control. Maintenance and use of equipment, management practices. Prereq: 110, 2 hours and 1 lab. F.

380 Supplemental Landscape Design Graphics (3) Design and development of graphic skills. Sketching, elevation, section, isometric projection, and perspectives. Lettering, plan graphics, color rendering, and other visual presentation media. Prereq: 280. Two two hour labs. F.


440 Advanced Turfgrass Management (4) Principles and scientific basis of turfgrass culture; adaptation, ecology, physiology, soil fertility, and grass nutrition; climatic influences on grass culture, physiology of clipping and management, design, construction, and management of golf courses; physiological influences of pest infestation and control measures. Prereq: 340 or consent of instructor. 3 hours and 1 lab. Sp.

450 Specialty Landscape Construction (2) Design, materials, and construction techniques for specialized components of the landscape industry: Irrigation systems, outdoor lighting, pools and other water features, and interlocking sidewalk construction. Prereq: 390, Two two hour labs. F.

451 Plant Tissue Culture (3) (Same as Botany 451.)

460 Professional Practices in Landscape Construction and Management (2) Professionalism, salesmanship, proposal, bidding, estimating, specifications, and contract management in landscape services industry. Computer technology applicable to landscape construction and contracting industry. Includes presentations by industry representatives. Prereq: 350 or consent of instructor. 2 hours. Sp.

480 Advanced Landscape Design (4) Comprehensive application of landscape design skills. Design applications involving site layout, landscape grading, applied landscape construction and planning design. Analysis, programming, design, drafting, estimating, and specification applicable to a variety of landscape projects. Prereq: 280, 350, and 380. 1 hour and 3 three hour labs.

489 Computer-Aided Landscape Design (3) Overview of Computer Aided Design (CAD) in relation to landscape design and construction. Emphasis on site planning and construction of related landscape plan view and 3-D drawings. Introduction to AutoCAD and LandCADD software. Prereq: 280. Agric 290 or consent of instructor.

490 Seminar (1) Current problems in ornamental horticulture and landscape design. Prereq: Senior standing.

492 Off-Campus Internship (1-3) Work experience in approved ornamental, turf or landscape industries. May be repeated. Maximum of 6 credits. E

493 Individual Problem Study (1-3) May be repeated. Maximum of 6 credits. E

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 nature of mind in a 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, Latin 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 110. Writing-emphasis course.

130 Critical Thinking (3) An introduction to practical reasoning in natural language, designed to enhance skills in recognizing, analyzing, evaluating and constructing arguments. Satisfies Arts and Sciences Basic Skills Requirement "Mathematics, Computer Science or Logic".

135 Formal Logic (3) Introduction to formal deductive reasoning and propositional and predicate logic. Satisfies Arts and Sciences 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 (ontology) as a theoretical context. Open only to students registered in the College of Business Administration.

290 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy.
Courses of Instruction

320 Ancient Western Philosophy (3) Writing-emphasis course.
322 Medieval Philosophy (3) Development of medieval thought from St. Augustine to William of Occam. Secondary and primary sources. (Same as Medieval Studies 322.) Writing-emphasis course.
324 Seventeenth- and Eighteenth-Century Philosophy (3) Writing-emphasis course.
326 Nineteenth- and Twentieth-Century Philosophy (3) Writing-emphasis course.
328 Contemporary Philosophy (3) Developments in Western philosophy since 1950 including Wittgenstein, Austin, Camus, and advocates of postmodernism. Writing-emphasis course.
342 Business Ethics (3) Ethical problems as they confront business as a social institution and individuals in business.
344 Professional Responsibility (3) Critical analysis of selected classic texts from philosophy, religious studies, and sociological studies concerning ethical and moral issues. Prerequisites: Philosophy 220 and 222.
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 ad bellum): legal and moral constraints in war (just in bello).
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.
355 Philosophy and Language (3) Nature of language; philosophical assumptions in linguistic works. Writing-emphasis course.
360 Introduction to Philosophy of Science (3) Stand-Bution on the modern science: scientific method; nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.
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.)
385 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 Sartre, and others. (Same as Religious Studies 395.)
400 Special Topics (3) When content varies, may be repeated. Maximum 8 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 figures or movements from antiquity through mid-twentieth century. Prereq: 8 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum: 9 hours.
425 American Philosophy (3) Colonial to early 20th Century. Prereq: 8 hours of philosophy or consent of instructor. Writing-emphasis course.
435 Intermediate Formal Logic (3) Metatheory of formal logic and philosophy of logic. Prereq: 135 or consent of instructor.
440 Contemporary Ethical Theory (3) Topics in metaethics 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.)
455 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: 360 and one year of natural or social science, or consent of instructor.
460 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.
479 Studies in Recent Continental Philosophy (3) Topics in metaphysics and epistemology in recent continental philosophy. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum 8 hours.
491 Foreign Study (1-15) When content varies, may be repeated. Maximum 8 hours.
492 Off-Campus Study (1-15) When content varies, may be repeated. Maximum 8 hours.
493 Independent Study (1-15) When content varies, may be repeated. Maximum 8 hours.

PHYSICAL EDUCATION ACTIVITY 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 WSI-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 Hula 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)
232 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)
250 Tumbling II (1)
251 Volleyball (1)
252 Weight Training (1)
253 Coed Gymnastics: Women's Apparatus (1)
254 Yoga and Relaxation (1)
255 Water Safety Instructor (1)
256 Lifeguarding (1)
276 Fitness for Life (2) (Same as HPSS 276)

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 logic, using a minimum of mathematical analysis. 121-122 Description of motion, forces, energy and momentum, properties of matter. 121-Electricity, magnetism, light, topics from modern physics including properties of atoms and nuclei. Must be taken in sequence. 3 hours lecture including demonstration lab. Prereq: Algebra.
131-132 Fundamentals of Physics: Mechanics and Heat (4,4) For engineers and Sciences majors in mathematics and the physical sciences. Basic Engineering 121-131 is equivalent course for engineers. Must be taken in sequence. Coreq: Mathematics 141-142, 3 hours lecture, 2 hours lab.
133 Fundamentals of Physics: Mechanics and Heat (4,4) For physics majors in mathematics and the physical sciences. Coreq: Mathematics 141, 4 hours lecture, 3 hours lab.
134 Fundamentals of Physics: Electricity, Magnetism, Waves, and Optics (5,5) Continuation of 133. Prereq: 133 or 131-132. Coreq: Mathematics 142, 4 hours lecture, 3 hours lab. This course will satisfy the prerequisite requirement for various upper-division physics courses that require Physics 231.
141-142 Nature of the Physical World (3,3) Concepts, vocabulary, and principles of physical sciences to establish a unified picture of the physical universe. 141-142 Principles of mechanics, electricity, and wave motion are developed and applied to fields such as solar systems, atomic and molecular behavior, radiation, atmospheric and oceanic phenomena, drifting continents, and science and society. Must be taken in sequence. 3 hours lecture including demonstration lab.
151-152 Elements of Physics for Computer Scientists (4,4) For students majoring in computer science. Principles of mechanics, heat and thermodynamics,
wave motion and sound, electricity and magnetism, light, relativity, and modern physics. Must be taken in sequence. Coreq: Mathematics 141-142. 3 hours lecture.

181 Physics of Music (3) Production, transmission, and reception of sound waves. Frequency, intensity, timbre. Basic acoustics of instruments and voice. 3 hours lecture and demonstration.

221-222 Elements of Physics (4.4) Basic physical principles and their applications in pre-medical, pre-professional, pre-pharmacy and pre-veterinary programs. Mechanics, heat, wave motion, and optics. 222-Electricity and magnetism, modern physics. Must be taken in sequence. 3 hours lecture, 3 hours lab. PreReq: Mathematics 130 or Calculus.

231 Fundamentals of Physics: Electricity and Magnetism (3) For engineers and Arts and Sciences majors in mathematics and the physical sciences. Required of all engineering students. Coreq: 131-132 or Basic Engineering 121-123. Coreq: Mathematics 231. 2 hours lecture, 3 hours lab./recitation.

232 Fundamentals of Physics: Wave Motion, Optics, and Modern Physics (4) Continuation of 231. Required of all engineering students. PreReq: 231, Coreq: Mathematics 241. 3 hours lecture, 3 hours lab./recitation.


311-312 Mechanics (3.3) 311 Kinematics and dynamics of a particle system, rotating reference systems, many body problems. 312 Many body systems, rigid bodies, Lagrangian and Hamiltonian mechanics, small and large oscillations, normal modes. Must be taken in sequence. PreReq: Or Coreq: 311, 251 or 138 and Mathematics 231. Coreq: 312. Mathematics 241.

321 Thermal Physics (3) Concepts of temperature and heat, laws of thermodynamics; elementary statistical mechanics, fundamentals of classical and quantum chemical problems. PreReq: 311, or 138, or 231 and consent of instructor.

341 Introduction to Nuclear Physics (3) An introduction to the nuclear physics with emphasis on applied aspects. Primarily for Nuclear Engineering majors. PreReq: 240 or 232.


361-362 Electronics Laboratory (3.3) Electronics devices and instrumentation techniques in the physics laboratory. 361-Basic analog and digital electronics, including electronic building blocks of relevance to data acquisition systems, operation amplifiers, digital-to-analog and analog-to-digital conversion, use of standard laboratory instruments, circuits, and computer programs. 362- Advanced instrumentation techniques applied to the study of electronic circuits as dynamic physical systems, feedback, controllability, signal processing, 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 philosophical and mathematical principles. Classical theories of gravitation, electromagnetism, and relativity; various forms of quantum mechanics, quantum electro-dynamics, 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 values-related perspective. Examination of important original papers, thought-provoking problems concerning different fields of classical physics, and a final oral and written expository examination. 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. Application to atomic, molecular, nuclear, and condensed matter physics. Must be taken in sequence. PreReq: 240 or equivalent. Mathematics 130 or Calculus.

421 Modern Optics (3) Transmission of light in uniform, isotropic media, reflection and transmission at interfaces; mathematics of wave motion and interference effects. Fundamentals of Fourier optics and holography. Coreq: 431; or either 232 or 138, and consent of instructor. 3 hours lecture, 3 hours lab.

431-432 Electricity and Magnetism (3.3) Electrodynamics, magnetostatics, equilibrium and wave fields, Maxwell's Equations, electromagnetic waves and radiation. Pre Req: 232 or 138.


461-462 Modern Physics Laboratory (3.3) 461-Introductions to fundamental and modern techniques in experimental physics, and to the theory and practice of measurement and data analysis procedures and equipment. 462-Advanced experiments and experimental techniques in modern physics; experimental team work. Through this laboratory experience the mechanical interpretation of the results and preparation of scientific reports. PreReq: 461, 6 hours lab per week.

471-472 Health Physics (3.3) Radioactivity, interaction with matter, radiation quantities and units, point, kernel and extended sources, x-rays and gamma rays, neutron activation, interaction of charged particles with matter; stopping power, range-energy relations, counting statistics, shielding, dosimetry, waste disposal, criticality prevention, radiation biology and ecology. PreReq: consent of instructor.

480 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 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 kinds of planning. General procedures in urban and regional planning. PreReq: 240 of Urban Studies 402.)


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 lab. 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.

313 Field and Forage Crops (3) Agronomic principles of crop production and management. Crop improvement, breeding, selection, fertilization, pest management, harvest and utilization of major field and forage crops. PreReq: 210 or 230. 2 hours lab and 1 lab. Sp

322 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 lab 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 weed management, herbicide selectivity and behavior, specific recommendations for crop and non-crop situations. PreReq: 210. 2 hours and 1 lab. F

392 Practicum (2-4) Working with agricultural, environmental or natural resources-related enterprises in area of career interest. Must have prerequisite approval from departmental advisor. Consent prerequisite for any course in Plant and Soil Science. PreReq: Consent of advisor and faculty committee.

401 Seminar (1) Current topics in the plant and soil sciences. Techniques of effective oral and written professional presentation: professional ethics; review of literature; assignments for written and oral presentations. Senior standing. Sp

411 Soil Microbiology (3) Soil microbial population and the soil ecosystem; microbial transformations of organic 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. Sp-A

412 Soil Genes, Classification and Mapping (3) Soil gen律is and formation: observing and describing morphological, agricultural and forest soils; chemical and physical properties, classification, mapping. Two Saturday day trips required. PreReq: 210 or consent of instructor. 2 hours lab. F-A

413 Soil Chemistry (3) Structure and chemical properties of soil materials, interactions with biological systems on the molecular fraction as it relates to 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 the movement 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 factors on physiological processes. PreReq: 230, Botany 110, 120. 2 hours and 1 lab. F-A

432 Bioclimatology (3) Solar energy budget: interactions between global, regional and local climates and biological systems. Qualifications of macro and microclimatic modifications and their effects on the generated weather station data collection and analyses; biological responses to climatic stresses; climate variation and 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, mode of action, degradation and environmental impact of pesticides used in agriculture. Prereq: 1 year of biological sciences and 1 semester Chemistry. 2 hours and 1 lab. Sp

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, harvest, storage facilities and techniques, quality evaluation and the biological and physiological mechanisms related to maturation, senescence and storage. Two Saturday field trips. 2 hours and 1 lab. Prereq: 1 year biological science and junior standing. F, A

453 Principles of Plant Breeding (3) Genetic principles and techniques of crop improvement. Prereq: Biology 220 or equivalent. 2 hours and 1 lab. Sp

471 Statistics for Biological Research (3) Notation, descriptive statistics, probability, distributions, confidence intervals, student’s t and 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 problems in plant and soil science. May be repeated. Maximum 5 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, Congress and the courts.

102 Introduction to Political Science (3) Introduction to political science and political systems.

107 Honors: United States Government and Politics (3) Analysis and exploration of the American political system for students with superior ability. Admission by permission of the department for students with a B average; entering freshmen accepted on basis of strong placement scores and high school record.

201 Introduction to Political Analysis (3) Nature, character, and functions 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) Poplar culture related to American politics and government focusing on the role of film, television, fiction, music, drama, and other mass communication devices. (Same as American Studies 312 and Cinema 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 politics and policy-making in the modern American city. (Same as Urban Studies 321.)

322 Minority Group Politics in the United States (3) Civil rights and welfare programs within the context 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 public 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 responsibility; the policy-making process, political environment.

350 Political Change in Developing Areas (3) Characteristics and problems of political changes with primary focus on developing areas. 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 in institutions of Western democratic systems. Writing-emphasis course.

365 Introduction to International Relations (3) Resource availability, international economics, international security and peace (imperialism, war, diplomacy, the balance of power, international law, and international organization.) Writing-emphasis course.

366 United States Foreign Policy Process (3) Processes whereby United States foreign policies are made and implemented, focusing on interaction within federal bureaucracy, the President, Congress, the press, and the 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) Required of honors majors; admission with consent of department.

410 Special Topics in Political Science (3) May be repeated with the 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 and groups in the United States. (Same as American Studies 421.)

428 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: amendment freedoms, equal protection, privacy and the rights 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 Financial Management (3) Fiscal planning, budget and expenditure control, government, 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. How to mobilize and manage technical and human resources in pursuit of public sector organization goals.

455 Latin American Government and Politics II (3) Selected topics on Latin American political dynamics, including consideration of leading theoretical explanations. (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 Eastern 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) Governments and movements in the Middle East, their characteristics, bases, and interrelationships.

470 International Law (3) Nature and development of international law and its role in the modern world. Particular attention to function of international law in the context of international conflict.

PSYCHOEDUCATIONAL STUDIES (PES) (825)

210 Psychoeducational Issues in Human Development (3) Understanding of the psychodynamic human development to teaching/learning pro-
110 General Psychology (3) Introduction to primary topics and theories of human behavior and experience.

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 human behavior. Prereq: 110 or equivalent, or consent of instructor. F, Sp.

220 Behavior and Experience: Humanistic Psychology (3) Behavioral and phenomenological analysis of individual behavior and individual development. Prereq: 110 or equivalent, or consent of instructor. E, Sp.

230 Child Psychology (3) The normal child from conception through infancy, childhood, and adolescence. Prereq: 110 or equivalent, or consent of instructor. E, Sp.

300 Learning and Thinking (3) Survey of theory and findings of research concerning both humans and nonhumans. Prereq: 110 or equivalent, or consent of instructor. E, Sp.

310 Motivation (3) Survey of theories and related research; discussion of applications. Prereq: 110 or equivalent, or consent of instructor. E, Sp.


350 Laboratory in Human Relations (3) Interpersonal relations and communication through structured experiences in small groups. Prereq: 110 or equivalent, or 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, or consent of instructor. E, Sp.

370 Ethology and Sociobiology (3) Basic concepts in the evolutionary approach to behavior, including application to psychology, the social sciences, and the arts. (Same as Zoology 370.) E.

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. Not open to students who have received credit for Psychology 385 or 395, Mathematics 115, or Statistics 201. E.

382 Contemporary Topics in Psychology (3) Current issues and problems, such as architectural psychology, impact of technology on behavior, and the psychology of leisure and stereotypes. Different topic each semester. Prereq: 110 or equivalent, 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.

395 Methods of Research in Psychology (3) Fundamentals in the design, conduct, and interpretation of research. Includes one course in experimental design and one course in data analysis. Prereq: 110 or equivalent, or consent of instructor. F, Sp.

396 Laboratory in Psychology (3) Introduction to techniques used in the laboratory to study topics in psychology, such as perception, memory, learning, and social behavior. Prereq: 110 or equivalent, or consent of instructor. E, Sp.

399 Supervised Research and Field Work (1-3) Field experience in community-based research and service settings. Prereq: 110 and 210 or 220 and 365 or Statistics 201 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 6 hours in 399, 490, 491, 492, and 493 combined may be applied toward the major. E.


409 Group Facilitation (3) Study of the group and its dynamics. Prereq: 110 or equivalent, or consent of instructor. E.

410 Sensory Processes and Perception (3) Physiological and psychological theories of perception. Emphasis on audition and vision. Prereq: 210, 385, E.


424 Psychology and the Law (3) Psychological aspects of legal systems. Prereq: 110 or equivalent, upper-division standing and consent of instructor.

430 Health Psychology (3) Psychological factors related to health and illness, comparing stress, personality, and health. Prereq: 110 or equivalent, or consent of instructor. E.

434 Psychology of Gender (3) Biological, psychological, and social factors in gender. Importance of gender roles and stereotypes, their effects on behavior and experience. Prereq: 110 or equivalent, or consent of instructor. E.

440 Organizational Psychology (3) Social-psychological analysis of organizations, emphasizing role-theory and systems theory. Prereq: 365. (Same as Management 440.) E.


450 Comparative Animal Behavior (3) (Same as Zoology 450.) F.

459 Comparative Animal Behavior Laboratory (3) Coreq: 459. (Same as Zoology 459.) F.

461 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Biological basis of emotions, learning, memory, and motivation. Prereq: 110 or equivalent, or consent of instructor. E.

462 Laboratory in Physiological Psychology (3) Laboratory studies of nervous system and psychological correlates of behavior. Coreq: 461. E.

470 Theories of Personality (3) Theories of human personality and their development. Prereq: 220 and 300, or consent of instructor. E.

480 Theories of Learning (3) Classical and current approaches to learning and conditioned responses. Prereq: 385. E.

482 Topics in Psychology (3) Intensive analysis of special topics, such as African-American Psychology or evaluation of programs in this community. Prereq: 210 or 220 and at least 12 hours in level 300 courses. Recommended: 385. E.

491 Foreign Study (1-5) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 490, 491, and 493 combined may be applied toward the major. E.

492 Off-Campus Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 490, 491, and 493 combined may be applied toward the major. F, Sp.

493 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 490, 491, and 493 combined may be applied toward the major. F, Sp.

496 Senior Seminar: Great Ideas in Psychology (3) Key ideas that have shaped conceptions of human kind. Exploration of historical development, scientific evolution, and larger social context. Prereq: Consent of instructor and senior standing. Writing-emphasis course. F, Sp.
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<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>300</td>
<td>Therapeutic Recreation and Special Populations</td>
<td>Principles, concepts, historical development of recreation, therapeutic recreation, and leisure services to special populations. Explanation of legislation, attitudes, management, professional organizations, advocacy, as related to leisure fulfillment. Prereq: Consent of instructor.</td>
</tr>
<tr>
<td>390</td>
<td>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/NC only. Prereq: 290 and permission of instructor. E</td>
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<tr>
<td>320</td>
<td>Therapeutic Recreation and Special Populations</td>
<td>Principles for operationalizing modern facility maintenance systems and management strategies for recreation/sports related facilities and services. Cost tracking, inventory systems, specialized maintenance techniques, safety guidelines, maintenance management systems and security. Prereq: 110, 310 or consent of instructor. F</td>
</tr>
<tr>
<td>415</td>
<td>Managing Leisure/Sport &amp; Related Facilities (3) Principles of planning, designing, outfitting and operating Leisure/Sport related facilities such as aquatic centers, tennis complexes, activity centers, etc. Prereq: 310 or consent of instructor. (Same as Sport Management 415). F</td>
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<tr>
<td>420</td>
<td>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</td>
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</tr>
<tr>
<td>430</td>
<td>Organization and Administration of Leisure Service (3) Principles of administration applied to provision of leisure services offered by public, private and/or commercial enterprises. Organizational structures, personnel management, evaluation, legal authority, introduction to budgeting, and procedures. Prereq: 310 or consent of instructor. F</td>
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<tr>
<td>440</td>
<td>Dimensions of Private and Commercial Recreation Businesses (3) Nature and function of recreation in private, commercial, and institutional settings. Development and management of goods and services offered in leisure market, factors influencing participation, management considerations, and research in commercial recreation and tourism. Prereq: 110, junior standing or consent of instructor. Sp</td>
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</tr>
<tr>
<td>450</td>
<td>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</td>
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<tr>
<td>490</td>
<td>Internship in Recreation (12) Full time practice in approved leisure or sport management agency. Emphasis on supervision, development, and administration. Prereq: 290, 390, senior standing. Satisfactory/No Credit only. E</td>
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</table>

### REHABILITATION AND DEAFNESS (855)

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<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>371</td>
<td>Audiology I (3) (Same as Audiology and Speech Pathology 371.)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>410</td>
<td>Practicum With Hearing Impaired (3) Supervised practice with hearing impaired students in pre-school, public school, and/or residential school setting.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>415</td>
<td>Language Development for the Hearing Impaired (3) Laboratory problems of hearing impaired contrasted with scope and sequence of normal language development. Formal linguistic systems used to describe language development.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>416</td>
<td>Language Development for the Hearing Impaired II (3) Developmental and nomenclature systems of teaching language to hearing impaired children. Comprehension and production differences, dialectic and figurative structures. Prereq: 421.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>419</td>
<td>Speech Development of Hearing Impaired (4) Theories of speech development, approaches in training perception and production of speech, and aural habilitation. Practicum experiences.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>423</td>
<td>Communication Processes for the Hearing Impaired (3) Expressive and receptive vocabulary development in sign communication. Fingerspelling and educational applications of sign language.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
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</table>

### RELIGIOUS STUDIES (863)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>101</td>
<td>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.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>102</td>
<td>The Comparison of World Religions (3) Introduction to religion in culture and society, focusing on cross-cultural interpretation and the treatment of problems and themes within religious traditions. Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>232</td>
<td>Varieties of Religious Community (3) How different forms of religious communities (cults, tribes, sects, monastic orders, denominations, familial, etc.) have sought to reject, reinforce, transform, ignore, or dominate their culture and society.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>235</td>
<td>Issues in Religious Studies (1-3) Introduction to the study of religion and religious analysis of approaches to the study of religion. Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>300</td>
<td>Ways of Understanding Religion (3) Sources and methods used in the study of religion and religious analysis of approaches to the study of religion. Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>301</td>
<td>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.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>302</td>
<td>Anthropology of Religion (3) Religions of selected non-literate peoples. Role of religion in their social and cultural systems. (Same as Anthropology 302.)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>305</td>
<td>Modern Religious Thought (3) Major themes, issues, and thinkers of the twentieth and/or twentieth century religion. Variable content. May be repeated. Maximum 6 hours.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>309-310</td>
<td>Elementary Classical Hebrew (3.3) Basic elements of Hebrew phonology, script, morphology and syntax. Introduction to basic elements of text, form, and literary criticism.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>311</td>
<td>Ancient Hebraic Religious Traditions (3) Development of ancient Israelite and early Jewish traditions with emphasis on the Torah and the Exodus. Divine kingship, and Zion in historical, prophetic and apocalyptic material. Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>312</td>
<td>Religious Aspects of Biblical and Classical Literature (3) Ways in which contemporary modes of religious thinking are expressed in biblical and classical material. Ways in which the western literary tradition has appropriated and rebel the biblical and classical heritage. Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>313</td>
<td>Religious Aspects of Modern Literature (3) Issues related for religious inquiry in contemporary literature. Relation of religious and moral considerations to problems of literary analysis; relation between religious and secular forms of human expression (symbol, metaphor, myth, image) identified in study of literature. Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>315</td>
<td>Reformation Europe, 1500-1650 (3) (Same as History 315.)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>316</td>
<td>Topics in Religion and Literature (3)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>320</td>
<td>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.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>322</td>
<td>Christian Thought (3) Principles of Christian thought and traditions through the interpretation of representative thinkers and texts from Augustine to Hippo to Immanuel Kant. Writing-emphasis course. (Same as History 322).</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>326</td>
<td>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.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>329-330</td>
<td>Intermediate Classical Hebrew (3.3) 329-Refinements in narrative material. 330-Studies in poetic and prophetic material from the Hebrew Bible. Prereq: 329 or consent of instructor.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>332</td>
<td>Classical Islam (3) Content limited to events prior to 1773 CE, focusing on the Qur'ans, the Prophets (Muhammad, the Husband of the First Wife, and the Prophet, the Husband of the Last Wife), and the origins of the Islamic religion.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>333</td>
<td>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 worldwide missionary activity and the growth of the Islamic community in the U.S. Prereq: Religious Studies 322 or consent of instructor. (Same as Asian Studies 333).</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>342</td>
<td>Religious Ethics (3) Selected ethical theories and moral teachings of religious communities and thinkers, their action-guides for individual and institutional, their applications to persons and social problems.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>344</td>
<td>Professional Responsibility (3) (Same as Philosophy 344.)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>345</td>
<td>Medical Ethics (3) (Same as Philosophy 345.)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>351</td>
<td>Introduction to Religion in the United States (3) A representative profile of religion in the United States, organized around selected local themes or problems.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>352</td>
<td>African-American Religion in United States (3) History and critical examination of formation and development of African-American religious thought and institutions in America. (Same as African-American Studies 352.) Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>353</td>
<td>Topics in African-American Religion (3) Selected figures, movements, and problems in the African-American religious tradition. Variable content. May be repeated. Maximum 6 hours. (Same as African-American Studies 353.) Writing-emphasis course.</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>355</td>
<td>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.)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
<tr>
<td>370</td>
<td>Philosophy of Religion (3) (Same as Philosophy 370.)</td>
<td>ATHERAPY AND DEAFNESS (855)</td>
</tr>
</tbody>
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Courses of Instruction

191

373 African Religions (3) Religions of the indigenous peoples of Africa, including how myth, ritual, and symbol constitute cultural and political movements in Africa. Africa has been and continues to be shaped by religious sensibilities. (Same as Anthropology 373 and African-American Studies 372.) Writing-emphasis course.

374 Philosophy and Religion in India (3) Survey of the development of 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 development of Buddhist philosophy in India and 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 in China is a cultural setting as basis for understanding modern China. (Same as Philosophy 379.) Writing-emphasis course.

381 Introduction to Judaism (3) History, traditions, philosophy and religion of the Jewish people grounded in the ancient period, but includes diaspora, emancipation and haskalah. Writing-emphasis course.

383 Religion in Japan (3) Traditional religious heritage and contemporary expressions of religion in Japan with attention to relationships of persons to nature, self-mastery and spontaneity, individual and community and secular to sacred. Writing-emphasis course.

384 Zen Buddhism (3) Historical, philosophical, and meditational aspects of Zen. Special emphasis on motifs of emptiness, enlightenment, and practices of meditation and the use of the koan. Recommended Prereq: One or more of the following: 376, 379, 383.

385 Contemporary Jewish Thinkers (3) Renewal trends in Nineteenth and Twentieth-Century Judaism. Writing-emphasis may be repeated. Maximum 6 credits.

386 Voices of the Holocaust (3) Historical understandings of Nazi genocide such as that of the Jewish people, Gypsies, and homosexuals. The economic, religious, social, and philosophical trends supporting mass genocide.

389 Literature of the English Bible (3) (Same as English 389.)

390 Topics in Religious Studies (3) Selected figures, themes and issues. Variable content. May be repeated. Maximum 6 hours.

405 Modern Jewish Thought (3) History, culture, and glorification of the new faciai portion of the Levant from 1850 to 1917 and the modern state of Israel in 1948 and the political complexities of the Middle East, faxiai culture and literature. Writing-emphasis course.

411 Modern Religious Philosophies (3) Religious implications of developments in science and movements from Nicolas of Cusa to the nineteenth century German Idealists. (Same as Philosophy 411.)

412 Classical Indian Systems of Philosophy: The Moksha Tradition (3) Selected writings and philosophic problems of the traditions of Samkhya, Yoga, Vedanta, Buddhism, or Jainism. Prereq: Religious Studies/Philosophy 374 or 376 or consent of instructor. (Same as Philosophy 412.)

415 Jesus and Paul Compared (3) Central ideas and concepts of each person compared with equivalent concepts in the other. Advanced study of the Gospels and Epistles of Paul, involving extensive independent research.

421-422 Elementary Sanskrit I, II (3, 3) Introduction to the grammar of classical Sanskrit. 422-introduction to the reading of epic and classical Sanskrit texts. Formerly 310 or consent of instructor.

425 Seminar in Western Religions (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

430 Seminar in American Religion (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

435 Seminar in Asian Religions (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

440 Seminar in Comparative Religion (3) Selected figures, themes, movements, and problems. Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

442-463 Intermediate Sanskrit (3, 3) Advanced grammatical construction and reading of epic and classical religious and narrative texts (e.g., Bhagavad-Gita, Mahabharatam, Ramayana, Kathasaritsagara). Prereq: 422 or consent of instructor. 463-Continued reading of classical religious and narrative texts. Introduction to classical Sanskrit poetry (e.g., Kaldasa's Shakuntala or Meghnadha). Preq: 452 or consent of instructor.

469 Readings in Selected Languages Related to Religious Studies (1-3) Prereq: Consent of instructor. Variable content. May be repeated. Maximum 6 hours.

491 Foreign Student (1-3)

492 Off-Campus Study (1-15)

495 Special Topics (3) Topics in retail and consumer sciences. May be repeated. Maximum 9 hours. Prereq: Junior or Senior standing and consent of the instructor.

497-498 Honors: Retail and Consumer Sciences (3) Independent study for Junior and Senior students showing special ability and interest in retail and consumer sciences. Prereq: Recommendation of Department Head.
SAFETY (890)

400 Directed Independent Study (1-15) Individual identification and study of safety or safety education problems. Requires written proposal. 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 organizations. Each participant required to teach at least two non-drivers to drive. Valid driver's license required. 3 hours lecture and 2 hours lab.

422 Advanced Driver and Traffic Safety Education (3) Teaching driver education through use of simulation, multimedia, and multi-car driving range. Emphasis placed on teaching skills and supervision. 2 hours and 2 labs.

493 Independent Study (1-15)

SOCIOLOGY (915)

110 Social Problems and Social Change (3) Increasingly acute and intense problems such as alcoholism, violence, drug use, crime, inequality, and environmental abuse within the context of social change. Assessment of control strategies may be taken instead of 100.
SPANISH (924)

111-112 Elementary Spanish (3,3) Language laboratory required. Sequence. Not available to students eligible for Spanish 150.

118 Honors: Elementary Spanish (3) An introductory course for students with a special interest in Spanish ideal for students with knowledge of another foreign language, for those who have had some previous (but not extensive) experience with Spanish. An enriched program with emphasis on basic skills of listening, speaking, writing, and reading. Attention given to those skills needed for communication with Spanish speakers in real life situations. Grading scale and workload flexible and irregular sequence. Students with two years of high school Spanish or one year of college Spanish may not take the course for credit. Courses must be taken in sequence. Students receiving a grade of A or B in 118 will receive credit for 210 transition course. Class size limited to 15 students.

150 Intermediate Spanish Transition (3) This course is designed to prepare students for enrollment in Spanish 211. Prereq: Transfer from institution of high school Spanish a placement score below the level required for admission to Spanish 211. This class will not count toward the College of Arts and Sciences foreign language requirement since 150 is a review of elementary Spanish, students who receive credit in this course may also receive credit for any other 100 level Spanish courses and therefore also for the six hours of elementary language credit awarded through placement examination. For elective credit only. F, S

199 Spanish 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 Arts and Sciences will provide an overview of the value of language study and international cultural awareness in world business. Restricted to students majoring in the program in Global Business. See the Director for further information. F

211-212 Intermediate Spanish (3,3) Prereq: 150 or 112 or Departmental Placement Exam. Must be taken in sequence. Students who complete these courses from high school will receive six hours of elementary language credit. E, F, S

217-218 Honors: Intermediate Spanish (3,3) Honors course for students of superior ability in Spanish. Incoming freshmen are admitted on the basis of a diagnostic test, high school average, and good scores on the ACT. Class is normally held to a maximum of 15 students. Students follow enriched program with continuing emphasis upon speaking and reading in intermediate/Lower-Intermediate-level foreign selections. Students who earn an A or B in 218 receive credit for 300. Prereq: 111-112 or equivalent. F, S

291 Spanish Literature in English Translation (3) From the Golden Age, Don Quixote, the picaresque novel, and St. John of the Cross, to the modern, Unamuno, Lorca, Ortega, and Cela. No foreign language or major credit. Writing-emphasis course.

300 Spanish Transition (3) Development of linguistic skills necessary for independent research courses above 300. Recommended for students who would benefit from additional training beyond 212 in the skills of speaking, reading, and understanding the language. Preparation for preparation to read Hispanic literature and other advanced level material. F

301 Spanish for Students of Other Romance Languages (3) Accelerated class for beginning students of Spanish with a strong background in another Romance language. Introduction to grammar, reading, and culture of Spain and Spanish America. Prereq: 3 hours at 300 level in another Romance language or equivalent.

323-324 Intermediate Conversation and Composition (3,3) Designed to improve proficiency in oral and written communication in Spanish. Prereq: for 323: 212, 216, or equivalent. Prereq: for 324: 323, or equivalent.

335 Aspects of Spanish Literature (3) Introduction to Spanish literature, using selections from prose, drama, and poetry of the medieval, Golden Age and modern periods. Required of all majors. Prereq: 323 or equivalent.

336 Aspects of Spanish Literature (3) (Same as Latin American Studies 336.) Prereq: 323 or equivalent.

345 Spanish for Business (3) Contemporary Spanish language as it applies to business transactions. Understanding and composing letters. Oral communication and elements of negotiation. Good business practices. Prereq: 323 or consent of instructor.

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. Prereq: 6 hours of Latin American Studies or consent of instructor. Writing emphasis course. (Same as Latin American Studies 401.)

402 Latin American Studies Seminar (3-15) Selected topics in Latin American Studies. May be repeated. Maximum 6 hours. Prereq: 6 hours of 300 or 400 level Spanish Latin American Studies courses or consent of the instructor. Writing emphasis course. (Same as Latin American Studies 402.)

421 Phonetics (3) Prereq: 323 or permission of instructor.

422 Advanced Grammar (3) Finer points of grammatical structures. Required of all majors. Native speakers must receive permission from the instructor to take this course. Prereq: 323 or permission of instructor.

423-424 Advanced Conversation and Composition (3,3) Advanced conversation and writing skills in Spanish for pre-professionals. Native speakers must receive permission from the instructor to take this course. Prereq: for 423: 323 or permission of instructor. Prereq: for 424: 423 or permission of instructor.

425 Introduction to Descriptive Linguistics (3) (Same as French 425, German 425, Russian 425 and Linguistics 426.)

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

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

431 Spanish Civilization (3) Major social, political, and cultural aspects of Spanish people from the origins of their civilization until today. Prereq: 335 or equivalent. Writing-emphasis course.

435-436 Survey of Spanish Literature (3,3) Span- ish literature through the Golden Age. 436-Spanish literature since 1700. Prereq: 335 or equivalent.

450 Hispanic Drama (3) Close reading and analysis of representative works by selected dramatists of each period, either Spain or Spanish America. Topics vary. May be repeated with consent of department. Maximum 6 hours. Prereq: 335 and 336, or equivalent.

451 Hispanic Prose (3) Close reading and analysis of representative works by selected novelists, essayists or short story writers of Spain and Spanish America. Topics vary. May be repeated with consent of department. Maximum 6 hours. Prereq: 335 and 336, or equivalent.

452 Hispanic Poetry (3) Emphasis on the major poets of each period, either Spanish or Spanish-American. Topics vary. May be repeated with consent of department. Maximum 6 hours. Prereq: 335 and 336, or equivalent.

459 Capstone Colloquium in Spanish (3) An integrative experience focusing on a broad range of issues and topics that affect much of the Spanish-speaking world and also those who specialize in Hispanic Studies. Prereq: 335, 336 or equivalent. Writing-emphasis course.

46 Special Topics (3) Focus on some aspect of Hispanic literature, culture, linguistics, or foreign language pedagogy. Topics vary. May be repeated with consent of department. Maximum 6 hours.

471 Latin American Civilization (3) Latin America's diverse heritage and major social and political institutions. Prereq: 335, 336 or equivalent. (Same as Latin American Studies 471.)

473-474 Survey of Spanish American Literature (3,3) Historical survey from the Conquest to late 19th century. 474-Major literary movements, writers and works of the 20th century. Prereq: 335, 336 or equivalent. (Same as Latin American Studies 473-474.)

479 Social Protest Literature of Latin America (3) Literature as a means of unmasking social ills that have traditionally beset Latin America. Among major themes: indigenous thought, Black literature, women's roles, the role of the writer in Latin American society. Prereq: 335, 336 or equivalent. (Same as Latin American Studies 479.)

490 Internship (1-15) Career-related experiences in the United States or abroad under the supervision of a faculty member. Prereq: 118-119 or equivalent. Foreign language & World Business Director. For Language & World Business majors only. Satisfactory/No Credit only.

491 Foreign Study (1-15)

493 Independent Study (1-15)
SPECIAL EDUCATION (933)

331 Articulation Disorders (3) Prereq: Admission to Teacher Education Program. (Same as Audiology and Speech Pathology 331.)

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 immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfaction/No Credit only. Sp, Su

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 programming and program implementation. Prereq: Admission to Teacher Education Program. Sp

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. Satisfaction/No Credit only. F

SPEECH COMMUNICATION (943)

100 Introduction to Speech Communication (3) Fundamental theories and practices with particular reference to the role of language in human relations, group, organizational, and public communication.

200 Developing Speech Confidence (1) Principles and techniques for coping with apprehension about communicating. Classes are limited to 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, topicelection, reasoning, and evaluating the discourse of others.

220 Interpersonal Communication (3) Process by which thoughts feelings, and actions affect and are affected by the face-to-face 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 Communication (3) Basic principles of communication within organizations. Topics and activities may include organizational/communication theory, group problem solving, case studies, interviewing, and formal presentations.

260 Communication and Society (3) Study of communicative behavior, social and public opinion, with emphasis on communication media: posters, film, songs, demonstrations, drama, and public address.

270 Argumentation and Debate (3) Reasoned decision-making techniques for analysis, evidence, reasoning, constructing, and refuting arguments.

280 Introduction to Oral Interpretation (3) Art of reading aloud; development of interpretive techniques and their application to selected passages of prose, poetry, and drama. Writing-emphasis course.

295 Communication Research Methods (3) Survey of contemporary methods used for research in Speech Communication. Emphasis on interpreting and evaluating communication research reports.

300 Nonverbal Communication (3) Exploration of nonverbal communication. Focus on communication perspective: 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 320 or consent of instructor. (Same as Sociology 320.)

330 Group Communication (3) Small group decision-making: evidence, argumentation, leadership, roles, and norms as they affect critical thinking in groups.

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 discourse: sources of evidence, and conditions affecting credibility.

380 Advanced Oral Interpretation (3) Individual and group performances of prose literature and poetry. Prereq: 290 or consent of instructor. Writing-emphasis course.

390 History of Rhetorical Theory (3) Western rhetorical theory from Plato to the present. Writing-emphasis course.

400 Topics in Speech Communication (3) Variable content course offering opportunity to offer subject matter not covered in an existing course. Topics, scope of subject matter, and prerequisites to be determined by the student and approved by department office. Prereq: Junior/Senior standing with at least a 3.0 GPA or by special permission of the Department; consent of supervising faculty member and Department prior to registration.

499 Proseminar in Speech Communication (3) Major theoretical perspectives in speech communication, their interrelationships and applications; consideration of the significance and ethical implications of speech communication in modern society. The course will cover two or more areas of the discipline. Prereq: senior standing and completion of at least 12 hours of major requirements in speech communication. Writing-emphasis course.

SPORT AND PHYSICAL ACTIVITY (954)

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. (Same as Exercise Science 100.) F, Sp

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

312 Coaching of Basketball (1) Individual and team fundamentals for the high school coach; conditioning, scheduling, 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 track practices. 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, specific conditioning and training programs, practice organization, player evaluation, scouting, individual and team offensive and defensive strategies. Prereq: Consent of instructor.

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

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

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

SPORT MANAGEMENT (957)

250 Foundations of Sport Management (3) An introduction to the scope of the sport enterprise including why business is involved in sport and an overall evaluation of sport management as a profession. F

290 Practicum 1 (2-3) Supervised part-time experience at approved site for graduate college students in pursuit of career goals. Each hour of credit requires 40 clock hours per semester. For Pre-Sport Management majors only. SNC 250. Prereq: HPSS 350 or Recreation 110 and 210 or consent of instructor.

350 Sport Management: Theory to Practice (3) (Same as HPSS 350.)

370 Event Management (1-3) Study of the various principles involved in the organization, promotion, and management of special events. Students will combine theory and practice through experience with assigned
special events. Prereq: HPSS 290 or consent of instructor.

380 Special Topics (1-3) Study in selected disciplinary or professional areas of Sport Management. May be repeated.

390 Practicum II (3) Supervised part-time experience at approved site offering sport management opportunities. Each hour of credit requires 60 clock hours per semester. For Sport Management majors only. SNC only. Prereq: Progression to Sport Management Major and Sport Management 290. E

415 Managing Leisure/Sport & Related Facilities (3) Seminar in Recreation Management. E

440 Sport Marketing (3) Application of fundamental marketing concepts to the Sport Industry. Marketing research, promotions, fund raising, advertising, and associated promotion programs specific to sport will be covered. The historical development of sport marketing will be included. Prereq: Marketing 301 and admission to Sport Management major. Available for graduate credit. Admission by consent of instructor.

450 Legal Aspects of Sport (3) This course identifies and applies various areas of law to the sport industry. Concepts included are how constitutional law, contract law, anti-trust law, and tort law impact sport management decisions. Special emphasis will be placed on discrimination in sport such as race, gender, ethnicity, and disability. Prereq: 350.

490 Sport Management Internship (1-15) Full time experience at approved sport management sites. Emphasis on managerial tasks and administrative procedures. For Sport Management majors only. Prereq: Completion of all Sport Management requirements, Senior standing, Progression to Sport Management Major (Admitted to major). E

493 Directed Independent Studies (1-3) Independent study in specific 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 statistics, including correlation, simple regression, and time series analysis; concepts of probability and probability distributions. Binomial and normal distributions; process improvement; estimations of means; confidence intervals, contingency tables. Prereq: Mathematics 121. E


252 Probability and Statistics for Scientists and Engineers II (3) Hypothesis testing; analysis of variance; parametric statistics, simple linear regression, multiple linear regression; statistical process control. Prereq: 251 (or Statistics 201 and permission of instructor), student must also have a working knowledge of the UTCC VAX System or Coreq: 261, Sp.

261 Introduction to Statistical Software (3) Use of computer operating system commands and packaged programs for statistical data analysis and related data management tasks. Use of UTCC computing facilities. Coreq: 252, Sp.

302 Statistical Methods (3) Linear regression and correlation; multiple regression, diagnostic dummy variable; analysis of data. Emphasis on data analysis and interpretation. Prereq: or Coreq: Sport Management computer facilities required. Not counted toward a major or minor in statistics. Not available for credit to students with credit in 461. Prereq: 201 or equivalent or Coreq: 252. E

321 Sampling Techniques (3) Procedures used in probability sampling from finite populations. Development of estimators and standard errors associated with sampling distribution of sample statistics. Prereq: or Coreq: 252. E


411 Introduction to Statistical Computing (3) Use of computer operating system commands and packaged programs for statistical analysis and file management. Not acceptable for credit for statistics majors. Prereq: 201 or 251. E

461 Applied Regression Analysis (3) Linear regression and correlation, multiple regression, polynomial regression, analysis of variables, use dummy variables, analysis of residuals. Logistic regression and its applications. Use of standard computer packages. Major writing requirement. Prereq: 251 or 261 or graduate status and consent of instructor. F, Sp

462 Analysis of Variance and Experimental Design (3) Analysis of variance techniques for single and multifactor models, most hot procedures. Design considerations for completely randomized, randomized and splitplot experiments, balanced incomplete block and designs, response surface methodology. Major writing requirement. Prereq: 252 and 251 or 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 (1-16) Supervised off-campus experience in application of statistical principles and methods in business, industry, or government, culminating in a written and oral report. Prereq: Permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. 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 statistics culminating in a written report. Prereq: Two courses in statistics and permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Letter grade or Satisfactory/No credit. May be repeated. Maximum 6 hours.

495 Independent Study (2-6) Faculty directed reading and investigation of specified topic in probability statistics culminating in a written report. Prereq: Two courses in statistics and permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Letter grade or Satisfactory/No credit. May be repeated. Maximum 6 hours.
COURSES OF INSTRUCTION

456 Rendering (3) Techniques in monochrome and full color illustration of space and form. Some acquaintance with advanced technical perspective and hand sketching is assumed.

462 Advanced Lighting Design (3) Advanced problems in lighting design and theory including areas such as lighting musical theatre, opera, and dance. Prereq: 362 or consent of instructor.

464 Computer Assisted Design for Stage Lighting (3) Advanced techniques in computer assisted design for stage lighting. Work with CAD 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 professionals 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 costumes for departmental productions. Credit available to Theatre majors only or with consent of department. 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 theatrical 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)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

UNIVERSITY HONORS (983)

118-128 Whittle Scholars Seminar (1,1) Sequence limited to and required of all Whittle Scholars in their freshman year. 118 concentrates on contemporary issues. 128 concentrates on leadership of society. Satisfactory/No Credit grading only.

337-347 Honors: Concentration in the Humanities (3,3) Small group studies of selected topics, issues or problems linked to, if not emergent from, the humanistic disciplines. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

338-348 Tennessee Scholars Seminar (1,1) Sequence limited to and required of all Tennessee Scholars each year. May be repeated. Maximum: 8 hours. Satisfactory/No Credit grading only.

347 Honors: Concentration in the Social Sciences (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.

357 Honors: Concentration in the Natural and Applied Sciences (3) Small group studies of selected topics, issues or problems with a concentration in the natural and applied sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

358-368 Chancellor's Scholars Seminar (1,1) Sequence limited to and required of all Chancellor's Scholars each year. May be repeated. Maximum: 8 hours. Satisfactory/No Credit grading only.

418-428 Seminar on International Travel/Study/Work Overseas (1,1) Sequence required of all Whittle 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 project proposals. 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 university education as an adventure in personal growth and professional development. A/B/C/D 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) Interdisciplinary approaches to issues transcribing 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 state speak about 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. Satisfactory/No Credit grading only.

322 Technology, Society and the Common Good (3) Explores philosophical and religious systems with a commitment to stewardship of the planet and those with an antagonistic or neutral perception of the natural world. Systems 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) 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.

421 Art and Organism (3) Interdisciplinary investigations of the relationship between art and biology. Readings and discussions focus on the idea that, while art is one of the most wholly human cultural endeavours, it is undeniably linked to, if not emergent from, our basic biology.

422 Ethics in Wildfire and Fisheries Management (1) Ethical bases for decision-making and application of methodologies in the practice of wildlands and fisheries management. A series of seminars presented by ethicists, wildlife and fisheries scientists and managers, and foresters will be used to acquaint students with a diverse perspective of ethical practice in the behaviors of wildlife and fisheries management. Lectures, panel discussions, and case studies. Team taught. Prereq: Senior standing and major in natural resources. Satisfactory/No Credit grading only.

530 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.

401 The City in the United States (3) (Same as Planning 401)

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 460 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 (993)

341 Law Enforcement and Public Relations (3) Fundamentals and general principles of local, state and federal laws and regulations governing natural resources and fisheries management. Principles and practices of interacting with the public.

440 Wildlife Techniques (2) Methods in wildlife damage control, forest, farmland, and wildlife habitat management, identification of wildlife field signs, 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.

442 Fisheries Techniques (2) Active and passive sampling techniques for fish and aquatic organisms; population estimation methods; fish handling and transport; food habits analysis; marking and tagging techniques; age determination and incremental growth analysis; stream assessment; equipment and instrumentation 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.

443 Fisheries Science (3) Quantification and management of freshwater fisheries including population estimation, age and growth, biological assessment, and stock, and stock assessment. Prereq: Introductory Biology 1 (Biology 391 or Biology 392, or consent of instructor. 1 hour and 1 lab or field.

444 Ecology and Management of Wild Mammals (3) Biological and ecological characteristics of game mammals and endangered mammals. Current principles and practices of wild mammal management. Prereq: Forestry, Wildlife and Fisheries 317 or Biology 230, or permission of instructor. 2 hours and 1 lab. One weekend field trip required.

445 Ecology and Management of Wild Birds (3) Biological and ecological characteristics of game birds, endangered birds, and bird pests. Current principles and practices of wildlife and fisheries management. Prereq: Forestry, Wildlife and Fisheries 317 and Biology 230, or permission of instructor. 2 hours and 1 lab. One weekend field trip required.

450 Ethical and Wildlife and Fisheries Management (1) Ethical bases for decision-making and application of methodologies in the practice of wildlife and fisheries management. A series of seminars presented by ethicists, wildlife and fisheries scientists and managers, and foresters will be used to acquaint students with a diverse perspective of ethical practice in the behaviors of wildlife and fisheries management. Lectures, panel discussions, and case studies. Team taught. Prereq: Senior standing and major in natural resources. Satisfactory/No Credit grading only.

493 Independent Study in Wildlife and Fisheries Sciences (1-15) Special research or individual problem in wildlife and fisheries science. Letter grade or Satisfactory/No Credit grading only.