ACCOUNTING

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 Statistics 201

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


340 Special Topics (3) Critical consideration of selected current topics. May be selected from managerial/cost, financial, systems or auditing. May include written reports and cases. Prereq: 312, 321, and 341 and consent of instructor.

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, 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, F, Sp

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

ADVERTISING

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 with a grade of C or better 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 with a grade of C or better.

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 with a grade of C or better.

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 with grades of C or better. 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 with a grade of C or better.

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 advertising and social issues.

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.

AFRO-AMERICAN STUDIES

201 Introduction to Afro-American Studies (3) Multidisciplinary approach to the Afro-American experience through the Civil War period which examines such issues as traditional African societies, the institution of slavery, the development of Afro-American culture, the beginnings of Afro-American protest tradition, and the Civil War and Reconstruction.

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

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

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

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

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

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

364 Contemporary Issues in Afro-American Education (3) 1954 to the present. Examines issues relevant to the current dilemma of providing quality education for the Afro-American student including professional school quotes, intelligence testing, homogeneous grouping, Afro-American college survival, busing, Black English/Standard English controversy. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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.)
AGRICULTURAL AND EXTENSION EDUCATION

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

245 Agricultural Experience, Leadership and Adult Programs (3) Developing supervised agricultural experience programs, leadership development opportunities, and intergenerational work through the Future Farmers of America, Role and methods for adult education in agriculture.

236 Strategies for Teaching and Program Planning in Agriculture (3) Approaches for developing strategies for teaching agriculture, preparing teaching plans and courses of study, and developing programs of activities for agriculture.

411 Fundamentals of Agricultural Extension (3) History; philosophy; organizational structure; clientele; programs; service; implementation of program and evaluation. Prereq: Consent of instructor.

420 Methods of Teaching Agricultural Mechanics (3) Methods for vocational agriculture students. Special competencies for planning, conducting and evaluating agricultural mechanics program. Prereq: Consent of instructor. F

435-36 Student Teaching in Agricultural Education (6,6) Full-time teaching practicum in an approved high school. Applied practices needed by vocational agriculture teachers. Satisfactory/No Credit grading only. Prereq: Admission to Teacher Education and 345 and 346. Coreq: Coreq: 435 for 436, 436 for 435. Sp

492 Agricultural and Extension Education Internship (2-6) Supervised work experience in approved county Extension offices, agricultural businesses, or agricultural related agencies. (Requires living off-campus for a period of five weeks.) Prereq: 411 and consent of instructor. Sp, Su

493 Independent Study (1-3) Individualized study of a special project or problem in Agricultural and Extension Education. Must be selected in consultation with the instructor and consent of Departmental Advisor. May be repeated for credit. Maximum 6 hours. E

AGRICULTURAL ECONOMICS

210 Introduction to Agricultural Economics (3) Application of economic principles to the farm, off-farm, and international sectors. Prereq: Microeconomics. F, Sp

301 Farm and Agribusiness Law (3) Survey of law applicable to the farmer, agribusiness manager, and agricultural industry. Property, contracts, torts, drainage and water rights, landlord-tenant relationships, taxation and insurance, forms of business organization, estate planning, corporate and personal income tax planning, regulatory laws, and other selected topics. Prereq: Junior standing or consent of instructor. F

342 Farm Business Management I (3) Principles and procedures for determining most profitable farm organization and selection of management processes; farm records and their uses; budgeting, economic aspects of acquisition and management of capital, land, labor and machinery resources. Prereq: Economics 201 and Junior standing. F

350 Marketing of Agricultural Products (3) Survey of U.S. food and fiber marketing system; marketing functions; industry structure; market channels; marketing options of farmers; basic analysis of marketing problems. Prereq: 210 or consent of instructor. Sp

352 Commodity Futures Markets (2) Futures market as an instrument in marketing of primary industry products; process of posting to the risk of adverse price changes; price analysis from two viewpoints; supply and demand and history (fundamentals and charted). Prereq: Junior standing. F, Sp

412 Agricultural Finance (3) Macro-finance, financial objectives, evaluation of debt and equity funds, capital investments, capital allocation, debt repayment, credit analysis, borrower and lender loan analysis application, insurance strategies, computer applications, kinds and sources of agricultural credit, and financial intermediation. Prereq: Economics 201; Junior standing or consent of instructor. F

430 Agricultural and Trade Policy (3) Values, goals, and policy processes; historical development and current characteristics of commodity, credit, food, and trade policy; relationships between domestic and international trade policy. Prereq: 210 or consent of instructor. Sp

440 Agricultural Production Economics (3) Application of microeconomic theory to problem of resource allocation, enterprise selection, scale of operation, intersectoral and intrasectoral resource use; and economic evaluation of agricultural production relationships. Prereq: 210 and Economics 311. F

442 Farm Business Management II (3) Advanced topics and methods for farm business analysis using micro and macroframe computer programs; programming applications in farm planning; spreadsheet analysis of whole farm business, systems analysis and management control; risk analysis and management; income tax management; farm growth and intergenerational transfer. Prereq: 342. Sp

450 Agricultural Price Analysis (3) Demand and supply mechanisms in agriculture; price determination; spatial equilibrium; temporal price patterns; pricing institutions. Prereq: 350 and Economics 311. F

452 Agribusiness Firm Management (3) Operations of firms selling farm supplies and merchandising agricultural products. Analytical tools and techniques for decision making. Prereq: Economics 201. Sp

460 Rural Economic and Community Development (3) Historical and theoretical perspective on problems facing rural communities; linkages between farm and nonfarm 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 concepts as a basis for natural resource use; externalities in natural resource use; factors influencing environmental quality, alternative public policy tools for influencing resource use or improving environmental quality. Prereq: 210 or consent of instructor. Sp

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

AGRICULTURAL ENGINEERING

200 Specialty Areas of Agricultural Engineering (1) Thesis and research seminars. Required training for each area, project research activities. 1 hour. F

300 Environmental Relationships (2) Applications of thermodynamic principles to problems in energy conversion. Thermodynamics cycles, biothermodynamics, the plant-animal-environment interaction. 2 hours. F

310 Power Units and Machinery (2) Components and operating characteristics of internal combustion engines and tractor power transmission systems; functional analysis; capabilities of agricultural machines; tractor-implement system performance. Prereq: Mechanical Engineering 351. 1 hour and 1 lab. Sp

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

330 Processing (2) Application of basic engineering sciences to processing and handling of agricultural products; physical properties; thermal processing, curing, drying and storage handling. Preprq: Mechanical Engineering 351. 2 hours and 1 lab. Sp

340 Soil and Water Conservation Engineering (2) Hydrological, agronomic and engineering principles needed to agricultural water management problems including soil and erosion control, irrigation, drainage, and water quality. Prereq: Plant and Soil Science 210. Engineering Science and Mechanics 341. 2 hour and 1 lab (or on alternate weeks). Sp
211 Surveying and Engineering Technology in Agriculture (3) Course surveying including measurement of distances, angles, and areas; differential and profile leveling; topographic surveying and mapping; engineering fundamentals applied to soil and water conservation, agricultural machinery, and structures; emphasis upon analytical techniques and problem solving. 2 hours and 1 lab.

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

410 Electronic Measurements and Control for Agriculture (2) Sensing and controlling physical and environmental parameters electronically; sensor selection and interface; basic digital and analog signal conditioning; process control; application of programmable controllers. Prereq: Electrical Engineering 302 or senior standing. 2 hours including project laboratory.

420 Agricultural Engineering Design Fundamentals (3) Nature of design; creativity, analysis and synthesis; design team organization; selection and functional analysis of design project. Prereq: Senior standing. 1 hour and 1 lab.

425 Agricultural Engineering Design Project (2) Synthesis of design; structure, kinematic, control system analysis; preparation of design drawings, specifications, model of device; written and oral report of project. Prereq: 300. 1 hour and 1 lab.

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.

435 Design of Mechanisms for Agricultural Machines (2) Types of mechanisms; transmission angles; synthesis of plane mechanisms; introduction to space mechanisms. Prereq: Mechanical Engineering 455 or equivalent. 1 hour and 1 lab. Sp.

440 Irrigation and Drainage Design (2) Design of irrigation and drainage systems including crop response, climate, water quantity and quality, and system characteristics. Prereq: 440 or equivalent. 2 hours and 1 lab (on alternate weeks). Sp.

445 Processing and Materials Handling Design (2) Systems and components for processing and utilization of crops including product characteristics, energy and mass balance, storage, handling and economic merit. Prereq: 330. 1 hour and 1 lab. Sp.

450 Electrical Distribution and Utility Design (2) Design of off-farm electrical systems; control; motors, stray voltages; special electrical loads; safety. Prereq: Electrical Engineering 301. 1 hour and 1 lab. Sp.


460 Design of Agricultural Structures (2) Design fundamentals for wood, steel and concrete components, compression and tension members; beam and column design; pole structure design; fasteners and joint design. Prereq: 311. 1 hour and 1 lab. Sp.

470 Special Problems in Agricultural Engineering (1-3) Selection, analysis solution and report of problem. 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

201 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.


303 Leadership Laboratory (1,1)
422 The Physiology of Reproduction and Lactation (3) Biology of sex and sexual differentiation, function of male and female, and reproduction and lactation, gametogenesis, neuroendocrinology and endocrinology of reproduction, physiology of sex hormones, sex determination, sex reversal, sex differentiation, foliculogenesis, ovulation, spermatogenesis, fertilization, embryonic development, implantation, pregnancy, parturition, lactation, and evolution of the dry period, artificial control of reproduction and lactation. Prereq: Biology 120. 2 hours and 1 lab. Sp (Same as Zoology 322.)

331 Animal Nutrition and Feeds (3) Properties, functions, and consequences of feed ingredients in diet formulation; evaluation of feeds of animals for nutrition and economical purposes of production responses and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses or consent of instructor. 2 hours and 1 lab. Sp

332 Ration Formulation and Linear Programming Applications (3) Nutrient requirements and ration formulation for beef and dairy cattle, sheep, horses, swine, poultry and laboratory animals. Mathematical and computer solutions for formulating complex rations with constraints. Prereq: 331, Math 121 and an introductory computer science course or consent of instructor. 1 hour and 2 labs. Sp

448 Poultry Production and Management (3) Structure of the poultry enterprises including rearing, housing, feeding, management, and marketing. Prereq: Senior standing and permission of instructor. Completion of Animal Science sophomore and junior core courses recommended prereq. 2 hours and 1 lab. F

484 Poultry Production and Management (3) Integration of principles of selection, nutrition, breeding, physiology and ethology into a comprehensive poultry production and management program. Economic impact of the industry, kinds of horse enterprises, management of feed and pasture resources, health maintenance and first aid, breeding and foaling and horse farm structures and equipment. Prereq: Completion of Animal Science sophomore and junior core courses or consent of instructor. 2 hours and 1 lab. Sp

485 Lamb and Wool Production and Management (3) Integration of principles of selection, nutrition, breeding, physiology, and marketing into complete lamb and wool production and management programs. Structure of industry, enterprise establishment, systems of production, production responses and economic returns. Prereq: Completion of Animal Science sophomore and junior core courses or consent of instructor. 2 hours and 1 lab. Sp

Anthropology

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

120 Prehistoric Archaeology (3) Introduction to methods and techniques used to identify and date archaeological cultures, reconstruct past lifeways and describe cultural evolution. Overview of the prehistory of Africa, western Europe, southwestern Asia, and the Americas from earliest dated human cultures to rise of complex civilizations.

130 Cultural Anthropology (3) Major concepts and methods in the study of culture; survey of cross-cultural analysis of institutions, behavior, social organization, economic, political, and religious institutions; language, ideology and arts. Contributions of anthropology to resolving contemporary human problems.


220 Prehistory of Tennessee (3) History of archaeological research in Tennessee and survey of prehistoric Indian cultures from initial occupation of the state to European contact.

230 American Cultures (3) Anthropology in the study of American Indian societies, the southwestern United States, the plains and the southeastern states, as well as sociocultural, political, economic, and religious communities, social classes, power structures, etc.

302 Religion of Primitive Peoples (3) (Same as Religious Studies 302.)

360 Genetics and Society (3) (Same as Botany 360.)

310 North American Indians (3) Comparative overview of Indian cultures of North America. Topical coverage ranges from prehistory and aboriginal life to problems of reservation existence, formal and informal acculturation. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

311 Southeastern Indians (3) Survey of Southeastern American Indian cultures at the time of European contact. Emphasis on Cherokee culture and on the social, economic, and religious organization of aboriginal groups. Prereq: 130 or consent of instructor.

312 Appalachian Culture (3) Traditional Southern Appalachian subsistence patterns and economy, social organization, beliefs and values, folklore and customs, socio-cultural impacts of industrialization and modernization. Prereq: 130 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

313 Peoples and Cultures of Mesoamerica (3) Pre-Columbian and Hispanic cultures of Mexico, Guatemala, El Salvador, and Honduras. Patterns of cultural continuity and cultural change throughout Mesoamerica's history. Prereq: 130 or consent of instructor. (Same as Latin American Studies 315.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

314 Peoples and Cultures of Africa (3) Ethnographic survey of peoples of sub-Saharan Africa, focusing on cultural diversity, human ecology, and contemporary issues. Prereq: 130 or consent of instructor. (Same as Afro-American Studies 314.) Writing-emphasis course at least one in-class essay examination and 3000 words of writing outside the classroom.

315 Afro-American Anthropology (3) Anthropological perspectives on life styles and social status of persons of African descent in North America, South America, and the Caribbean. Prereq: 130 or consent of instructor. (Same as Afro-American Studies 315.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

360 North American Prehistory (3) Prehistoric cultures of North America from initial occupation of the continent to European contact. Writing-emphasis course at least one in-class essay examination and 3000 words of writing outside the classroom.

361 Historical Archaeology (3) Historical archaeology of North America in the 18th and 19th centuries.

360 North American Prehistory (3) Prehistoric cultures of North America from initial occupation of the continent to European contact. Writing-emphasis course at least one in-class essay examination and 3000 words of writing outside the classroom.

361 Historical Archaeology (3) Historical archaeology of North America in the 18th and 19th centuries.

362 Principles of Archaeology (3) Research strategies used in developing method and theory, constructing cultural histories, 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 370 and Afro-American Studies 370.)

400 Readings in Anthropology (1-6) Problem-oriented directed reading in anthropology. Prereq: Anthropology majors with senior standing or consent of instructor. May be repeated. Maximum 6 hours.

410 Principles of Cultural Anthropology (3) Exploration of the illustrative role of visual images and methods in cultural anthropology, with application to specific ethnographic traditions. Prereq: 130.

411 Linguistic Anthropology (3) Basic linguistic concepts applied to research in cultural anthropology, particularly investigations of body 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 archaeology, ethnohistory, and historical cases. Prereq: 130.

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.

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 case 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.

460 Selected Topics in Archaeology (3) Regional or theoretical issues in archaeology for undergraduate students. Topics may include practical experience in laboratory study of archaeological materials. May be repeated. Maximum 6 hours. Prereq: 120 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 Afro-American Studies 461.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

462 Early European Prehistory (3) Origins and evolution of human culture in Europe through the beginnings of settled life. Primary focus on Paleolithic/Mesolithic chronology and lifeways. Prereq: 120 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

463 Rise of Complex Civilizations (3) Development of complex societies in Old World from origins of agricultural economics to rise of States. Focus on Mesolithic, Neolithic, and Metal Age lifeways in Africa, Europe, and Asia. Prereq: 120 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

464 Principles of Zooarchaeology (3) Basic osteological studies of major vertebrate groups, with emphasis on the aboriginal's use of animals in subsistence and cultural identification and interpretation of archaeological material derived from molluscan and vertebrate remains, with identification and analysis of characteristic elements and functions of older and more recent foragers. Prereq: 120 or consent of instructor. Identification and analysis of characteristic elements and functions of older and more recent foragers. Prereq: 120 or consent of instructor.

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

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

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

484 Museology III: Field Projects (1-12) (Same as Art 484.)

490 Primate Evolution (3) Living and fossil primate anatomy, evolution, and comparative anatomy. Survey of primate fossil record with emphasis on the origin or major primate lineages. Prereq: 110.

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 races, relationships of major groups to one another. (Same as Afro-American Studies 496.)

ARCHITECTURE

101 Introduction to Architecture (3) Scope and definition of architecture in relation to contemporary society, building industry, and allied design professions. Architectural design as a creative process. Orientation to courses and programs of the architect. F

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

111 Architecture and the Built Environment (3) 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 involvement. F

171 Design Fundamentals I (3) Definition, ideas, and processes of design. Sketch design studies and free-hand drawing. Emphasis on ideas of place and aspects of use. Prereq: 120 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

203 Second Degree Program: Seminar I (2) Theory and practice in architecture. Selected readings in history, theory, and design methodology with emphasis on contextual issues and architectural ordering principles. Coreq: 203. F

204 Second Degree Program: Seminar II (2) Selected readings in history, theory, and design methodology with emphasis on contextual issues and architectural ordering principles. Coreq: 204. F

211 History of Architecture I (3) Architectural thought and ideas of building and community form. Ancient times to the Renaissance. Prereq: History 151, 152. F

212 History of Architecture II (3) Architectural thought and ideas of building and community form. Renaissance to mid-twentieth century. Prereq: 211. Sp

213 History and Theory of Contemporary Architecture (3) Architectural thought in design practice in late twentieth century. Examples of contemporary works and review of theoretical issues. Prereq: 212. F

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

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


332 Advanced Computer Applications (3) Computer applications in architecture, with special emphasis on structural calculations. Prereq: 231.


362 Structural Analysis II (4) Continuation of analysis and design of simple structures of steel, wood and concrete based upon specific loading requirements. Use of construction and building codes, handbooks and design aids - selection of structural members. Prereq: 331. Sp

363 Advanced Structural Design (3) Analysis and design of basic building structures. Structural and constructional aspects of building, including structures in steel, concrete, masonry, and timber to satisfy loading and building code requirements. Prereq: 332 or equivalent.

364 Advanced Structural Architectures (3) Philosophical and methodological issues of structural design. Historical and theoretical aspects of structural design and form. Advanced mathematical and experimental analysis of structures, including use of computer programs. Prereq: 323 or equivalent.


356 Advanced Design of Concrete Buildings (3) Broadcast and on-site concrete construction and maintenance, foundations, floor and wall systems. Domes and shell roofs. Prereq: 323 or equivalent.


400 Service Practicum (3) Experience in architectural or equivalent office for a minimum of 3 months to be completed prior to fifth year entry. E

403 Introduction to Preservation (3) History, theory, and legal aspects of architectural preservation and restoration.

404 Preservation Technology (3) Techniques of preservation: methods of analysis, history of materials and technology used in old buildings.

405 Descriptive Analysis of Historic Buildings (3) Identification and analysis of characteristic elements of buildings from various architectural periods, with emphasis on American architecture. Survey techniques.
Courses of Instruction

173 Western Art I (3) Major monuments in Western Art focusing on Europe and America from 1400 to the early 20th Century. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

176 Experience Art (3) Form and meaning in the visual arts. Lecture-discussion. Especially for non-majors.

183 Asian Art (3) Art of Central and Southeast Asia, India, China, Korea, and Japan from prehistory through modern art with special emphasis on their historical and cultural contexts. May not be repeated. Maximum 12 hours.

191 Introduction to Studio Art: Various Media (3) Individual sections for various artistic disciplines. For non-majors only. Course may be repeated, medium may not be repeated. Maximum 12 hours. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

192 Intermediate Design and Color (3) Further exploration of basic techniques of two-dimensional design, with emphasis on color theory and technique. Prereq: 101. 102, 103.

201 Fabric: Painting and Dyeing (3) Painting and dyeing processes in the development of surface design on fabric, including batik, direct painting, and/or other related approaches.


204 Fiber: Woven Wall Works (3) Fabrication of woven wall forms on the vertical loom, with emphasis on experimental use of fiber media in development of architecturally scaled wall works.

206 Enameling (3) Metalworking and jewelry techniques emphasizing integration of casting and fabrication methods (including stoneselecting, fastenings, and mechanisms) with individual studio problems to develop a personal style of expression. Prereq: 106. May be repeated. Maximum 6 hours.

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


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

213 Painting I: Introduction (3) Theories of color and acrylic painting. Prereq: 101, 102, 103 for art majors; none for non-art majors.

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


216 Watercolor II (3) Capabilities of transparent watercolor, with attention to individual exploration of surface, space, and composition. Prereq: 215 for art majors; Art 191-Watercolor for non-art majors. May be repeated. Maximum 6 hours.

219 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.

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

226 Material and Techniques in Glass (3) Capabilities of vitreous enamel techniques (including stonesetting, fastenings, and mechanisms) emphasizing integration of casting and fabrication methods. May include carving, chiseling, forming (including tissue molds), shell casting, and sand, ceramic shell casting methods. May be repeated. Maximum 6 hours.

227 Experimentation in Glass (3) Thrown ceramic forms including functional utilitarian pottery 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 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.

232 History of Photography (3) Photography as a fine art. Emphasis on work of Steiglitz, Strand, Weston, and White. (Does not apply to art history requirement.) Prereq: 231.

233 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 I (3) Modeling techniques in clay and wax, working from figure. Possibilities of expression with human figure as subject. Modeling process as both observational and material handling technique. Prereq: 101, 102, 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, stufing, ceramic shell and sand casting methods. May be repeated. Maximum 6 hours.

244 Wood Sculpture I (3) Wood as sculptural medium. May include use of hand and power tools, carving, and construction.

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 a new object. Emphasis on development of a personal form. Prereq: Consent of instructor. Satisfactory/No credit only.

251 Beginning Graphic Design (3) Survey of graphic design; tools, materials; techniques; lettering, and use of type; layout and design. Prereq: 101, 102, 103.

252 Production (3) Design and layout; practice of mechanical preparation of art for various printing processes, skills and craftsmanship emphasized. Prereq: 251.

253 Advertising Design (3) Fundamentals of layout and layout for newspaper; magazine, television, outdoor advertising. Non-art majors only.

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

257 Special Topics: 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.

262 Intaglio I (3) Metal plate intaglio printing in traditional and contemporary techniques of etching, softground, drypoint, mezzotint, aquatint, and photo etching. May be repeated. Maximum 6 hours.

263 Lithography I (3) Stone and aluminum plate lithography. May be repeated. Emphasis on development of decorative and non-functional ceramics forms. Concepts and ideas emphasized. Prereq: Consent of department. Satisfactory/No credit only.

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

269 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.

279 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.

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

292 Film Design (3) Introductory theory and practice of film making. Emphasis on graphic elements through use of motion picture camera.

295 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 (6) Review of prior studio work. Successful completion required prior to registration for junior and senior courses. Prereq: Consent of department. Satisfactory/No credit only.

301 Fabric: Individual Class Projects (3-6) Prereq: 104, 201, 203 or consent of instructor. May be repeated. Maximum 6 hours.

302 Fiber: Individual Class Projects (3-6) Prereq: 105, 202, 204 or consent of instructor. May be repeated. Maximum 6 hours.

306 Silversmithing (4) Intensive smithing techniques including forging, raising, shell forming, lathe, mokume, and lamination with individual studio problems to develop a personal style of expression. Prereq: 106, 258 or consent of instructor. May be repeated. Maximum 6 hours.

311 Drawing III (4) Development of personal drawing techniques and concepts through class problems. Prereq: 212 and 312 or consent of instructor. May be repeated. Maximum 8 hours.

312 Drawing Portfolio Review (6) 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 techniques. Prereq: 314 or consent of instructor. May be repeated. Maximum 8 hours.

314 Painting Portfolio Review (6) 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 (6) Review of prior works 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 (6) 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: 331. May be repeated. Maximum 8 hours.


334 Photographic Techniques Workshop (4) Theories and practices of film exposure and development. Introduction to zone system. Prereq: 331.

340 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: 240 and 340. May be repeated. Maximum 8 hours.

342 Life Sculpture II (3) Advanced modeling techniques and anatomy. Working from the figure. Includes casting a minimum of one piece. Prereq: 242 and 340 or consent of instructor. May be repeated. Maximum 6 hours.


344 Wood Sculpture II (3) Extension of skills and techniques begun in 244. Prereq: 244 and 340 or consent of instructor. May be repeated. Maximum 6 hours.

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

346 Mixed Media Sculpture II (3) Further problems in the sculptural use of two or more distinctive materials. Prereq: 245 and 340.

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 Corporate Design (3) Concepts of corporate graphic problems. Includes 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: 350.

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. 355.

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

362 Intaglio II (4) Color intaglio printing from a single metal plate, including a la poupee', chine colle', and relief rolls. Prereq: 262 and 360. May be repeated. Maximum 8 hours.

363 Lithography II (4) Color lithography from stone and plates using mylar registration. Extra techniques; including xerox and monotype transfer, acid tinting, reversals, chine colle' and photo-lithography. May be repeated. Maximum 8 hours.

364 Screen Printing II (4) Advanced work with basic screen printing techniques including photo screening. Emphasis upon image development and personal concept. Prereq: 264 and 360. May be repeated. Maximum 8 hours.

371 Early Christian and Byzantine Art, to 1350 (3) Art in Italy and the Eastern Empire from the beginnings of Christian art to c. 1350. Mosaic and painting, sculpture and architecture. (Same as Medieval Studies 371.)

372 Northern European Painting, 1350-1600 (3) From the early art of late Middle Ages to Northern Renaissance. Jan van Eyck, Roger van der Weyden, and Durer; early printmakers. (Same as Medieval Studies 372.)

374 Art of Northern Europe, 1600-1675 (3) Concentrated study of Bruegel, Rubens, Rembrandt, Georges de La Tour, Vermeer, Poussin, and Hals.

375 History of Modern Sculpture in Europe and America (3) From 1800 to 1900: Neoclassicism to Rodin. From 1900 to present: emphasis on Cubism. Constructivism, Expressionism, Pop, Primary Forms, Environments, and Earthworks.

381 Medieval Art of the West, 800-1400 (3) Western European art of the "Dark Ages," Romanesque, and Gothic periods. (Same as Medieval Studies 381.)

382 The Art of Italy: 1250-1450 (3) Development of exploration of naturalism. Revival of antiquity and development of theories of perspective in the Early Renaissance. Including Duccio, Giotto, Masaccio, Donatello, Botticelli. (Same as Medieval Studies 382.)


384 Art of Southern Europe: 1575-1700 (3) Concentrated study of Caravaggio, Bernini, and Italian Baroque development in all media. Spanish Baroque painting and sculpture with special attention to Velazquez.

385 Chinese Art (3) Survey from pre-Shang Dynasty to contemporary movements in China, Taiwan, and Hong Kong. New discoveries are stressed. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

386 Japanese Art (3) Survey from ancient Joman art to Shinto, Meiji, and modern art. Study of the arts: literature, music, theater, art and applied arts, and religion. Emphasis on ceramics sculpture, and the vessel forms, Environments, and Earthworks.

387 Japanese Art (3) Survey from ancient Joman art to Shinto, Meiji, and modern art. Study of the arts: literature, music, theater, art and applied arts, and religion. Emphasis on ceramics sculpture, and the vessel forms, Environments, and Earthworks.

388 Chinese Art (3) Survey from pre-Shang Dynasty to contemporary movements in China, Taiwan, and Hong Kong. New discoveries are stressed. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

392 Film Design (3-6) Theory and practice of film making. Prereq: 260.

396 Beginning Airbrush (3) Techniques of airbrush drawing: skills and creative applications emphasized. For art majors only.

401 Fiber: Advanced Projects (3-6) Prereq: 302 or consent of Instructor. May be repeated. Maximum 12 hours.

402 Fabric: Advanced Projects (3-6) Prereq: 301 or consent of Instructor. May be repeated. Maximum 12 hours.

404 Intermediate Computer Enhanced Design (3) Exploration of computer systems, software and techniques. Prereq: 356 or consent of instructor.

405 Advanced Computer Enhanced Design (3) Prereq: 404 or consent of instructor. May be repeated. Maximum 6 hours.

406 Goldsmithing (3-6) Advanced metalsmithing techniques including granulation, electroforming, electroplating, anodization, and photo processes with individual studio problems to develop a personal style of expression. Prereq: 8 hours of metalsmithing or consent of instructor. May be repeated. Maximum 12 hours.

409 Special Topics in Fiber/Fabric (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department and individual topic. 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 concepts 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 to expand and enhance the painting, drawing, and watercolor curriculum. Prereq: Determined by department and 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 expected. Prereq: 321 and 322. May be repeated. Maximum 12 hours.

422 Ceramics: Advanced Projects (3-6) Each student is responsible for developing a thematic investigation of a specific concept using appropriate methods, materials, and techniques. Individual direction expected. Prereq: 321 and 322. 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. Prereq: 321 and 322.

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

425 History of Ceramics Seminar (3) Survey of the history of ceramics from ancient through contemporary. Emphasis on ceramics sculpture, and the vessel forms, Environments, and Earthworks. (Does not apply toward art history requirement.) Prereq: 321 and 322.

426 Kilns: Design, Construction and Operation (3) Designing kilns, traditional and modern refractories, construction methods, and operation of wood, gas and electric kilns. Prereq: 321 and 322.

429 Special Topics in Ceramics (3) Student or instructor-initiated course offered at convenience of department. Prereq: Determined by department and individual topic. 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 and 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.

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

451 Advanced Graphic Design (3) Advanced projects in conceptual and applied design for printed media: publications, posters, advertisements. Prereq: 356.

142 Courses of Instruction

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>453</td>
<td>Advertising Illustration (3) Concepts of advertising illustration media and techniques as applied to project illustration. Prereq: 354.</td>
</tr>
<tr>
<td>455</td>
<td>Professional Seminar (3) Political, social, economic, and ethical problems of the contemporary designer. Seminars with guest speakers. Senior portfolio reviews, resume design. Prereq: 350.</td>
</tr>
<tr>
<td>456</td>
<td>Graphic Design/Illustration Practicum (1-12) Practical work experience in the design or illustration field. Only by prearrangement with the department. Prereq: Senior standing and consent of instructor. May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>459</td>
<td>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.</td>
</tr>
<tr>
<td>462</td>
<td>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.</td>
</tr>
<tr>
<td>463</td>
<td>Lithography III (3-6) Exploration of individual projects through advanced color edicling methods from stones and aluminum plates. Prereq: 363. May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>464</td>
<td>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.</td>
</tr>
<tr>
<td>469</td>
<td>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.</td>
</tr>
<tr>
<td>471</td>
<td>History of North American Art (3) Survey of landmarks in painting, architecture, sculpture, and design from prehistory to 1900.</td>
</tr>
<tr>
<td>472</td>
<td>History of 20th Century American Art (3) Development in architecture, painting, and design from 1900.</td>
</tr>
<tr>
<td>473</td>
<td>19th Century American Painting (3) From West and Copley to emergence of &quot;The Eight&quot;.</td>
</tr>
<tr>
<td>474</td>
<td>History of Modern Architecture in Europe and America (3) Survey of 19th-century styles, Sullivan and skyscraper; 20th century: Viennese leaders, the Bauhaus, Gropius, Van der Rohe, Le Corbusier, and Wright; Aalto to Koolhaas; Tange and Metabolism, Archigram, Soleri, and Venturi.</td>
</tr>
<tr>
<td>475</td>
<td>History of the 19th Century Painting in Europe and America (3) Emphasis on France: Neoclassicism, Romanticism, French, Constable, Turner, Corot and Barbizon landscapes, Hudson River Group, Pre-Raphaelite Brotherhood, Manet, Courbet, Impressionism, van Gogh, Homer, Seurat through Cezanne.</td>
</tr>
<tr>
<td>476</td>
<td>History of 20th Century Painting in Europe and America (3) Fauvism, Die Brucke, Cubism, Der Blaue Reiter, Futurism, Dada and Surrealism, geometric abstraction, social commentary painting, Abstract Expressionism in the USA and parallels in Europe; Pop, Op, Minimal and Concept Art.</td>
</tr>
<tr>
<td>479</td>
<td>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.</td>
</tr>
<tr>
<td>481</td>
<td>Museology I: Museums, Purpose and Function (3) Purposes, functions and development of museums of art, history, natural and applied science. (Same as Anthropology 481.)</td>
</tr>
<tr>
<td>482</td>
<td>Museology II: Exhibition Planning and Installation (3) Exhibition planning and installation techniques. Publicity, promotion, matting and framing, shipping and storage. Prereq: 481 or consent of instructor. (Same as Anthropology 482.)</td>
</tr>
<tr>
<td>484</td>
<td>Museology III: Field Projects (1-12) Special field projects including restoration, preservation, registration, and other related research on or off campus. Prereq: 481 and 482. May be repeated. Maximum 12 hours. (Same as Anthropology 484.)</td>
</tr>
<tr>
<td>486</td>
<td>Art of Indian Asia (3) History of Indian art with consideration of the art of Central Asia and Southeast Asia. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.</td>
</tr>
<tr>
<td>489</td>
<td>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.</td>
</tr>
<tr>
<td>491</td>
<td>Foreign Study (1-15)</td>
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<tr>
<td>492</td>
<td>Off-Campus Study (1-15)</td>
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<tr>
<td>493</td>
<td>Independent Study (1-15)</td>
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<tr>
<td>494</td>
<td>Individual Problems (3) Prereq: Consent of instructor. May be repeated. Maximum 12 hours.</td>
</tr>
<tr>
<td>495</td>
<td>Visiting Artist Seminar (2) Seminar and discussion of contemporary artists conducted by different visiting artists each semester. (Does not apply toward art history requirement.) May be repeated. Maximum 8 hours.</td>
</tr>
<tr>
<td>496</td>
<td>Advanced Airbrush (3) Advanced techniques of airbrush drawing; skills and use in illustrations emphasized. Prereq: 396.</td>
</tr>
<tr>
<td>497</td>
<td>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.</td>
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</tbody>
</table>

**ART ARROWMONT PI BETA PHI SCHOOL OF ARTS AND CRAFTS**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>200</td>
<td>Special Topics (2-4) Student- or instructor-initiated course offered at convenience of department. May be repeated.</td>
</tr>
<tr>
<td>210</td>
<td>Drawing (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>220</td>
<td>Ceramics (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>230</td>
<td>Photography (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>240</td>
<td>Painting/Watercolor (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>250</td>
<td>Metal Design (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>260</td>
<td>Fibers (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>270</td>
<td>Fabric (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>280</td>
<td>Enameling (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>290</td>
<td>Wood (2-4) Beginning to intermediate. May be repeated.</td>
</tr>
<tr>
<td>400</td>
<td>Special Topics (2-4) Student or instructor-initiated course offered at convenience of department. May be repeated.</td>
</tr>
<tr>
<td>410</td>
<td>Drawing (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>420</td>
<td>Ceramics (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>430</td>
<td>Photography (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>440</td>
<td>Painting/Watercolor (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>450</td>
<td>Metal Design (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>460</td>
<td>Fibers (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>470</td>
<td>Fabric (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>480</td>
<td>Enameling (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
<tr>
<td>490</td>
<td>Wood (2-4) Intermediate to advanced. May be repeated.</td>
</tr>
</tbody>
</table>

**ART EDUCATION**

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>300</td>
<td>Art for the Elementary Classroom Teacher (2) Methods of teaching art in elementary classrooms including developmental theory, philosophical concerns and selected media experiences.</td>
</tr>
<tr>
<td>301</td>
<td>Foundation of Art Education (3) Basic philosophy and structure including directed learning activities in two and three dimensional design, art appreciation, and teaching methodology. F, Sp</td>
</tr>
<tr>
<td>302</td>
<td>Concepts of Drawing and Painting (3) Processes in teaching of drawing and painting including consideration of pertinent literature and research. F, Sp</td>
</tr>
<tr>
<td>303</td>
<td>Concepts of Sculpture and Crafts (3) Processes in teaching of sculpture and crafts including pertinent literature and research. Prereq: 301 and admission to Teacher Education Program. F, Sp</td>
</tr>
<tr>
<td>304</td>
<td>Concepts of Printmaking, Graphic Design and Lettering (3) Processes in teaching printmaking, graphic design and lettering including pertinent literature and research. Prereq: 301 and admission to Teacher Education Program. Sp</td>
</tr>
<tr>
<td>350</td>
<td>Field Experience (1) Tasks related to teaching and to teacher roles. May be repeated. Maximum 2 hours. Prereq: Admission to Teacher Education Program. Satisfactory/No credit only. Sp</td>
</tr>
<tr>
<td>400</td>
<td>Curriculum Planning and Teaching Strategies (3) Program development, instructional methods, professional literature, contemporary issues, simulation and micro teaching situations. Prereq: 301 and admission to Teacher Education Program. F, Sp</td>
</tr>
<tr>
<td>410</td>
<td>Pre-Internship Seminar (1) Orientation describes the objectives and policies of the internship program. May be completed the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp, Su</td>
</tr>
<tr>
<td>418</td>
<td>Internship I: Grades K-12 (3-6) 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</td>
</tr>
<tr>
<td>419</td>
<td>Internship II: Grades K-12 (3-6) Demonstration of professional competence in planning, instruction and classroom management. Internship is completed in local public schools. Prereq: 481 and admission to Teacher Education Program. Satisfactory/No Credit only. Sp</td>
</tr>
<tr>
<td>490</td>
<td>Special Topics (3) May be repeated. Maximum 6 hours.</td>
</tr>
<tr>
<td>493</td>
<td>Independent Study (3) May be repeated. Maximum 9 hours.</td>
</tr>
</tbody>
</table>

**ASIAN STUDIES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>101-102</td>
<td>Asian Civilization (3,3) Comparative study of development of religion, social institutions, and high culture in India, China, Japan, and the Islamic world. 101-Rise of classical civilizations. 102-Traditional culture and their modern developments. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.</td>
</tr>
</tbody>
</table>
121-122 Elementary Modern Standard Arabic I, II (5,5) Literary Arabic, 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.

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

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

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

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

221-222 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.

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

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.

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

261-263 Intermediate Persian (4,4) Taped language program. Prereq: 151-162 or equivalent 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: at least one in-class essay examination and 3000 words of writing outside the classroom.

313-314 Japanese Literature in English Translation (3,3) 313-Classical/traditional: masterpieces of poetry, fiction, essay, and dramatic literature. 314-Modern: major works of fiction since 1850. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

316 The Literature of India in English Translation (3) Major genres and masterpieces of Indian literature—epic poetry, drama, court poetry, modern novel. Concentration on ancient and classical periods of Indian literary history.

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

321 Spoken Lebanese-Palestinian Arabic (4) Infor-mal Arabic for use in daily life. Emphasis on appropriate response and understanding of cultural context. All work is oral, including exams, but grammatical analysis 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.

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 II, (4,4) Includes con-versation, drill, and composition practice with native speaker as well as reading and translation. Prereq: 251-252. Must be taken in sequence.

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

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

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

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

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; light of stars; stellar evolution; stellar birth, evolution and death as a chain of events; characteristics of galaxies and the origin of the universe examined in light of modern astrophysics and particle physics. A minimum of mathematical analysis. Must be taken in sequence. 4 hours lecture-demonstration, 1 hour laboratory. May be repeated for credit with consent of instructor. Maximum 9 hours.

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

217-218 Honors: Introductory Astronomy (4,4) Introduction to astronomy 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 techniques and interpretation of underlying physical laws in accompanying lab. 3 hours lecture, 2 hours lab. Coreq: Mathematics 141 or 130 or equivalent. Credit given for only one sequence of lower division astronomy. This sequence satisfies the liberal arts requirement for a natural science. 4 hours lecture.

411 Astrophysics (3) Development of analytical physical models of the universe, the solar system, stellar and interstellar matter, and planetary systems. Topical and interdisciplinary approach includes consideration of quasars, pulsars, black holes and current developments in the field. Acceptable for major credit in physics. Prereq: Physics 202 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.

AUDIOLINGUISTICS

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. Prereq: 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. Prereq: 304, 305, or consent of instructor. (Same as Special Education 331.)

371 Audiology I (3) Basic audios. Fundamental aspects of auditory anatomy and physiology. Introduction to disorders of hearing. Basic Psychoacoustics. (Same as Special Education 371.)

404 Appraisal of Speech and Language Disorders (3) Diagnostic procedures for children and adults with speech and language problems including observation and practice with diagnostic tests. Prereq: 304, 305, 433 or consent of instructor. (Same as Special Education 404.)

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

433 Clinical Practice in Speech-Language Pathology (1-4) Prereq: 320, 331 or consent of instructor. Enrollment for fewer than 2 semester hours must have prior departmental approval. (Same as Special Education 433.)

434 Clinical Practice in Speech-Language Pathology (1-4) Prereq: 333 or consent of instructor. Enrollment for fewer than 2 semester hours must have prior departmental approval. (Same as Special Education 434.)

440 Voice Disorders (3) Etiology, diagnosis, and treatment of organic and functional voice disorders. Prereq: 304, 306, or consent of instructor. (Same as Special Education 440.)

445 Clinical Practice in Audiology (1-4) Prereq: 473 and 494.

455 Problems in Speech Pathology (1-3) Prereq: Consent of instructor.


463 Practical Applications of Language Habilitation Techniques (3) Various methods and procedures used in treating delayed/disordered preschoolers. Alternative/ augmentative systems included. Prereq: 461 or 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 audiometry, masking and overview of special auditory tests. Prereq: 371, (Same as Special Education 473.)

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

494 Introduction to Aural Rehabilitation (3) Rehabilitation of acoustically impaired who have communication difficulties, stressing maximum use of residual hearing and utilizing other sensory modalities. Prereq: 473. (Same as Special Education 494.)
**BIOCHEMISTRY**

310 Introduction to Biochemistry (3) Biochemical principles underlying physiological events in animal tissues. Metabolism of carbohydrates, lipids, proteins, and nucleic acids; undergr?und metabolic fluids. Action of drugs and hormones. Prereq: Chemistry 120-30 or 150-30, Botany 110-120, 120 lectures and discussions. Not available for credit if credit has previously been received for 410 or 420. F, Sp

401 Cellular and Comparative Biochemistry (4) Electrocly behavior; chemistry and structure of proteins; enzymes; the molecule and biological function; catalysis and enzyme energy; synthetic metabolism; nucleic acid function; protein synthesis, and biochemical genetics. Prereq: Biochemistry 350-60-69 and Biology 110-20. Three lectures and discussion. F, Sp


426 Advanced Topics in Biochemistry (3) Selected Topics of current research interest, e.g., allosteric theory and control of protein function, immunchemistry, 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. Various biochemistry technologies. Written reports required. Prereq: 410. Sp Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

430-440 Introduction to Physical Biochemistry (3,3) Development of concepts from physical chemistry for application to biological processes. 430 - Thermodynamics; Intermolecular bonding; transport; shape and motion of macromolecules; kinetics of enzyme-catalyzed reactions. 440 - Quantum mechanics; molecular orientation; biophysics; biophysical studies; nucleic acids; macromolecular studies through nuclear magnetic resonance and electron spin resonance; case studies of selected macromolecules. Prereq: Mathematics 141-142, Chemistry 350-360-369, and Biology 110-120. F, 430 - 440. Sp

452 Independent Research in Biochemistry (1-4) Special experimental problems under direction of a staff member. Limited to undergraduates and by consent of instructor. May be repeated. Maximum 12 hours. Prereq or Coreq: 410, 419.

**BIOLOGY**

110-120 General Biology (4,4) Biology 110 - Biology of cells; chemical basis of life; cell structure and function; energy metabolism; cell division; Mendelism and molecular genetics; kingdoms of monera, protista, fungi, and bacteria. Biology 120 - Plant and animal anatomy (taurism). Organisms; physiology, growth, and reproduction; ecology; population genetics; behavior; and evolution. Recommended, but not required to be taken together. Students who receive credit for 110-120 may not also receive credit for Biology 150, Botany 110-120, Honors Botany 118-128, or Honors Zoology 117-118.

150 Biology for Majors (5) General biology emphasizing biological principles. Open to students who have a year of high school biology and a score of 26 or better on the natural science section of the ACT. Students who receive credit for 150 may not also receive credit for Biology 110-120, Botany 110-120, Honors Botany 118-128, or Honors Zoology 117-118.

210 Cell Biology (3) Organization and function of the cell. Prereq: 110-120 or 118-128, 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 (3) Relations between organisms and their environment: including human environmental problems. Prereq: 110-120 or 150, or Botany 110-120 or 118-128, 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/field trip each week. May be taken in any sequence or combination with 210 and 220.

**BOTANY**

110-120 General Botany (4,4) 110 - Introduction to taxonomy through tree identification; basic organization and function of cells; plant growth and development; physiology; respiration; photosynthesis; genetics (including meiosis, mitosis, Mendelian inheritance, and population genetics). 120 - Origin of life, survey of plant kingdom (algae, fungi, mosses, ferns, conifers, and flowering plants); ecology; life histories; evolution; and importance to man. Students may not receive credit for both Botany 110-120 and Biology 110-120, Botany 118-128, or Biology 150. F, 120, Sp, Su 200.

118-120 Honors: General Botany (4,4) Same as General Botany 110-120 with emphasis on special topics and philosophical context including special presentations, seminars, and occasional group projects. Written reports required. Prereq: 118. Sp Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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

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

309 Biology of Human Affairs (3) Basic biological principles involved in deterioration and preservation of an environment in which humans and their cultures may survive.

310-320 Plants: An Evolutionary Survey I, II (3,3) Morphology, development, natural history, and evolution. 310 - Surveys non-vascular plants (monera, algae, fungi). Prereq: satisfactory ACT scores; Chemistry 120-30 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.

401-402 Field Studies in Botany: (Specific Topic to be announced) (3,3) Studies of the distribution and taxonomy of special plant groups. Selected field topics will vary and may include: Bryology, Lichenology, Entomology, Aroid Speciation, Mycorrhizal Plants, Synantherology, Woody Plants, and Botanical Photography. May be repeated, but no specific topic may be repeated for credit. Maximum 9 hours.


412 Plant Anatomy (3) Cells, tissues and organs; their development in vegetative and reproductive structures of vascular plants—emphasis on seed plants. Prereq: 110-120 or Biology 110-120.

426 Paleobotany and Palynology (3) (Same as Geology 426.)

431 Plant Ecology (3) Interactions between individuals, species, communities and their environments. Circulation of energy and matter in ecosystems. Weekly field trips or laboratory periods, and at least two weekend field trips. Prereq: 330 or equivalent. Sp

441-442 Undergraduate Research Participation (1-2,1-2) Experience in active research projects under supervision of staff members. Prereq: Junior or senior standing and consent of instructor. May be repeated. Maximum 8 hours. E

451 Plant Tissue Culture (3) Methods for the culture of cells, tissues, and organs including media preparation and maintenance of cultures. Lecture and lab. Prereq: Botany 110-120, Botany 118-128, or the equivalent of 2 years of high school biology and satisfactory ACT scores; Chemistry 120-130 or equivalent. Recommended: Botany 310-320, 321, 412; Microbiology 310 or 319; Ornamental Horticulture and Landscape Design 330; and Plant and Soil Science 331.

**BROADCASTING**

275 Introduction to Radio and Television (3) History, economics, structure and regulation of broadcasting including radio, television, cable, satellites and related technologies. Includes role of broadcasting in society. Prereq: Communications 150.

310 Radio News (3) Writing, reporting, and performing news for radio. Lecture, and lab course with experience in total news operation of WUTK-FM. Prereq: 275 and Communications 200.


330 Producing for Radio (3) Functions, theories, tools, and techniques of working for radio. Students write, perform and produce on WUTK-FM. Overview of audio equipment and production techniques. Prereq: 275 and Communications 200.

410 Television News (3) Writing, reporting, performing and producing news for television. Lecture and lab course providing students with experience as reporter, writer, producer, and editor for television news program. Includes an overview of electronic news gathering equipment and techniques as well as video editing. Prereq: 310.

420 Radio and Television Sales and Promotion (3) Problems and practices of television, radio, and cable sales and promotion. Case studies in sales, sales management, pricing, radio cards, use of rating and sales presentation. Lecture and analysis of effective station promotion techniques. Prereq: 300.

430 Producing for Television (3) Principles of television studio and field production, both technical and creative. Writing, producing, shooting and editing video stories and programs. Class uses 3/4" cameras, recorders, and editing system. Prereq: 330.

490 Radio and Television Management (3) Business policies and practices of broadcast operations, department functions, cost and income analysis, leadership styles and techniques with an emphasis on mid-level management. Capstone course to be taken in student's senior year. Prereq: 275, 310, 320, 330.

492 Practicum (1-5) Off or on-campus work and learning experience at radio, television, cable or non-broadcast facility. 1 hour must be at WUTK-FM. 150 hours of work required for each hour of credit. Final written report required. May be repeated one time. Prerequisites: 275, progression to a broadcasting major and consent of department head.

493 Independent Study (3) Area of study in broadcasting to be determined by student in consultation with faculty advisor. Ordinarily the area of study is not part of the departmental curriculum. Students must complete an application form available in the department. Prerequisites: Senior standing and consent of department head.

BUSINESS ADMINISTRATION

311 International Business (3) Survey of strategic implications of conducting business operations in an international context. Analysis of relevant cross-national environments, including cultural, political, economic and legal characteristics. Prereq: Economics 201.

320 Business Career Planning and Placement (1) Career opportunities in business. Making the career decision, preparing for and conducting a job campaign. Using the Placement Office. Satisfaction/No Credit only. Prereq: Satisfactory progression to upper-division level in Business or Liberal Arts Business Minor.

467 Honors: Corporate Executive in Residence Seminar (3) Interaction with top corporate executives from a wide spectrum of business disciplines. Domestic and international strategic planning as it is applied in major U.S. Corporations. Executive presentations and small group discussion on goods and services in consumer and industrial settings. Prereq: Senior standing, Finance 301, Management 301, Marketing 301 and consent of instructor.

491 Foreign Study (1-5) Prereq: Consent of instructor. See page 56.

492 Off-Campus Study (1-5) Prereq: Consent of instructor. See page 57.

493 Independent Study (1-5) Prereq: Consent of instructor. See page 57.

BUSINESS LAW

301 The Legal Environment of Business (3) Introduction to legal system including legal ethics (jurisprudence), sources of law, steps in lawsuit, constitutional law related to business, administrative regulation, securities law, antitrust law, employer-employee relations, product liability, consumer protection, business associations, environmental law, international law, contracts, and white collar crimes and torts. Prereq: Junior standing. E

401 Law of Business Organizations and Commercial Transactions (3) Introduction to legal implications of basic business transactions including contracts, property, negotiable instruments, bankruptcy, receivership, insurance, and legal liability. Fundamentals of business law required for professionals (e.g. CPA exam). Major writing requirement. Prereq: 301 F, Sp

CHEMISTRY

100 Principles of Chemistry (4) Bonding and molecular structure, gas laws, liquids and solids, solutions, colloids, acids and bases, oxidation and reduction, kinetics and equilibria. 3 hours and 1 lab E

110 Introduction to Organic and Biochemistry (4) Organic chemistry: alkanes, unsaturated and aromatic hydrocarbons, structures and reactions of various organic functional groups, Biochemistry: amino acids and proteins, carbohydrates, lipids, nucleic acids. 3 hours and 1 lab. Prereq: 100 or 130 or 131 or 138 E

120-130 General Chemistry (4,4) A general course in theoretical and descriptive chemistry. 120 - Modern atomic theory, chemical bonding, stoichiometry, quantitative treatment of gas laws, quantitative aspects of solution chemistry, kinetics. 130 - Chemical equilibria, thermodynamics, descriptive chemistry of non-metallic and metallic elements, electrochemistry, introduction to organic and biochemistry. Prereq for 120: 3. 3 hours and 1 lab E

121-131 General Chemistry (4,4) For chemistry majors. Subject matter similar to Chemistry 120-130. Prereq for 121: 3 hours and 1 lab. 121-F, 131-Sp

128-138 Honors: General Chemistry (4,4) 3 hours and 1 lab. 128-F, 138-Sp

140 Chemical Programming (2) Use of the computer in solving problems encountered in chemistry. Required of and limited to chemistry majors. Prereq or Coreq: 130 or 131 or 138. 1 hour and 1 lab. Sp

200 Introduction to Chemical Research (1) Participation in an active research program in analytical, inorganic, organic, physical, or biochemistry. Students work with researchers to acquire expertise in planning experiments, interpreting results, and formulating hypotheses. Credits do not count toward a major or minor in chemistry. Not a substitute or prerequisite for 400. Prereq or Coreq: 200 or higher level course in chemistry and consent of instructor. May be repeated. Maximum 4 hours. E

230 Inorganic Chemistry (3) Periodicity, valence, bonding, and the descriptive chemistry of the elements; coordination compounds; nuclear chemistry; transition elements, inner transition elements. 2 hours and 1 lab. Prereq: 130 or 131 or 138 F

310 Analytical Chemistry (3) Principles and practices of quantitative measurements in chemical systems. Acid-base, complexometric, and redox equilibria; applications of titrimetric analysis; potentiometry; elementary spectrophotometry; chemical separations including chromatography, ion exchange, and solvent extraction. Prereq: 130 or 131 or 138 E

319 Analytical Chemistry Laboratory (1) Experiments on topics covered in 310. Coreq: 310 E

320 Advanced Analytical Chemistry (3) Modern electroanalytical methods; mass spectrometry; optical spectroscopic techniques; magnetic resonance methods; advanced chromatographic theory. Prereq: 310. Sp

329 Advanced Analytical Chemistry Laboratory (2) Experiments on topics covered in 320. Coreq: 320. Sp

350-360 Organic Chemistry (3,3) Compounds of carbon and their reactions. Reaction mechanisms, synthesis, spectroscopic and other physical properties. Must be taken in sequence. Prereq: 130 or 131 or 138; Coreq for 350: 369. E

369 Organic Chemistry Laboratory (2) Experiments on topics discussed in 350-360. Coreq: 360. One 5-hour lab. E

370-380 Biophysical Chemistry (3,3) Physicochemical principles with applications to biological systems. Must be taken in sequence. Not open to students having 371-381, 370-Gas Laws: first, second and third laws of thermodynamics; chemical equilibria; solutions; chemistry; electrochemistry. 370- Reaction kinetics; transport phenomena; elementary quantum chemistry; optical and magnetic spectroscopy; light scattering; colloid science. Prereq: 369-369 and Mathematics 142 or 152 or equivalent. 370-F, 380-Sp

371-381 Physical Chemistry (3,3) Students may not receive credit for both 370 and 371 nor for both 380 and 381. 371-Properties of gases; first, second, and third laws of thermodynamics; chemical equilibria; simple phase equilibria; properties of solutions; introduction to statistical thermodynamics. 381-Kinetics of chemical reactions; intramolecular vibrations; applications to electronic structure of atoms and molecules; molecular spectroscopy; molecular symmetry. Prereq: 360 or 138, Physics 231 or 222, and Mathematics 241 E

379-389 Physical Chemistry Laboratory (2,2) Experiments on topics discussed in 370-380 or 371-381. Prereq or Coreq: Corresponding courses 370 or 371 for 370 and 379 or 380 for 380. E

400 Research in Chemistry (2) Open to senior majors with consent of department head. Written reports are required. Advanced students work with faculty on projects requiring knowledge and skills acquired in chemistry curriculum. May be repeated. Maximum 6 hours. E Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

405 Topics in the Development of Chemistry (3) Historical development of topics such as the atomic theory; chemical industry; interrelationship of population, energy, and food. Subject matter may vary from one offering to another. Assignments include readings from older original literature (Dalton, Faraday, Kekulé) and from current journals and monographs. Includes the use and misuse of evidence, the impact of chemistry on society, how scientists reach conclusions, and the nature of the scientific community. Prereq: Coreq: Senior standing in chemistry. F Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

406 Seminar (1) Discussions by faculty and students of current research and topics from recent literature. Oral and written reports required. All chemistry majors are encouraged to enroll. Coreq: Senior standing in chemistry. May be repeated. Maximum 2 hours.

409 Advanced Chemical Experimentation (3) Laboratory course in application of modern experimental techniques to solutions and theoretical interpretations. Synthesis and characterization of organic and inorganic compounds, with emphasis on independent study and use of chemical literature. Prereq: 230, 320, and 380. 3 labs. F

430 Advanced Inorganic Chemistry (3) Atomic and molecular structure, bonding theories, descriptive chemistry of the element, its reactions, and inorganic reactions, applications of modern techniques for characterization, coordination and organometallic chemistry. Prereq: 260 or Coreq: 380 or 381. Sp

431 Radioactivity and its Application (2) Radioactive materials in tracer and diagnostic medical application. Radioactive decay, detection apparatus and techniques, tracer procedures, safety precautions in agriculture, biology, medicine, nuclear industry, chemistry, history, physics majors or minors. Prereq: Mathematics 122 or equivalent and two courses from the following: 100, 110, 120-130, 121-131, 125-136. 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

470 Advanced Physical Chemistry (3) Topics from chemical dynamics, statistical thermodynamics, quantum mechanics of atomic and molecular systems, crystal structure and solid state. Prereq: 380 or 381. Sp

490 Introductory Polymer Chemistry (3) Fundamenta1 principles structure and the role of chemistry in the interdisciplinary field of polymer science. Relation of molecular structure to bulk properties of polymers. Prereq: 360 or Coreq: 380 or 381. F

CHILD AND FAMILY STUDIES

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

210 Human Development (3) Conception through adulthood in various social/ecological contexts. Inter-
211 Development in Infancy and Early Childhood (3) Development from conception through early childhood; cognitive, physical, emotional, social, sexual, physical aspects of ontogeny; normative, nonnormative development. Includes observation. F, Sp, Su

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

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

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

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

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. Sp

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

350 Early Childhood Education I: Environments for Children (3) Classroom management, behavior guidance, organization of day care environments, one-to-one interaction, instruction with children, child stress reduction and management in classroom. Includes participation. Prereq: 110 and 211 or consent of instructor. F

351 Early Childhood Education II: Curriculum and Program Development for Young Children (3) Planning effective early learning programs for young children relating knowledge of children's growth and development to appropriate experiences in art, music, number, logic, media, physical knowledge; planning, implementing, evaluating curriculum activities. Includes participation. Prereq: 350 or consent of instructor. F

352 Family, School, and Community Relations (3) Techniques for developing community relationships and advocating for children and families, including handicapped individuals. Includes observation and program participation. Pre or Coreq: 351 or HEED 220 or consent of instructor. Sp

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. Sp

360 Family Finance (3) Alternatives for meeting family financial responsibilities across the life-cycle. Prereq: 220 or CFS majors. F

420 Families: Ethnicity, Race, Class and Culture (3) Cultural, socioeconomic, ethnic variations; emerging needs and programs. Prereq: 220, 320, Junior standing or consent of instructor. (Same as Afro-American Studies 300). F, A, S

430 Family Interaction (3) Dynamics within family systems: marriage, and parent-child relationships; communication and conflict management within families. Prereq: 220. Sp

440 Teaching in Community-Based Programs (3) (Same as Home Economics Education 440) Sp

450 Assessment in Early Childhood Programs (3) Physical, cognitive, social, language development in handicapped and nonhandicapped children birth to 5 years; early childhood assessment procedures. Includes supervised practicum in assessment. Prereq: 351 or consent of instructor. F

451 Early Childhood Education III: Mainstreaming Exceptional Children (3) Individualized curriculum planning based on knowledge of normative, nonnormative development, assessment, effective teaching strategies for facilitating development. Includes participation. Prereq: 450 F

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. F, Sp, Su

470 Student Teaching (15) Responsibility for planning and guiding groups of infants, toddlers, or preschoolers under supervision of Master Teacher. Includes weekly seminar. Prereq: 351. Satisfactory/No Credit only. F, Sp, Su. F and Sp student teaching begins on first day of registration and ends on last day of final examination period (student teaching follows the CDL calendar and does not include Spring Break). Su student teaching begins the day following Sp commencement and ends on the day before Su commencement. No other classes may be taken during student teaching.

475 Day Care Administration (3) Theories, methods, and materials for administrators of early childhood education programs; writing funding proposals, staff selection, financial management, recruiting and enrolling children, supervision of early childhood education programs, effective communication, conflict resolution. Includes participation experience. Prereq: 351 or consent of instructor. Sp

480 Practicum in Family Science (6 or 15) Supervised experiences working with children or families, designed to meet special interests of students; includes weekly seminar. Prereq: 15 hours in Child and Family Studies. Satisfactory/No Credit only. F, Sp

485 Special Topics in Child and Family Studies (1-9) Personal or professional interest in human development or family studies. Prereq: 9 hours in Child and Family Studies and consent of instructor. May be repeated. Maximum 9 hours. F, Sp, Su

497 Honors: Child and Family Studies (3-6) Issues or topics affecting children and/or families, designed to meet particular interests of the student. Prereq: 15 hours in Child and Family Studies, overall GPA of 3.25 or greater, and consent of instructor. May be repeated. Maximum of 6 hours. F, Sp, Su

CLASSICS

221 Early Greek Mythology (3) Archaic Greek religion with emphasis on how they reflect the early Greek vision of the universe and humanity's place in it. Origins and development of Greek myths and the rise of organized religion, from Bronze Age to about 450 B.C. Readings include Hesiod and Aeschylus. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

222 Classical Greek and Roman Mythology (3) Use of myth in literature, religion, and philosophy of Greece and Rome from about 450 B.C. to about 350 A.D. Two foci are the latter half of the fifth century B.C. and the last quarter of the first century B.C. Includes Oriental intrusions into Greece and Rome, including early Christianity. Readings include Sophocles, Euripides, Plato, poetry, and modern scholarship. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

232 Archaeology and Art of Etruria and Rome (3) Survey of the archaeological and art of the Etruscans and the Roman World from prehistoric times to the fall of the Roman Empire (1000 B.C.-500 A.D.) Reconstruction of the Etruscan culture and art, and the Roman imperial culture, including the arts, architecture, and urban planning in Italy and the provinces. Prereq: 232 or consent of instructor. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

233 Archaeology and Art of Etruria and Rome (3) Survey of the archaeology and art of the Etruscans and the Roman World from prehistoric times to the fall of the Roman Empire (1000 B.C.-500 A.D.) Reconstruction of the Etruscan culture and art, and the Roman imperial culture, including the arts, architecture, and urban planning in Italy and the provinces. Prereq: 232 or consent of instructor. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

234 Medical and Scientific Terminology (3) Greek and Latin roots from which medical and scientific terminology is derived. Extensive practice in analysis of terms. Practice in use of Latin nomenclature.

311 Archaeology of the Aegean Bronze Age and Early Greece (3) Includes Troy, the Cycladic islands, the Greek mainland, Crete, Cyprus, ca. 3000-700 B.C. Rise and fall of the Minoan and Mycenaean civilizations and their effect on the Aegean World and Cyprus. Evidence for early Greek colonization and foreign contacts. Architecture, wall paintings, artifacts, inscriptions, funerary customs. May be repeated. F, Sp, Su

334 Cities and Sanctuaries of the Ancient Greek World (3) Archaeological survey of the development of the Greek city and sanctuary from prehistoric times through the Roman period (ca. 2000 B.C.-200 A.D.). Includes topography and plans of major cities and sanctuaries, functions of buildings, development of city planning, quality of city life, religious rites and festivals including the Olympic games. Ancient sites include Mycenae, Athens, Priene, Alexandria, Perge, Ephesus. Students are recommended to have taken one of the following: 221, 232, 233, 281, History 310. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

352-254 Greek and Roman Literature in English Translation (3, 3.5) 253-Greek literature. Major literature of ancient Greece from Homer to Menander, with emphasis on the sixth and fifth centuries B.C.-254-Roman literature. Major literary works of the Romans from Plautus to Tacitus. How the Romans borrowed from the Greeks and then achieved their own artistic identity by the time of Vergil's Aeneid. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

373 Medical and Scientific Terminology (3) Greek and Latin roots from which medical and scientific terminology is derived. Extensive practice in analysis of terms. Practice in use of Latin nomenclature.
May be repeated. Maximum 6 hours. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

441 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 courses offered subject matter not taught in an existing course, or concentration on one aspect of the existing course. May be repeated. Maximum 9 hours. Prerequisites according to topic.

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

491 Foreign Study (1-15)

COLLEGE SCHOLARS HONORS

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

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

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

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

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

100 Introduction to Mass Communications (3) Overview of systems of mass communications, with emphasis on American media, their ownership, legal and social controls, role and effects. Advertising, broadcasting, journalism, and public relations are examined in the context of theories of mass communications. Potential majors in the College of Communications should take this course during their freshman year. Juniors and seniors may not enroll.

200 Writing for Mass Communications (3) Information gathering and writing under deadline for print and broadcast media, including news and promotional copy. Preparation of news, advertising and persuasive text. Comparison of styles and organization techniques. Grammar, usage, and style workshop. Prerequisites: 100, English 102, and college admission tests (typing, spelling and grammar).

300 Mass Communications Research Methods (3) Social science research methods, especially sample surveys, 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: libel, privacy, free press-fair trial, judicial controls, governmental regulations. Also includes ethical standards and practices of the mass media in America. Prereq: 200 or consent of instructor. F, Sp

COMPARATIVE LITERATURE

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

202-203 Cross-Cultural Perspectives in World Literature (3,3) Literary perspectives and values in different time periods and cultures. Variable content. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

301 Computer Techniques for Literary Study (3) Computer research in literary study including writing programs in BASIC which have literary research applications. Projects include indexing and bibliography, concordances, syntactic analysis, content analysis, authorship attribution, textual editing, and stylistic analysis. No previous computer knowledge or background is assumed or required.

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

COMPUTER SCIENCE

100 Introduction to Computing (4) History of computers, overview of computing, current trends, hardware, software, computing tools currently available. Organization and characteristics of modern digital computers. Introduction to programming, emphasis on developing good programming habits. Problem solving and algorithm development. Building abstractions with procedures and data. 100 and 102 may not both be taken for credit. 100 for students with little or no background in computing.


102 Introduction to Programming (4) Problem solving and algorithm development. Organization and characteristics of modern digital computers. Emphasis on developing good programming habits. Building abstractions with procedures and data. Programming in a modern computing language. 100 and 102 may not both be taken for credit. 3 hour lab required.

110 Computer Organization (3) Number systems, internal representation of numbers in computers, hardware components, hardware organization, introduction to assembly language, microprogramming control units. Computing with register machines, introduction to digital circuits. Prereq: 100 or 102. 3 hour lab required.

112 Data Structures (3) Structured programming, data structures and applications. O(1) techniques, lists, queues, trees, tables, streams, algorithms, files. 3 hour lab required.

203 COBOL (3) Computer programming in COBOL. File handling, file structures, editing, linking. Prereq: 100 or 101 or 102 or consent of instructor.


291 Lower-Division Special Topics (1-3) Topics vary. Programming languages, operating systems and application software packages. May be repeated. Minimum 9 hours.

311 Discrete Structures (3) Propositional and predicate calculus, algorithms, graphs, trees. Prereq: Mathematics 222 and either 100 or 102.

320 Problem Solving (3) General approaches to problem solving. Techniques for formalizing intuitive heuristics. Structure of problems and goals, generation of alternatives, and dealing with incomplete information. Prereq: 311 and 331. (Required core course for the Machine Intelligence concentration.) 3 hour lab required.

331 Digital Design (3) Logic design, microprocessors and microprocessor interfacing, interrupts. Prereq: 111 and 112. 3 hour lab required.

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

360 Systems Programming (3) Linkers, loaders, multitasking, /O facilities, interrupt handling, monitors, etc. Prereq: 111 or 112. (Required core course for the Computer Systems concentration.) 3 hour lab required.

371 Numerical Algorithms (3) Same as Mathematics 371.

380 Theory of Computation (3) Recursive functions, Turing machines, computational complexity and the halting problem. Prereq: 111 and 311. (Required core course for the Theory of Computation concentration.)


401 Applications of Computer Graphics (3) Commerical software, techniques, hardware. Prereq: 100 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

402 Applications for Artificial Intelligence (3) Commerical software, techniques, hardware. Prereq: 100 or 101 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

403 Applications of Microcomputers (3) Microcomputers, DCG, commercial software and hardware. Prereq: 100 or 101 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

404 Applications of Database Systems (3) Commercial software, systems, techniques. Prereq: 100 or 101 or 102. May not be taken for credit by Computer Science majors. 3 hour lab required.

411 Senior Thesis I (3) Frontiers-of-computer-science technology and research. Students begin writing a senior thesis. Prereq: Senior standing. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

412 Senior Thesis II (3) Continuation of 411. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

421 Introduction to Artificial Intelligence (3) Introduction to AI languages. Basic techniques of heuristic search, gaming, and theorem proving. Prereq: 320. 3 hour lab required.

422 Expert Systems (3) Production rule model and its extension into many-valued and fuzzy logics. Derivation of explanations, examples of expert system tools and building expert systems. Other methodologies—frames, scripts, decision expressions. Prereq: 421. 3 hour lab required.

423 Natural Language Processing (3) Phrase-structured and slot grammars, error-correcting interfaces and semantics. Applications in database and expert systems. Prereq: 361 and 421.

424 Robotics Software (3) Software for robotic control. Prereq: 331 and Mathematics 142. 3 hour lab required.

425 Functional Languages (3) Functional, applicative and object-oriented languages such as LISP and SMALLTALK. For research applications. Prereq: 111 and 112 and Mathematics 222. 3 hour lab required.

426 Computer Graphics (3) Interactive computer graphics, transformations, perspective, shading, vector generation. Graphics hardware such as tablets and chips with goal of understanding techniques for designing computer systems for graphics capability. Prereq: 331. 3 hour lab required.

433 Computer Systems Architecture (3) Parallel processing, memory, I/O, pipelines, specialized architecture. Prereq: 331 be taken for credit by Computer Science majors. 3 hour lab required.

434 Networks and Communications (3) ISO open system interconnection model, protocols, study of several existing wide area networks, local area networks. Prereq: 331 and 360.
435 Microcomputer Systems (3) Disk operating systems, peripheral devices, local area networks and communication protocols. Introduction to multiprocessor microcomputer systems. Prereq: 331 and 360. 3 hour lab required.

436 Computer Systems Hardware Design (3) Investigation of computer systems hardware, including bus structures, I/O devices, interrupt support hardware, direct memory access logic, timing buses, and system configuration. Lab includes the construction, testing and debugging of either or both of: a prototyped subsystem; a system based on commercially available microcomputer component devices. Prereq: 435. Includes 3 hour lab.

439 Microprogramming (3) Microprogramming concepts and techniques for control systems of large and small machines. Bit-slice architecture, sequencers, etc. Prereq: 351. 3 hour lab required.

441 Science Information Systems (3) Design of scientific data banks, document repositories, information retrieval and electronic dissemination services. Control and dissemination of scientific information at the national and international level. Prereq: 340.

442 Introduction to Database Management Systems (3) File searching and organization, hierarchical, network, and relational models; relational calculus and algebra, data definition and manipulation languages; implementation and security considerations; performance, integrity, and reliability metrics. Intelligent database systems. Prereq: 340 and 311.

443 Introduction to Information Storage and Retrieval (3) Information storage and retrieval, statistical, syntactic, and logical analysis of information content, evaluation of retrieval effectiveness. Prereq: 340.


451 Pattern Recognition and Analysis (3) Elements of syntactic pattern recognition, learning algorithms, decision theory, classification rules. Prereq: 111, 112 and 113. 3 hour lab required.

452 Image Processing and Analysis (3) Methods for digitizing, storing, processing, and displaying images. Image enhancement, restoration. Prereq: 451. 3 hour lab required.

460 Human Factors in Software (3) Interface between people and machines and the ease of use of software in the environment for which it is intended. Prereq: 111 and 112.


462 Software Engineering (3) Software design and application process from initial requirement and specification statements to coding, testing, implementation, and maintenance. Prereq: 111 and 112.

463 Programming Languages (3) Study and comparison of programming languages and their environments. Human interfaces, formalisms, domain of applicability, object manipulation, syntax, etc. Prereq: 111 and 112.


465 Parallel Computation I (3) Examination of non-numerical algorithms for parallel computation, operating systems, design and classification of parallel processors, compilers, concurrent computation. Prereq: 433.


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

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

473 Computer Modeling and Simulation of Physical Systems (3) Interactive techniques for the simulation of various kinds of physical systems. Prereq: 111, 112 and 311; and Mathematics 371.

476 Management of Uncertainty of Computer Systems (3) Origins of uncertainty and methods for dealing with the various classes of uncertainty. Topics may include hazards in switching circuits, vagueness in natural language processing, approximate reasoning models. Prereq: 111, 112 and Mathematics 222.

482 Graph Theory and Applications (3) Planarity, network flow, critical paths, etc. Prereq: 111, 112 and 311.


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. Intended for students with a specific project to pursue in conjunction with a faculty member. Project may be from a department other than Computer Science in which a case a faculty member from the appropriate department will help oversee the project. May be repeated. Maximum of 6 hours may be applied to the major. Prereq: Consent of instructor.

494 Special Topics in Computer Science (1-3) May be repeated. Maximum 9 hours.

CULTURAL STUDIES

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

400 Selected interdepartmental Cultural Topics (1-12) Acceptable for credit in any cultural studies concentration or minor with the consent of the director of cultural studies and the respective chairperson. May be repeated for credit up to maximum of 12 hours.

491 Foreign Study (1-15) Acceptable for credit in any cultural studies concentration or minor except Afro-American studies. Registration by consent of director of cultural studies and the respective chairperson.

492 Off-Campus Study (1-15) Acceptable for credit in any cultural studies concentration or minor except Afro-American studies. Registration by consent of director of cultural studies and the respective chairperson.

493 Independent Study (1-15) Acceptable for credit in any cultural studies concentration or minor except Afro-American studies. Registration by consent of director of cultural studies and the respective chairperson.

DANCE

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 (2) Preparation and presentation of university dance company performances. Participation through audition only. May be repeated. Maximum 16 hours.

210 Ballet Level (1) (2) Instruction and practice in elementary classical ballet techniques. May be repeated. Maximum 4 hours.

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

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

240 Tap: Level I (2) Instruction and practice in elementary tap dance techniques.
341 Survey of Labor Economics (3) Principles and methods of the teaching of dance with practical application in a mini-enterprise. May be repeated twice. Satisfactory/No Credit only. E

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

ECONOMICS

100 Survey of Economic Ideas (3) Ideas of major economists in context of socioeconomic conditions of their times. Emphasis on nontechnical 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.

207 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 of costs, and price of behavior of firms in perfectly competitive, monopolistic and imperfectly competitive markets, input prices, income distribution, welfare and general equilibrium. Prereq: 201.


321 International Economics (3) Balance of payments, exchange rate determination, monetary and fiscal policies, monetary arrangements, comparative advantage, tariff and nontariff trade distortions, protection arguments, regional integration. 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: at least one in-class essay examination and 3000 words of writing outside the classroom.

324 Comparative Economic Systems (3) Economic processes under alternative strategies and allocations mechanisms. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

325 Economic History of the North Atlantic Community (3) Origins of capitalism, mercantilism, Industrial Revolution, development of factory system, rise of organized business and labor, integration of the Atlantic economy. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

331 Government and Business (3) Antitrust and regulatory economics, problems in regulation and social control of business organization, oligopoly models. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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

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


351 Regional and Urban Economics (3) Overview of regional differences. Theory of industrial and agricultural location, migration, 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 inferences of empirical results, forecasting procedures and common econometric problems, such as multicollinearity, heteroscedasticity, and autocorrelation. Prereq: 201, Statistics 201, Mathematics 121-122 or 141-142.

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

415 History of Economics (3) Methods of study of historical development. Study of origins and evolution of major doctrines. Classical and Neoclassical economics, economics of Keynes and his followers, some principal developments of second half of twentieth century. Major writing requirement. Prereq: 201 and consent of instructor.

424 Political Economy of World Development (3) Topics vary. Latin America, Asia, Soviet Union and Eastern Europe. Analysis of major economic strategies, policies, and problems. Major writing requirement. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.


462 Economics of Resources and Environmental Policy (3) Economic analysis of environmental policy and allocation of resources. Benefits and costs of control of environmental pollution, and impacts of growth on environment. Major writing requirement. Prereq: 201.

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

472 Public Finance: Taxation and Intergovernmental Relations (3) Individual and corporate income tax, tax system, non-tax sources of revenue, fiscal federalism. Prereq: 201.

482 Introduction to Mathematical Economics (3) Application of algebra, matrix algebra, differential and integral calculus to micro and macroeconomics. Prereq: 201, Mathematics 121-122 or 141-142.

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

EDUCATION

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

303 Teacher Effectiveness and Curriculum Design (1) (Same as Educational Curriculum and Instruction 303.)

304 Microcomputers and Instructional Design (1) (Same as Educational Curriculum and Instruction 304.)

402 Social Theory and Educational Practice (1) (Same as Educational Curriculum and Instruction 402.)

315 Psychology of Learning and Classroom Management for Teachers (3) (Same as Educational and Counseling Psychology 315.)

325 Principles of Education Test Construction for Teachers (2) (Same as Educational and Counseling Psychology 325.)

370 Survey of Exceptional People (2) (Same as Special Education 370.)

EDUCATIONAL AND COUNSELING PSYCHOLOGY

210 Psychology of Human Development for Teachers (3) Understanding and application of the psychology of human development to teaching/learning process in educational setting. For students of superior ability and interest. Prereq: 201. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

315 Psychology of Learning and Classroom Management for Teachers (3) Understanding and application of the psychology of learning and classroom management to the teaching/learning process in educational settings. Prereq: 210 or equivalent admission to Teacher Education Program. (Same as Education 315.)

319 Principles of Educational Test Construction for Teachers (2) (Same as Educational and Counseling Psychology 319.)

404 Special Topics (1-3) Instructor initiated course offered at convenience of the department on various topics of current interest. Department for listing of topics to be covered. May be repeated twice. Maximum total credit 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. E

431 Personality and Mental Health (3) Perspectives of mental health. Emphasis on relationships to education and other social institutions. E

432 The Disadvantaged Student: Psychoeducational Perspectives (3) Theory and research regarding etiology, psychosocial behavior and appropriate interventions. E

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

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

EDUCATIONAL CURRICULUM AND INSTRUCTION

141 Efficient Reading and Study Skills (2) Improvement of reading comprehension and rate, intensive vocabulary enrichment, study skills as they relate to 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 6 hours. E

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

303 Teacher Effectiveness and Curriculum Design (1) Literature and research on effective teaching. Relationships between teaching principles and processes of curriculum design. Prereq: Admission to Teacher Education Program. (Same as Education 303.) F, Sp

304 Microcomputers and Instructional Design (1) Basic operations and application of microcomputer as related to curriculum development and instructional design. Prereq: Admission to Teacher Education Program. (Same as Education 304.) F, Sp

325 Teaching Science and Social Studies in Elementary and Middle Schools (3) Methods and materials for teaching science and social studies in elementary and middle schools. Teaching approaches common to both fields including inquiry, multi-sensory activities of the internship program. Must be completed before the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. (Same as Education 330.) F, Sp

355 Introduction to Secondary Schools (3) Language and language development as applied to teaching of oracy (listening, speaking, reading, and writing). Includes methods and materials. Prereq: Admission to Teacher Education Program. F, Sp

360 and 361 Teaching Developmental Reading in the Elementary and Middle Schools (3) Methods and background on how to teach word recognition skills, comprehension, study skills and to use materials. Includes units on phonics, evaluation and basal readers. Prereq: Admission to Teacher Education Program. F, Sp

370 Elementary and Middle School Mathematics Instruction (3) Procedures for helping children learn mathematics. Unit planning, daily planning, grouping, general factors related to classroom management. Not open to students who have had recent course in language arts methods. Prereq: Admission to Teacher Education Program. F, Sp

375 Laboratory and Field Studies in Elementary Education (1) Simulation of anthropological concepts to understanding of educational processes; major conceptual frameworks; selected ethnographic research on process of teaching, classroom organization and management practices for teaching science and social studies. Prereq: Admission to Teacher Education Program. F, Sp, Su

402 Social Theory and Educational Practice (1) Concurrent with internship; designed to integrate student's own experience with foundational theory and policy. Prereq: Admission to Teacher Education Program. (Same as Education 402.) F, Sp

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

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

419 Teaching Laboratory (3) Learning and practicing research based effective teaching behaviors. Video taping in simulated school settings. Prereq: Admission to Teacher Education Program. F, Sp

421 Elementary and Middle School Science and Social Studies Instruction (3) Methods and materials for teaching science and social studies. Development of instructional materials and individual entry points of the two fields. Not open to students with recent course or background in the Teaching of Elementary School Science and Social Studies. Prereq: Admission to Teacher Education Program. F, Sp

424 Studies in Elementary Education (1-3) Variable topics on teaching in Early Elementary (K-3), Middle Elementary (4-8), and Skils (K-2). Prereq: Admission to Teacher Education Program and permission of instructor. May be repeated. Maximum 6 hours. E

429 Language Arts/Reading in Elementary and Middle Schools (3) Language and language development as applied to teaching of oracy (listening, speaking, reading, 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. Prereq: Admission to Teacher Education Program. F, Sp

434 Topics in Reading Education (1-6) May be repeated. Maximum 6 hours. Prereq: Admission to Teacher Education Program and a course in Reading Education. F, Sp

435 Elementary and Middle School Mathematics Instruction (3) Procedures for helping children learn mathematics. Unit planning, daily planning, grouping, general factors related to classroom management. Not open to students with a recent course in teaching of elementary school mathematics. Prereq: Admission to Teacher Education Program. F, Sp

438 Early Childhood Education: Program Development and Teaching in Kindergarten (3) Curriculum planning, classroom organization and management practices for teaching reading and writing in kindergarten to elementary school. Prereq: Admission to Teacher Education Program. F

451 Education in Cultural Perspective (3) Contributions of anthropological concepts to understanding of educational processes; major conceptual frameworks; selected ethnographic research on process of schooling. F

453 Adolescent Literature (3) Literature written or appropriate for adolescents. F

454 Teaching Strategies and Issues in Social Studies Education (3) Goals, objectives, techniques, materials, evaluation, and school-community relationships. Required for certification and admission to Teacher Education Program. F

455 Teaching of Foreign Language, Grades 7-12 (3) Instructional methods, lesson planning, peer-teaching, materials for teaching Foreign Languages 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. F

456 Teaching Speech and Drama Grades 7-12 (3) Purposes, techniques, materials and evaluation of teaching Speech and Drama in secondary school. Required for certification in Speech. Prereq: 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. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. F, Sp, Su

461 Developing Reading Skills in Content Fields (3) Teaching reading and study skills in content areas of the major field. Extensive assessment of textbook emphasis on middle school and high school. F, Sp, Su

471 Internship I: Elementary (3-8) Methods and theoretical issues 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 satisfactory/no credit only. F, Sp

472 Internship II: Elementary (3-8) Demonstration of professional competence in planning, instruction, and classroom management in local school. Prereq: 471 and admission to Teacher Education Program. Satisfactory/No Credit only. F, Sp

473 Student Teaching in the Elementary School (3-18) Semester equivalent to Educational Curriculum and Instruction 481 or 482. Intended for students in the four year program or equivalent. Not to be substituted for Educational Curriculum and Instruction 471-473. Internship I. Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and 203 (1). Satisfactory/No Credit only. F

474 Student Teaching, Grades 7-12 (1-6) Semester equivalent to Educational Curriculum and Instruction 471 or 472. Internship II. Prereq: Admission to Teacher Education Program. Not to be substituted for Educational Curriculum and Instruction 481: Internship I or 473: Internship II. Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and 203 (1). Satisfactory/No Credit only. F

475 Utilization of Instructional Media (3) Basic communication process, need for instructional media, instructional development, selection and utilization of basic media, and basic 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

481 Internship I: Grades 7-12 (3-6) Methods and the theories of teaching. Internship is completed in the 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

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. F

485 Teaching of Mathematics, Grades 7-12 (3) Preparation of teaching plans, evaluation, materials for teaching mathematics, and direction of observation in schools. Prereq: Admission to Teacher Education Program. F

486 Introduction to Instructional Computing (3) Classroom use of computers, applications for teachers, overview of computer operations 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

494 Supervised Readings (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

495 Special Topics (1-3) Topics to be assigned. May be repeated. Maximum 12 hours. E

496 Teaching Science Grades 7-12 (3) Methods, recent trends in science and environmental education programs for secondary schools. Prereq: Admission to Teacher Education Program. F, Sp

517 Seminar (1-3) Curriculum, instructional technology, educational sociology as they relate to goals of students' programs. May be repeated. Maximum 6 hours. E
ENGINEERING AEROSPACE


362 Dynamics/Vibrations (3) Central force motion, transfer orbits, free and forced vibrations of single and multiple degree vibrating systems. Prereq: ESS&M 231, F.


422 Aerodynamics (3) Theory and design of aerodynamic bodies (1) Topics related to engineering ethics. Potential flow, theory, viscous effects, compressibility effects. Subsonic, transonic, and supersonic airfoils. Prereq: 370, F.

423 Viscous Flow (3) Boundary layer theory; laminar and turbulent flow, compressibility effects; numerical solution methods. Prereq: 351 and Mech. E. 391; Sp.


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 a complete aerospace system including economic and technical aspects. Participation in team design effort including formal presentations and design report. Prereq: 425, 429, Sp.

431 Mechanical Engineering/Aerospace Engineering (1) Topics related to engineering 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, F.

494-495 Selected Topics in Aerospace Science (1-4) Current problems and topics in aerospace science and engineering, for the several areas of aerospace science. Prereq: Consent of instructor. F, Sp.

ENGINEERING BASIC

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


111 Fundamentals of Engineering Graphics (3) Technical sketching, geometric constructions, emphasis on plane surface analysis; presentation of engineering data; graphical solution of three dimensional space problems. The student will view two three-hour periods or three two-hour periods, including one hour of lecture per week.

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

131 Particle Dynamics (3) Kinematics, simple harmonic motion; kinetics, Newton's laws, work-energy, impulse-momentum; impact. Prereq: 121; Coreq: Math 142.


ENGINEERING CHEMICAL


240 Fluid Flow and Heat Transfer (3) Force, energy and mechanical energy balances; flow in tubes, piping systems. Pressure drops, pumps, cooling, and metering; steady and unsteady state heat conduction; heat transfer in tubes and heat exchangers; radiation. Prereq: 200.

310 Chemical Engineering Laboratory (1) Introduction to computer solution of chemical engineering problems. Prereq: 240, Basic Engin. 101.

330 Chemical Engineering Thermodynamics (3) Basic concepts and chemical engineering applications of thermodynamics; emphasis on flow processes, real gases, estimation of properties, phase equilibrium and chemical equilibria. Prereq: 240.

340 Mass Transfer (3) Stage-wise operation; application of analytical, graphical, and computer methods to design of stage-wise separation operations. Differential operations-application of analytical and computer methods to the design of distillation processes. Applications include gas absorption, distillation, extraction, humidification, ion exchange and membrane separations. Prereq: 330.


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

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

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

410 Chemical Engineering Laboratory II (3) Laboratory investigations of mass transfer and chemical reaction phenomena in chemical engineering. Prereq: 440, 450.

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


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

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

451 Advanced Process Dynamics and Control (3) Process and control system simulation and advanced industrial system design. Cascades, feedback, multivariable, deadline, adaptive, and nonlinear control system design. Includes computer 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: 350 and consent of instructor.

475 Fundamentals of Bio reactor Design (3) Reactor modeling, analysis and design for microbial fermentations and cell culture, including batch, fed batch and continuous operations. Design of bioreactor systems, packed and fluidized beds; pumping and controlling such systems. Includes laboratory work. Prereq: 450, 480.

476 Principles of Biochemical Separations (3) Selection and analysis of separation processes including chromatography, electrophoresis, centrifugation, membrane processes, and conventional and supercritical fluid extraction.


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

486 Coal Processing to Liquid Fuels (3) Characterization of various coals with respect to current gasification and liquid fuel technologies; modeling of conversion processes and estimation of product yields and the associated water, oxygen, and energy requirements; catalytic hydrogenation and reactor design considerations; economic assessments. Prereq: 485.

490 Process Design and Economic Analysis (3) Development of process information into an integrated chemical plant design, including capital investment, operating costs and economic feasibility. Computer simulation of final plant design. Prereq: 450, 480.

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

ENGINEERING CIVIL

210 Engineering Surveys (3) Menusration through application of surveying techniques; theory of errors and data analysis; concepts of horizontal, vertical and angular measurements and control; construction surveys; and route surveys through vertical and horizontal controls. Prereq: Surveying 201.

251 Transportation Engineering I (3) Transportation problems and perspectives, rural and urban; use of a systematic planning process; analysis of existing transportation systems, methods for the evaluation of alternatives and the evaluation of civil engineering projects. Civil engineering decision making and appli-
cations of economic analysis. Prereq: Sophomore standing.

261 Stresses in Framed Structures (3) Stress and strain in framed structures; behavior of columns, beams, and beams in columns; moment of inertia, reactions, moments, shears, and stresses in beams, columns, and torsional members. Prereq: Basic Eng. 121.

310 Route Surveying (3) Basic principles and practice of land surveying, with practical alignment of transportation routes; includes compound, reverse and parabolic curves and spiral transitions. Includes electronic computations by micro-computer. Prereq: 210.


330 Introduction to Soil Behavior (3) Physical and mechanical properties of soils; theory of compaction, seepage, and effective stress. Consolidation theory, soil mechanics, settlement, and shear strength of sands and clays. Two lectures and 1 lab. Prereq: 261.

335 Foundation Engineering (3) Fundamentals of geotechnics applied to design and analysis of soil-structure systems; subsurface investigation; design of shallow foundations, deep foundations, and lateral earth pressure and retaining structures. Analysis of homogeneous slopes. Prereq: 330.


352 Transportation Engineering II (3) Introduction to design, planning, and analysis of transportation systems, including various transportation modes, their guideways and terminals. Two lectures and 1 lab. Prereq: Junior standing and 210.

361 Analysis of Framed Structures I (3) Forces in trusses; influence lines; deflections and beams and trusses; analysis of indeterminate structures; moment distribution. Prereq: 261.

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

390 Hydraulics (3) Basic laws and properties of incompressible fluids. Units and dimensional analysis; derivation of Bernoulli's equation, water surface, friction losses, pipe flow; flow measurement; open channel flow and culverts; pump characteristics. Two lectures and 1 lab. Prereq: ESBM 231, Basic Eng. 101.

396 Hydrology (3) Concept of hydrologic cycle; weather processes and water resource development; water resources; on measurement and distribution; abstraction, and runoff; storm hydrograph and peak flow analyses, including design floods; reservoir and channel routing; rainfall and flood streamflow frequency analyses; groundwater flow. Prereq: 390.

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


405 Seminar (2) Selected topics including historical and modern civil engineering achievements, professional and ethical responsibilities. Prereq: Senior standing and completion of all junior level non-elective engineering courses.

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

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

410 Land Surveying (3) Procedures of locating property; evaluation and coordination to describe property, to create land divisions, and to prepare plats; laws of land surveying. Prereq: 210.

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

433 Earthquake-Resistant Structures (3) Same as Architecture 433.

434 Elementary Structural Matrix Methods (3) Same as Architecture 434.

440 Civil Engineering Systems Design and Management (2) 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 materials. Emphasis on microcomputer applications. Prereq: Junior standing or consent of instructor.

451 Highway Engineering (2) Design, construction, operation, and maintenance of highway facilities; includes application of various engineering principles and techniques to the design of roads, highways, and sidewalks. Highway facilities covers both geometric and pavement design. Prereq: 210, 251, 352.

452 Traffic Engineering (3) Characteristics of driver, vehicle, and roadway and their interrelationship; traffic studies; basic considerations of traffic circulation and control, lighting, capacity analysis, roadway safety analysis and design. Prereq: 210, 251, 352.

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

451 Analysis of Framed Structures II (3) Maximum stresses due to moving loads; uses of influence lines; lateral forces due to earthquake and wind; 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 rolled structural steel beams, design of structural steel members for axial tension and compression 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 bending, shear, axial loads; design of a typical framed building including connections. Prereq: 461.

474 Reinforced Concrete Design (3) Reinforced concrete beams and floor slabs, columns with combined axial loads and bending, footings and retaining walls. Prereq: 461.

480 Water and Waste Transport (3) Theory and design of water distribution systems, wastewater collection systems and solid waste collection systems. Prereq: 390.

490 Water Resources Project Design (3) Development of multi-purpose reservoir and dam project, including data acquisition; spillway and outlet works design; earthen and gravity dam stability analyses; drains and filters; maintenance and operation principles; and dam safety concepts, including dam break analyses. Prereq: 390, 395.

494 Urban Drainage Engineering (3) Design and management of stormwater conveyance and control system for collection of hydrologic and hydraulic principles to design of drainage systems for urban, strip mining, and highway development; design of detention basins, culverts, and detention/reten- tion basins; application of commonly-used computer runoff models; evaluation of land-use changes of streamflow quantity and quality. Prereq: 390, 395.

495 Water Resources Development and Management (3) Institutional framework including: water law; evaluation of procedures for comparing and selecting among water resources development alternatives; multiphase decision making, principles of engineering economics, the cost analysis and determination of priority, environmental impact assessment procedures; decisions using risk-based methods; case studies. Prereq: Senior standing.

ENGINEERING ELECTRICAL AND COMPUTER


202 Circuits II (3) Complex average, imaginary and real/complex effective values; ideal dependent and independent elements; basic circuit theorems; delta and yee connections, power measurement using two wattmeters. Complex frequency, time constant, and poles. Frequency response of R-L-C circuits and transformers. Reflections at interfaces of transmission lines. Prereq: Consen- gence; general case, special cases in series and parallel circuits. Scaling: magnitude and frequency. Mutual inductance, capacitance and mutual parameters: linear and ideal transformers; admittance, impedance and hybrid parameters; trigonometric and complex Fourier series. Prereq: 201. Coreq: Physics 232 and Mathematics 241.

209 Circuits II Laboratory (1) Use of computer in lab preparation and analysis of circuits. Use of voltmeters, galvanometers, and oscilloscopes; RLC circuits; active element - operational amplifier; measurement of voltages and the phase angles. Frequency response of R-L-C circuits. Active and passive elements; added and ideal transformers; admittance, impedance and hybrid parameters; trigonometric and complex Fourier series. Prereq: 201. Coreq: Physics 232.

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


319 Systems Lab (1) Experiments and projects demonstrat- ing systems discussed in 312.


329 Electrical Energy Lab (1) Experiments and projects demonstrat- ing electrical energy discussed in 321 and 322.
331 Electronic Devices (3) Fundamentals of energy band theory of p-n junctions; diodes, field effect transistors, and bipolar transistors; integrated circuit fundamentals; device applications, simple power supplies, and amplifiers; project laboratory. Prereq: 202.

332 Electronic Circuits (3) Multistage transistor amplifier biased both in the active and saturation regions; frequency- and transient response of open loop linear amplifiers; fundamentals of integrated circuit operational amplifiers and analog to digital conversion; basic transistor switching circuits. Prereq: 331. Coreq: 339.

339 Electronics Lab (1) Experiments and projects demonstrating electronics discussed in 332.

341 Fields I (3) Coulomb's law, Gauss's law, and Amperes law. Maxwell's equation for electrostatic and magnetostatic cases; Maxwell's equations for dynamic case; dynamic potentials, uniform plane wave propagation. Prereq: 202.


349 Communications Lab (1) Experiments and projects demonstrating communications discussed in 342.


352 Small Computer Systems (3) Structured assembly language programming; control of peripherals through device service routines; data collection under the control of small computer using A/D converters; digital output to CRT displays; on-line, real-time data analysis; fast Fourier Transform, digital filters; automatic test equipment; terminal and interface applications; word processing; information management; communications between computers. Prereq: 351. Coreq: 359.

359 Computers Lab (1) Experiments and projects demonstrating computers discussed in 352.

361 Introduction to Plasma Engineering (3) Particle motion in electric and magnetic fields; collective motions of plasma particles; plasma diagnostics and the Langmuir probe; plasma light sources and lasers; radio waves in plasmas and the ionosphere; MHD genera- tion in plasmas and plasma electronics. Basic computer simulation of plasma systems and microelectronics. Prereq: 202 for EACE majors; or Physics 232 or 238 for all others. Coreq: 369.


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

421 Power Systems (3) Principles and character-istics of electric power systems; transmission and distribution; dc and polyphase power systems; power systems; power generation in plasmas and traveling wave tubes; free oscillations to fusion energy, industry, and astrophysics. Prereq: 311.


429 Power Electronics Lab (1) Experiments and projects demonstrating machines discussed in 422.

429 Power Electronics Lab (1) Experiments and projects demonstrating electronic systems discussed in 423.

431 Digital and Analog Integrated Electronics (3) Basic processing and fabrication of active and passive components for monolithic integrated circuits; design concepts for bipolar, MOS and JFET transistors in typical analog and digital integrated circuit designs; standard digital logic circuits including TTL, ECL, Schottky, CMOS, and GaAs gates and arrays; design concepts for op-amps, comparators, references, regulators, and other linear functions. Acceptable as a designated design course. Prereq: 332. Coreq: 435.

432 Analog Signal Processing Electronics (3) Trans- ducer signal and interfacing characteristics; analog integrators; operational amplifiers, instrumentation and isolation amplifiers, rf amplifiers, and video amplifiers; active filters, level and phase detection, multiplexers, modulation and demodulation, sample and hold, and comparators. Acceptable as a designated design course. Prereq: 332. Coreq: 436.

433 Electronic Amplifiers (3) Feedback amplifier principles; wideband linear amplifier design; radio frequency and audio power amplifier design; linear regulated power supply design; oscillator principles. Acceptable as a designated design course. Prereq: 332. Coreq: 439.

435 Digital and Analog Integrated Electronics Lab (1) Experiments and projects demonstrating electronic systems discussed in 433.

436 Analog Signal Processing Electronics Lab (1) Experiments and projects demonstrating electronics discussed in 432.

439 Electronic Amplifiers Lab (1) Experiments and projects demonstrating electronic amplifiers discussed in 433.


443 Microwave Circuits and Electronics (3) Scat- tered wave description of circuits to include isolators and amplifiers, speakers and power dividers, circula- tors, phase shifters. Loading and interconnection of systems. Power generation and amplification by vacuum and solid state (bulk and junction) devices. Phase-sensitive wave switching, filtering and multiplexing devices and transmitters. Feedback and waveguide components. Prereq: 432. Coreq: 449.

444 Electro-Acoustics (3) Wave equation for sound, radiation from pistons, impedance of a piston. Loud speakers, horns, speaker systems, phonograph record-
469 Plasma Laboratory (1) Experiments and design projects illustrating material covered in 462, 463 and 463.


489 Electro-Optics I Lab (1) Experiments and projects demonstrating electro-optics discussed in 481.

499 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 once. Prereq: Senior standing or consent of instructor.

499 Electro-Optics II Lab (1) Experiments and projects demonstrating electro-optics discussed in 482.

ENGINEERING INDUSTRIAL

200 Fundamental Computer Applications in Industrial Engineering (3) Application of modern computer hardware and software to enhance professional productivity. Use of word processors, spreadsheets, and library IE programs applied to Industrial Engineering. Includes FORTRAN programming and numerical analysis. Prereq: Basic Engr. 101.


301 Operations Research (3) Introduction to mathematical programming includes classical optimization theory, linear programming (simplex method, transportation and assignment problems) and dynamic programming. Prereq: Mathematics 231 and 200.

302 Work Methods and Measurement (4) Job analysis, job evaluation, design of wage structures, design of workplace layouts, flow charts, activity charts and measurement and control of work. Measurement tools such as time study, predetermined time systems, work sampling, data analysis, development of standard time data, learning curves and wage incentive systems. Prereq: Statistics 251.

304 Introduction to Human Factors Engineering (3) Human capabilities and limitations affecting work, work place, and work environment design. Emphasis on human factors methodology, human input requirements, human outputs, the design of human-machine interfaces, the analysis of stress on performance, environmental stressors, such as temperature-humidity, lighting and noise. Measurement of human performance and effects of interface design on human performance. Student-selected group project. Prereq: 304 and senior standing.

421 Informational Systems I (3) Systems engineering approach to design, development, implementation, and operation of systems of information. Emphasizes informational aspects of IE systems. Study of data structures and database management systems. Prereq: 209 and senior standing.

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


494-495 Special Topics in Industrial Engineering (1,3) Recent developments in industrial engineering including new areas of application, new research techniques and new methodologies. May be repeated once. Prereq: Senior Standing and consent of instructor.

ENGINEERING MATERIALS

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

202 Fundamentals of Materials Engineering (3) First law of thermodynamics, mass and energy balances, thermochemistry, introductory kinetics, introduction to materials processing. Coreq: 201. F

203 Experimental Methods in Materials Science (2) Laboratory including data acquisition and processing, experimental systems with microcomputers, use of computers in data acquisition and analysis. 1 hour and 3 hour lab. Prereq: 201. Sp

205 Metallurgical Processing (2) Overview of the scope of the discipline. Production technology for ore beneficiation, reduction processes, semi-finished and finished metallic products.


302 Mechanical Behavior of Materials (3) Loading behavior for ceramics, polymers and metals; standardized tensile testing procedures; analytical treatment of stress, strain, and constitutive equations; theory of failure for ductile materials; analytical linear elastic fracture mechanics. Prereq: 201, sophomore mathematics, ESM 321. Sp (Same as Engineering Science and Mechanics 323.)

303 Thermodynamics of Solids (2) Applications to solids of free energy: activity, Raoult's and Henry's laws; condensed phase equilibria; phase stability; phase rule; multicomponent systems. Prereq: Chemistry 371. Sp

304 Introduction to X-ray Diffraction (2) Generation of x-rays; diffraction theory; powder technique; determination of lattice constants; phase identification; measurement of orientation; chemical analysis by x-ray spectroscopy. Includes laboratory. Sp

310 Electronic Properties of Solids (3) Electrical, thermal, mechanical, and magnetic properties of both conductors and semiconductors. Applications to solids, Brillouin zones, periodic structures, temperature and compositional dependence; application of metals, semiconductors and insulators; electronic current and magnetism in solid state science and engineering students. Prereq: 201. Coreq: Physics 232.
320 Physical Metallurgy (3) Phenomenology and microstructure of cast, wrought, and refined metals and alloys.  Prereq: 301. 3 hours or 2 hours and 1 hour lab.  Sp

340 Introduction to Polymer Science and Engineering (3) Synthesis and molecular structure of polymers; polymerization kinetics; molecular characterization; crystalline and glass transition; crystallization kinetics; mechanical properties; rheology and processing.  Prereq: 201.  Sp

342 Structure-Property Relationships in Polymers (3) Crystallinity, morphology, and microstructure; processing; property relationships with respect to crystallization kinetics, deformation modes, and orientation types.  Electrical properties of polymers.  Prereq: 340 or consent of instructor.  F

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

400 Microanalytical Techniques (3) X-ray diffraction principles and the concept of the reciprocal lattice.  Kinematical theory of electron scattering to include diffraction contrast imaging, geometrically induced contrast, and the electron backscatter technique.  Preparation techniques for electron microscopy.  Operating principles of electron microscopes and the use of secondary electrons, backscattered electrons, Auger electrons, and x-rays.  Prereq: 301 or equivalent.  F

410 Mechanical Metallurgy (3) Brittle fracture due to metallurgical and environmental factors; stress-life and strain-life fatigue analysis; residual stresses; creep and stress-rupture; finite plastic strain, fracture toughness; fabrication by forging, rolling, deep drawing, and x-ray emission.  Prereq: Chemical analysis.  Introduction to advanced iron-steel processing techniques.  3 hours or 2 hour and 1 lab.  Prereq: 304.  F

421 Chemical Process Metallurgy (3) Application of chemical thermodynamics to metallurgical processing.  Ferrous and nonferrous pyrometallurgical refining, slag-metal equilibria, solidification, gas-metal process; operating principles of electron microscopic techniques to include TEM, SEM, STEM, and EELS.  Recommended for engineering science and mechanics majors.  F

422 Chemical Process Metallurgy (3) Application of chemical thermodynamics to metallurgical processing.  Ferrous and nonferrous pyrometallurgical refining, slag-metal equilibria, solidification, gas-metal process; operating principles of electron microscopic techniques to include TEM, SEM, STEM, and EELS.  Recommended for engineering science and mechanics majors.  F

425 Metallurgical Fabrication (3) Principles and practice of metal fabrication processes; welding, brazing, and powder metallurgy; solidification, segregation, heat flow, microstructure, residual stresses, thermal treatments including sintering and reactive sintering.  Prereq: 300 or 201 and ME 466.  Also suggested for mechanical engineering and engineering science and mechanics majors.  F


425 Metallurgical Applications in Manufacturing and Processing (3) Fabrication methods, standards and specifications, principles of thermomechanical processing for finished and semi-finished products, casting, forming, joining, heat treatment, powder metallurgy, corrosion control.  Prereq: 201.

440 Mechanical Properties of Polymers (3) Deformation in the amorphous and crystalline states; isotropic and anisotropic properties; the temperature and molecular interations.  Rubber elasticity; thermodynamic and mechanical behavior in terms of the statistics of networks.  Yielding and crazing.  Fiber drawing; structural models.  Viscoelasticity; Boltzmann superposition principle; time-temperature superposition.  Internal friction.  Prereq: 302, 340 or consent of instructor.  F

443 Polymer Processing (3) Rheological measurements; flow through tubes and slits, including extrusion and injection molding; shear stress strain, injection molding, synthetic fibers, including structure development; properties.  F

444 Plastics Fabrication and Design (3) Lectures, laboratory, and field trips; unit operations of plastics fabrication; plastics classification; design and selection criteria; processing techniques; characterization laboratory.  Sp

470 Corrosion Science and Engineering (3) Mechanisms and control of corrosion processes; thermodynamics and electrode kinetics of corrosion reactions; electrochemical measurement techniques; applications to design.  Recommended for chemical engineering, mechanical engineering, civil engineering and engineering science and mechanics majors.  F

471 Semiconductor Materials (3) Theory properties and processing of semiconductors with emphasis on applications to solid-state devices; basic physics of semiconductor materials; crystal growth, films, doping, annealing, etching, property and performance evaluation.  Prereq: 310.  F

472 Fundamental Principles of Composite Materials (3) Physical principles basic to the design, manufacture and application of fiber reinforced polymers, metals and ceramics.  Prereq: 302 or equivalent.  Sp (Same as Engineering Science and Mechanics 426).

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.  F

486 SPring Project Laboratory (1-3) Group or individual investigation of problems related to materials science and engineering.  May be repeated to a maximum of 6 credits.  Prereq: 201, 202, 203 and consent of instructor.  F

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

496 Special Topics in Materials Science and Engineering (1-3) Recent developments in materials research, developments and/or applications.  Prereq: Senior standing or consent of instructor.

499 Design and Analysis (3) Lecture and laboratory sessions on design and analysis of performance; standards, design codes, design criteria, processing, test data, analysis, design projects.  Prereq: Senior standing.  Sp

ENGINEERING MECHANICAL

331 Thermodynamics I (3) Energy and laws governing individual molecules and macroscopic properties.  Applications of thermodynamic cycles; applications to engineering problems.  Prereq: Chemistry 130, and Mathematics 231, F, Sp, Su

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

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

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

345 Mechanical Engineering Instrumentation and Measurement (3) Fundamentals of measurement systems standards; dynamic characteristics of instruments; statistical data treatment; transducers; signal conditioning; strain, pressure, temperature and flow measurement.  Prereq: 363 or Aerospace Engr. 362, 341, ECE 301, Sp


391 Engineering Analysis (2) Analysis techniques for problems of engineering science and engineering.  Prereq: Materials Science 201, F, Sp

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

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

416 Turbo-Machinery (3) Basic principles of turbomachinery; systematic methods of analysis, design, performance evaluation.  Prereq: Aerospace Engr. 351.

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

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

454 Lubrication (3) Hydrodynamic theory of lubrication; bearing design; Reynolds-Stokes equations to infinite and finite bearings; analytical and numerical solutions; applications to design.  Prereq: 344, Aerospace Engr. 351.

449 Mechanical Engineering Laboratory (3) Design and conducting of laboratory experiments.  Test standards and specifications.  Analysis of data and formation of conclusions.  3 hours per week.  Prereq: 322, 344, 345. Coreq: 475, Sp, Su

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: 341, 363, ECE301-302.  F, Sp

455 Introduction to Machine Design (2) Engineering economy, optimization, design for automation, reliability, patents and product liability; design of mechanical engineering solid mechanics systems. Participation in team design effort; requires design report.  Prereq: 332, 465.  F

456 Introduction to Thermal Design (2) Engineering economy, optimization, design for automation, reliability, patents and product liability; design of mechanical engineering solid mechanics systems. Participation in team design effort; requires design report.  Prereq: 332, 344.  F


462 Tool Design (3) Principles underlying tool and die design; design for high volume production; tool holding fixtures; comparison of material removal methods; selection of tool material; plastics production.  Prereq: Mech. Engr. 366 or Industrial Engr. 404, ES&M 321.


465 Elements of Machine Design I (3) Motion and forces related to plane and spatial mechanical linkages, and power and speed transmission.  Friction and gearing.  Prereq: 365 or ME 361.
Theories of failure to design of machine elements. Emphasis on turbomachinery, heat exchangers, conservation of instructor.

Solar energy collection and use; selected applications. Prereq: 332, 344 or 474 Solar Energy Utilization (3) Nature and availability of solar radiation; review of heat transfer topics pertinent to solar energy collection and use; design analysis of solar energy collectors and method of storage; selected applications. Prereq: 332, 344 or consent of instructor.

Thermal Engineering (3) Thermal systems with emphasis on turbomachinery, heat exchangers, combustion and system analysis and design including second law and economic analysis. Prereq: 332, 344, F, Sp.

Thermal Engineering Design (4) Design of a component or complete system with emphasis on turbomachinery, heat exchangers, combustion and system analysis. Prereq: 450, 475, Sp.

481 Internal Combustion Engines (3) Thermochemical phenomena in combustion and propulsion engines. Combustion, detonation; equilibrium; dissociation; stoichiometry; reactor kinetics; engine design using ideal and real fluids. Prereq: 332, 344.

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

ENGINEERING NUCLEAR

201-202 Seminar (1, 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 real fluids. Prereq: Thermodynamics 142.

204 Thermodynamics II (3) Second law, development of entropy concept and availability. Various power plant cycles and systems. Prereq: 203.

301 Introduction to Nuclear Engineering (3) Nuclear systems, radioactive decay, cross sections, fission product decay, reactor theory. Prereq: Physics 232, Mathematics 231.


304 Nuclear Engineering Laboratory (3) Radiation detection and counting instrumentation, counting statistics, half-life and decay schemes, gamma camera, heat transfer experiments. Prereq: 305, Coreq: 302.

305 Energy Transport (3) Development of differential and integral energy conservation; conduction and convection heat transfer, including numerical methods; application to nuclear reactor fuel elements, reactor cores, and heat exchangers. Prereq: 204.

306 Designing for Energy Transport (3) Radiation transport; hydrodynamics; heat transfer in, boiling; heat exchanger design; steam generator design. Prereq: 305.

310-311 Thermal Hydraulics (3, 3) Energy and the management of flows. When they are transferred and transported. First and second laws of thermodynamics with applications from power cycles; transfer of heat through conductive and radiative mechanisms; and development of fluid flow principles for the transport of energy. Prereq: Mathematics 241.

342 Thermal Science (3) Fluid statics; conservation equations of mass, momentum, and energy; application to fluid machinery; heat transfer processes, heat conduction, and natural convection. For non-departmental majors only.

401 Nuclear Reactor Theory (3) Nuclear reactor design and analysis of nuclear systems; interface with non-nuclear aspects of system design including system reliability and economics, class project. Prereq: 401.

403 Nuclear Engineering Laboratory (3) Cross-section measurement, diffusion properties of neutrons, critical loading experiment, control rod calibration, statistical weight, shielding, neutron poisoning, dynamics, and control experiments. Prereq: 304 or equivalent. Coreq: 401, 405.

404 Nuclear Fuel Management (3) Topics relative to nuclear fuel cycle including mining and milling, fuel fabrication, fuel behavior during reprocessing and waste disposal. Economic and regulator issues. Prereq: 302.


463 Introduction to Fusion Energy I (3) Same as Electrical and Computer Engineering 463.

464 Introduction to Fusion Energy II (3) Same as Electrical and Computer Engineering 464.

ENGINEERING SCIENCES AND MECHANICS

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

271 Introduction to Biomedical Engineering (3) Overview of biomedical engineering; anatomy, physiology, biochemistry, biofluids, bioinstrumentation, and biomechanics. Coreq: Mathematics 241 or consent of instructor.

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


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

323 Mechanical Behavior of Materials (3) Same as Materials Science 303.

341 Fluid Mechanics I (3) Basic conservation laws of fluids; hydrostatics; integral forms, energy, work; similarity, dimensional analysis, boundary layer, turbomachinery, performance/similarity. Prereq: 231, Mathematics 241.


421 Materials of Engineering (3) Mechanical properties of engineering materials; data collection and processing; time and cyclic dependent properties, 3 hours or 2 hours and laboratory. Prereq: 321, Materials Science 201.

433 Fracture-Safe Design (3) Critical view of variables controlling fracture toughness: part and flaw geometry, temperature, loading rate, section size, material properties; characteristics of fracture toughness, material and loading sensitivity factors, strain energy release rates, J integral, COD data, transition temperature tests; use of fracture toughness data in design. 3 hours or 2 hours and laboratory. Prereq: 321 and Materials Science 201, (Same as Materials Science 475.)

425 Principles of Nondestructive Testing (3) Principles and theory of nondestructive testing methods: liquid penetrant, magnetic particle, eddy current, ultrasonic, acoustic emission, and radiographic methods. Laboratory, Prereq: 321, Materials Science 201. (Same as Physics 425.)

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

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 dynamical systems and stability, bifurcations, chaos, self-oscillations, 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 basic laws; compressible flow, isentropic flow, shocks, duct flows with heat transfer and friction; open channel flow, critical flow, energy methods; internal and external viscous flows, boundary layers, elementary turbulent closure models. Prereq: 341, Mathematics 231.

452 Computational Mechanics II (3) Integration of fundamental physical laws, mathematical methods and computational techniques necessary to develop engineering analysis and design capabilities. Prereq: 351.

453 Project in Design and Development (3) Conceptualization, analysis, design, and presentation of an engineering analysis and design project. Prereq: Senior standing in ESM; 301, 452; IE 405. Coreq: ME 344.

454 Computational Mechanics III (3) Integration of fundamental physical laws, mathematical methods and computational techniques necessary to develop engineering analysis and design capabilities. Prereq: 452.

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

483 Photomechanics (3) Photoelasticity, photoelastic coating method, Moire' method, interferometry, and holography, 2 hours and laboratory. Prereq: 321, Physics 232.

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

471 Clinical Engineering and Bioinstrumentation (3) Fundamentals and characteristics of health care delivery systems including hospital organization and health care economics; development and management prin-
copies for a hospital-based clinical engineering pro-
gress, the same as regular sequence. Expository
credit, a student must participate at least two hours
sentence patterns, and paragraph development. To receive
the semester by their English Composition teachers.
only for students remanded to it at the beginning of
journals, letters, and reports, as well as expository
ations. Prereq: 271, ECE 301.
476 Transport Phenomena in Living and Life Support
Systems (3) Application of mass, momentum and heat
transport theory to quantitative analysis of in vivo phys-
iological function; analysis of transport phenomena in
life support systems including design considerations for
artificial organs; application to blood rheology, mesh
dissolution, microvascular bifurcations, and heat transfer in
systems and extracorporeal blood flow devices. Prereq: 271,
Math 220.
494-495 Special Engineering Science Topics (3,3)
Problems related to recent developments and prac-
tice. May be repeated once for credit. Prereq: junior
or senior standing, consent of instructor.

ENGLISH
101 English Composition I (3) Expressive, informa-
tive, and persuasive writing, with emphasis on invention,
organization, style, and revision; practice in writing
journals, letters, and reports, as well as expository and
persuasive essays; intensive study of prose for reading
skill; and study of writing processes. Consent of
instructor.
102 English Composition II (3) Analytical writing based
on the study of literature and the study and practice of
research writing; individual conferences. Prereq. 101.
A.B,C,NC grading.
103 Writing Workshop (1) Self-paced laboratory course
only for students remanded to it at the beginning of
the semester by their English Composition teachers.
Individual instruction in grammar, mechanics, sen-
tence patterns, and paragraph development. 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. Satisfactory/No credit
grading.
118 Honors English Composition (3) Open only to
those selected on the basis of placement scores and high school record. Grading scale and workload the same as regular sequence. Expository and analytical writing based on the study of literature and non-fiction prose; the study and practice of research writing; individual conferences. Students receiving a grade below B in 118 will complete a year’s work in
English composition by taking 102. Students receiv-
ing a grade of A or B will complete their Freshman
English requirements by choosing 102, a sophomore
literature course in the English Department or 355.
A.B.C,NC grading.
121 English Grammar Review for Foreign Students
(4) Comprehensive review of English grammatical struc-
tures and their first semester selection in the
University of all foreign students who demonstrate on the
English Placement Examination a need for work
in English structures. Admission to this course is by
the English Placement Exam only. Meets four hours
a week. A.B,C,F grading.
131 Composition for Non-Native Speakers of En-
lish (3) Particular emphasis on development of
writing with emphasis on informative and per-
suasive writing. Includes grammar and mechanics.
Individual conferences. Admission to this course is
by the English Placement Exam only. A.B.C,NC grad-
ing.
132 Composition for Non-Native Speakers of English
II (3) Writing based on reading and discussion. Empha-
sis on research techniques and writing research papers.
Individual conferences. Admission to this course by
the English Placement Exam only. A.B.C,NC grading.
201 British Literature I: Beowulf through Johnson (3)
Major literary works from three periods: Middle Ages,
Renaissance, and Restoration and Eighteenth Centu-
ry. Writing-emphasis course: at least one in-class essay
examination and 3000 words of writing outside the
classroom.
202 British Literature II: Wordsworth to the Present
(3) Major literary works from three periods: Romant-
ic, Victorian, and Twentieth Century. Writing-
emphasis course: at least one in-class essay exami-
nation and 3000 words of writing outside the
classroom.
207 Honors British Literature I (3) Enriched section
of 201 designed for students with a 3.25 or higher
GPA.
208 Honors British Literature II (3) Enriched section
of 202 designed for students with a 3.25 or higher
GPA.
221 Literature of the Western World I: Ancient, Medie-
val, and Renaissance (3) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.
222 Literature of the Western World II: Enlighten-
ment, Romantic, and Modern (3) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.
227 Honors Literature of the Western World I (3)
Enriched section of 201 designed for students with a
3.25 or higher GPA.
228 Honors Literature of the Western World II (3)
Enriched section of 222 designed for students with a
3.25 or higher GPA.
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:
at least one in-class essay examination and 3000 words
of writing outside the classroom.
232 American Literature II: Civil War to the Present
(3) Development of American literature from Civil War
to the present. Writing-emphasis course: at least one
in-class essay examination and 3000 words of writing
outside the classroom.
233 Major Black Writers (3) Black American literature
beginnings to the present. (Same as Women’s Studies
333.) Writing-emphasis course: at least one in-class
essay examination and 3000 words of writing outside
the classroom.
332 Women in American Literature (3) Women as
writers and as subjects in American literature from its
beginnings to the present. (Same as Women’s Studies
332.) Writing-emphasis course: at least one in-class
essay examination and 3000 words of writing outside
the classroom.
333 Black American Literature and Aesthetics (3)
Black American literature and aesthetics since 1899,
with emphasis on cultural evaluations and the prin-
ciples of being “American”. Writing-emphasis course:
at least one in-class essay examination and 3000
words of writing outside the classroom.
334 Film and American Culture (3) American films
as both works of art and social documents. Relationship
between American culture and film in the twentieth cen-
tury. (Same as American Studies 334.) Writing-emphasis course: at least one in-class
essay examination and 3000 words of writing outside
the classroom.
351 The Short Story (3) Emphasis on 20th century
American, British, and International.
355 Advanced Expository Writing (3) Strategies of
writing on personal and academic subjects. Discuss-
ion of student and professional writing. Open to
sophomores with instructor’s consent.
356 Writing Poetry (3) Introduction to writing poetry.
364 Writing Fiction (3) Introduction to writing novels
and short stories.
365 Writing Drama and the Screenplay (3) Intro-
duction to writing one-act and full-length plays, as
well as screenplays.
371 Foundations of the English Language (3) Pho-
nology, morphology, and syntax of English. History of
the English language to 1800. (Same as Linguistics
371.)
372 The Structure of Modern English (3) Survey of
approaches—traditional, descriptive, and generative-
transformational—to the structure of modern Eng-
lish. (Same as Linguistics 372.)
376 Colloquium in Literature (3) Methods and objectives
of literary study; conferences to plan student’s pro-
gram in major.
378 Literary Criticism (3) Historical survey of major
works of literary criticism.
381 Introduction to Folklore (3) Essential terms and
concepts in modern folklore-folk-studies. Empha-
sis on North American materials: folklore, folktale,
myth, legend, proverb, riddle, superstition, dance,
games, and oral writing outside of study of models
and short stories.
389 Literature of the English Bible (3) Types of litera-
ture in the Bible: legend, folktales, history, biography,
poetry, prophecy, apocalyptic. (Same as Religious
Studies 389.)
389 Meat Science Lab (1) Slaughter and processing methods for beef, pork and poultry. Prereq: 360 or concurrent enrollment. Sp
401 Food Technology and Science Seminar (1-2) Review of scientific literature, oral 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 nutrients in foods. Study of physico-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. F, Sp.
420 Food Microbiology (2) Physical, chemical and environmental factors modifying growth and survival of foodborne microorganisms; pathogenic and spoilage microorganisms affecting quality of foods and their control. Prereq: Microbiology 210, Coreq: 429, F
430 Sensory Evaluation of Food (3) Principles and methods of sensory evaluation of foods. Basic analytical tools are developed and used to study valuation of different types of secu-
ties. Major writing requirement.
422 Portfolio Analysis and Management (3) Portfolio theory and evidence of behavior of security returns with a view to determining rational investment policy. Includes statistical analysis for risk and return of port-
folios, portfolio evaluation and revision, capital market theory, and extensions of portfolio analysis. Prereq: 421.
430 Financial Markets (3) Role of short and long term financial markets in the process of capital formation and allocation. Theories and mathematics of interest rates in money and capital markets.
450 Financial Management: Theory and Practice (3) Decision making topics in financial management includ-
ing valuation, capital budgeting under uncertainty, cost of capital, capital structure theory and dividend policy. Major writing requirement.
450 Advanced Topics in Financial Management (3) Contemporary issues in corporate finance, liquidity and current asset management, corporate growth and control, international financial management, and pension fund management. Prereq: 450.
470 Risk Management and Insurance (3) Identification, measurement and decision making with regard to insur-
ance-type risks facing the firm. Emphasizes handling these risks in the most cost-efficient manner.
471 Estate and Financial Planning (3) Process of estate accumulation, safekeeping, and distribution, with particular emphasis on impact of insurance and taxation.
481 Real Estate Finance and Investment Analysis (3) Principles of financing and investing in real prop-
erty. Utilizes discounted cash flow models and ratio analysis. Current federal tax law applicable to real prop-
erty, and the impact of consolidation and other joint ven-
tures. (Same as Urban Studies 481.)
482 Urban Development and Finance (3) Economic analysis of determination of urban land value and use, and urban development problems in the United States. Primary and secondary mortgage mar-
kets and economic analysis of the effects of these markets on urban development. (Same as Urban Studies 482.)

FOOD TECHNOLOGY AND SCIENCE
140 The Food Industry (3) Role of the food industry in providing an adequate, safe food supply for the United States and international markets. Interactions of the food industry with governmental agencies and consumers. 2 hours and 1 lab. F
268 Meat Evaluation and Grading (2) Grading stan-
dards for quality and yield; principles for evaluating beef, pork and lamb, and application of standards for institutional meat cuts. Practice grading, judging carc-
ses, and application of purchase specifications. F
360 Meat Science (2) Carcass characteristics of meat animals, muscle structure and composition, cut identification, curing, freezing and cookery, Sp
369 Meat Science Lab (1) Slaughter and processing methods for beef, pork and poultry. Prereq: 360 or concurrent enrollment. Sp
401 Food Technology and Science Seminar (1-2) Review of scientific literature, oral 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 nutrients in foods. Study of physicochemical 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. F, Sp.
420 Food Microbiology (2) Physical, chemical and environmental factors modifying growth and survival of foodborne microorganisms; pathogenic and spoilage microorganisms affecting quality of foods and their control. Prereq: Microbiology 210, Coreq: 429, F
430 Sensory Evaluation of Food (3) Principles and methods of sensory evaluation of foods. Basic analytical tools are developed and used to study valuation of different types of securities. Major writing requirement.
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430 Financial Markets (3) Role of short and long term financial markets in the process of capital formation and allocation. Theories and mathematics of interest rates in money and capital markets.
450 Financial Management: Theory and Practice (3) Decision making topics in financial management including valuation, capital budgeting under uncertainty, cost of capital, capital structure theory and dividend policy. Major writing requirement.
450 Advanced Topics in Financial Management (3) Contemporary issues in corporate finance, liquidity and current asset management, corporate growth and control, international financial management, and pension fund management. Prereq: 450.
470 Risk Management and Insurance (3) Identification, measurement and decision making with regard to insurance-type risks facing the firm. Emphasizes handling these risks in the most cost-efficient manner.
471 Estate and Financial Planning (3) Process of estate accumulation, safekeeping, and distribution, with particular emphasis on impact of insurance and taxation.
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, and the impact of consolidation and other joint ventures. (Same as Urban Studies 481.)
482 Urban Development and Finance (3) Economic analysis of determination of urban land value and use, and urban development 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.)

FOOD TECHNOLOGY AND SCIENCE
140 The Food Industry (3) Role of the food industry in providing an adequate, safe food supply for the United States and international markets. Interactions of the food industry with governmental agencies and consumers. 2 hours and 1 lab. F
268 Meat Evaluation and Grading (2) Grading standards for quality and yield; principles for evaluating beef, pork and lamb, and application of standards for institutional meat cuts. Practice grading, judging carcasses, and application of purchase specifications. F

### Courses of Instruction

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FRENCH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111-112 Elementary French (3)</td>
<td>3</td>
<td>Introduction to French. May not be repeated for credit by students with two years of high school or one year college French. Must be taken in sequence. Language Laboratory required.</td>
</tr>
<tr>
<td>210 Intermediate French Transition (A)</td>
<td>3</td>
<td>A thorough study of the fundamentals of French language for those who have completed two or more years of high school but whose placement test results indicate that they are not prepared for the 211-212 sequence. Special emphasis on developing communicative proficiency in French. The course will meet five hours a week and will not count toward the College of Liberal Arts intermediate-level foreign language requirement. For elective credit only.</td>
</tr>
<tr>
<td>211-212 Intermediate French (3,3)</td>
<td>6</td>
<td>Sequence stresses the development of students' listening, speaking, and reading and prepares students to take upper division French courses. Must be taken in sequence. Language Laboratory required.</td>
</tr>
<tr>
<td>217-218 Honors: Intermediate French (3,3)</td>
<td>6</td>
<td>For students of superior ability in French. Incomer freshmen admitted on basis of diagnostic test, high school average, and performance on ACT. Credit for those students receiving a grade of A or B in the course.</td>
</tr>
<tr>
<td>291-292 French Literature in English Translation (3,3)</td>
<td>6</td>
<td>291-From the origins through the Age of Voltaire. Song of Roland, Rabelais, Montaigne, the Classical period, and Voltaire. 292-Diderot. 19th and 20th centuries; Flaubert, Rimbaud, Sartre, Camus. May not be counted toward the major or minor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.</td>
</tr>
<tr>
<td>300 French Transition (2)</td>
<td>1</td>
<td>Development of linguistic skills necessary for satisfactory work in courses above 300. Recommended for students who would benefit from additional training beyond 212 in basic skills of reading, speaking and writing French. May not be counted toward the major or minor.</td>
</tr>
<tr>
<td>301-302 Elements of French for Upper Division and Graduate Students (3,3)</td>
<td>6</td>
<td>Elements of language, elementary and advanced readings. Open to graduate students preparing for language examinations, and upper division students desiring reading knowledge of the language. Undergraduate credit only. Not for credit for those having had 111-112 or equivalent. No auditors.</td>
</tr>
<tr>
<td>311-312 History of French Literature (3,3)</td>
<td>6</td>
<td>Chronological view of French literature in relation to the specific historical, social, and political factors that have influenced it. Prereq: 212, 216 or equivalent.</td>
</tr>
<tr>
<td>313 Aspects of French Literature (3)</td>
<td>3</td>
<td>Study of masterpieces from the great literary movements and counter-movements. Prereq: 212 or equivalent.</td>
</tr>
<tr>
<td>324 Women in French Culture (3)</td>
<td>3</td>
<td>Role of women in shaping French history and culture. Feminists (George Sand, Aurore Dudevant), Mme de Maintenon, intellectuals (Mme de Stael); actresses (Sarah Bernhardt), scientists (Marie Curie). Taught in English. May not be counted toward the major or minor. (Same as Women's Studies 324.)</td>
</tr>
<tr>
<td>341-342 Intermediate Composition and Conversation (3,3)</td>
<td>6</td>
<td>Grammatical analysis of modern French prose; review of grammar and application in translation from English to French, both written and oral, exercises in free composition. Prereq: 212, 216 or equivalent. Either 342 or 345 may be applied toward the major, but not both.</td>
</tr>
<tr>
<td>345 French for Business (3)</td>
<td>3</td>
<td>Contemporary French language as it applies to business transactions. Understanding and composing business letters; oral communication and elements of French culture related to good business practices. Either 342 or 345, may be applied toward the major but not both. Prereq: 341 or consent of instructor.</td>
</tr>
<tr>
<td>401-402 Consecutive and Simultaneous French-English and English-French Translation (3,3)</td>
<td>6</td>
<td>401-Consecutive Translation to and from English. Introduction to simultaneous translation from French into English, and vice versa, on a variety of subjects such as business, politics, science. Prereq: 342, 345 or equivalent. Preferably taken in sequence.</td>
</tr>
<tr>
<td>410 Medieval French Literature (3)</td>
<td>3</td>
<td>Major representative works of Medieval French literature. Texts in modern French. Prereq: 212, 218 or equivalent. (Same as Medieval Studies 410.)</td>
</tr>
<tr>
<td>411 French Literature of the 16th Century (3)</td>
<td>3</td>
<td>High points of 16th century French literature. Excerpts from Rabelais and Montaigne; readings of poems from the writers from Lyon and members of the Plaide. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>412 French Literature of the 17th Century (3)</td>
<td>3</td>
<td>Masterpieces of 17th-century French literature. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>413 French Literature of the 18th Century (3)</td>
<td>3</td>
<td>Major works of the Enlightenment. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>414 French Literature of the 19th Century (3)</td>
<td>3</td>
<td>French Romanticism and its counter movements: Realism, Parnassianism and Naturalism. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>416 Survey of Francophone Literature (3)</td>
<td>3</td>
<td>Introduction to writing in French outside of France. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>419 Readings in French Literature (3)</td>
<td>3</td>
<td>Readings in French literature. Coreq: 342 or 345.</td>
</tr>
<tr>
<td>420 French Cinema (3)</td>
<td>3</td>
<td>The French cinema from its earliest days through the New Wave directors. Prereq: 212, 218 or equivalent. Can be applied to major only as a writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.</td>
</tr>
<tr>
<td>421 Phonetics (3)</td>
<td>3</td>
<td>Foundation in the science of phonetics. Introduction to theoretical and individual performance. Laboratory training highly recommended. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>422 Advanced Grammar (3)</td>
<td>3</td>
<td>Improving one's own style studying basic and more refined structures of the French language. Writing creative free-style compositions. Prereq: 342 or 345.</td>
</tr>
<tr>
<td>423-424 Advanced Conversation (1,1)</td>
<td>2</td>
<td>Informal conversation with native speaker on contemporary topics. Stress in class contact rather than outside preparation. Meets two hours a week. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>425 Introduction to Descriptive Linguistics (3)</td>
<td>3</td>
<td>Phonetics and phonemics, morphology and syntax. Types of languages, linguistic groups, dialects, and dialect geography. Application of descriptive linguistics—field linguistics, dialect study; its practical use in learning languages and in language teaching. Introduction to transformational grammar. Prereq: six hours of upper division English or six hours of upper division courses in a modern or ancient language (exclusive of German and French 301-302). Courses in literature in translation, and general courses in Latin and Greek requiring no knowledge of these languages, or consent of department. (Same as German 425, Russian 425, Spanish 425, Linguistics 425.)</td>
</tr>
<tr>
<td>426 Methods of Historical Linguistics (3)</td>
<td>3</td>
<td>Same as Russian 426, German 426, Spanish 426 and Linguistics 426.</td>
</tr>
<tr>
<td>429 Romance Linguistics (3)</td>
<td>3</td>
<td>Development of Classical Latin through Vulgar Latin into major Romance languages. (Same as Spanish 429 and Linguistics 429.)</td>
</tr>
<tr>
<td>430 Theatrical French (2-3)</td>
<td>3</td>
<td>Performance in one or more French plays. Prereq: 212, 218 or equivalent and consent of instructor. Can be applied to major.</td>
</tr>
<tr>
<td>431 Highlights of French Civilization (3)</td>
<td>3</td>
<td>Survey of French Civilization from the Gauls to World War II. Historical events, daily life, all forms of arts. Prereq: 212, 218 or equivalent. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.</td>
</tr>
<tr>
<td>432 Contemporary French Culture (3)</td>
<td>3</td>
<td>French contemporary civilization and culture since World War II. Problems, trends and organization of French society today. Prereq: 212, 218 or equivalent.</td>
</tr>
<tr>
<td>440 Capstone Experience in French (4)</td>
<td>4</td>
<td>Synthesizing senior colloquium and tutorial in which students reflect on the raison d'etre of the discipline from a multidimensional point of view. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.</td>
</tr>
<tr>
<td>491 Foreign Study (1-15)</td>
<td>1-15</td>
<td>May be repeated. Maximum 15 hours. Satisfaction/credit only.</td>
</tr>
<tr>
<td>492 Off-Campus Study (1-15)</td>
<td>1-15</td>
<td>May be repeated. Satisfaction/credit only.</td>
</tr>
<tr>
<td>493 Independent Study (1-15)</td>
<td>1-15</td>
<td>May be repeated. Satisfaction/credit only.</td>
</tr>
</tbody>
</table>

### GEOGRAPHY

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-102 World Geography (3,3)</td>
<td>6</td>
<td>Selected topics and world regions, especially those with problems or situations of contemporary interest, to illustrate geographical points of view, concepts, and techniques. Must be taken in sequence.</td>
</tr>
</tbody>
</table>
460 Principles of Geochemistry (3) Application of chemical principles to geologic problems. Emphasis on crystal chemistry and relation between basic atomic structure and distribution and behavior of elements in the Earth's crust. Prereq: Chemistry 150-150; recommended: 101-102. 3 lecture hours and one 2-hour lab. (Same as Botany 460.)

470 Applied Geophysics (3) Basic principles and applications of seismic, gravity, magnetic, and electrical prospecting methods. Recommended: Math 141-142 or 147-148 and Physics 131. 2 lecture hours and one 2-hour lab.

480 Principles of Economic Geology (3) Ore-forming processes, classification of mineral deposits, survey of different types of mineral deposits with examples, and metallogeneses. Prereq: 310 and 330 or equivalents. Recommended: 460. 2 lecture hours and one 2-hour lab.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

GERMAN

101-102 Elementary German (3,3) Must be taken in sequence.

107-208 Honors: Elementary and Intermediate German (6,6) Honors course for students of superior ability. Freshmen are admitted on the basis of high school average and performance on the American College Testing Program. Upperclass students must have a B average. A grade of C or above must be achieved in 107 in order to continue German 208. A student obtaining a grade of D or better in 107 may continue with German 102. This sequence is equivalent to 101-102 and 201-202. It allows the student to enter all 300-level German courses.

111 Language Laboratory (0)

112 Language Laboratory (0)

201-202 Intermediate German (3,3) Must be taken in sequence. Prereq: 102 or equivalent.

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

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

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 equivalent.

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.

325 Modern German Novel (3) A study of selected topics in advanced German grammar and syntactic analysis. Prereq: 6 hours of upper division German courses. Prereq: 332 or equivalent.

326 German Drama in English Translation (3) German drama from the Enlightenment to the present, including study of dramatic theory and criticism. No foreign language credit.

331-332 Elements of German for Upper-Division and Graduate Students (3,3) Elements of language, elements, and advanced readings and a final 10,000 word translation project. Open to graduate students preparing for language examinations, and upper-division student desiring reading knowledge of the language. 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: 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: at least one in-class examination and 3000 words of writing outside the classroom.

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 Linguistics 425.

426 Methods of Historical Linguistics (3) Phonetics, distinctive feature analysis, sound change types, nature of sound change, principles of reconstruction and fundamental assumptions about language change through time. Non-phonological linguistic change, 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 432.)

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 or graduate reading courses. (Same as Linguistics 435.)

436 History of the German Language (3) Development of the German language from Indo-European through Proto-Germanic, Old High German, Middle High German to New High German. Internal and external linguistic history of German speech. Prereq: 6 hours of upper division German language courses excluding courses in translation or graduate reading courses. (Same as Linguistics 436.)

485 Business German (3) German used in fields of business, government, administration and economics. Prereq: 5 hours of upper division German excluding courses in translation and graduate courses.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

497 Senior Honors (1-6) Admission by consent of department. May be repeated. Maximum six hours.
GREEK
121-122 Beginning Greek (3,3) Must be taken in sequence.
261 Intermediate Greek: Grammar and Review and Readings (3) Systematic review of Attic Greek and readings from selected authors. Prereq: 122.
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
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. E
200 Seminar in Human Sexuality (2) Problems and responsibilities of being male and female as they relate to health and wellness. Satisfactory/No Credit only. F, Sp
225 Alcohol/Drugs and the College Student (2) Problems related to use and abuse of substances potentially harmful to health and wellness. Covers alcohol, drugs, tobacco and other substances. Satisfactory/No Credit only. F, Sp
320 Cardiopulmonary Resuscitation (1) Theory and skills to implement basic cardiac life support following cardiac arrest due to such conditions as heart attack, drowning, electrocution, suffocation, poisoning, drug intoxication, and vehicular and other accidents. Educational and preventive aspects of controlling cardiovascular disease. Leads to basic life support certification. 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 promotion strategies. F, Sp
305 The School in Community Health (2) Roles and responsibilities of teachers in school health programs; emphasis upon: health problems of the school child, recognition and methods of handling them; healthful school environment; school health services and community resources, health personnel, voluntary and official health agencies. May not be taken for credit by health majors. F, Sp
306 Health Instruction in Elementary Grades (2) Topics appropriate for school-aged child in elementary grades. Organization and presentation of health content emphasizing healthy lifestyle, and providing specific guidelines of how to change inappropriate behaviors. (Same as Physical Education 330.)
375 Health Education: Curriculum, Methodology, Communications (3) Principles of health education curriculum construction, methodology and communication strategies for teaching/transmitting health education information. Sp
380 Research and Grant Writing (2) Study and application of research methods and grant writing techniques for health educators. Skills for reading and interpreting journal and research articles. Exercises and student projects to develop a research or grant proposal. Emphasis on development and review processes. Sp
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.) E
405 Alcoholism and Alcohol Education (3) Factors which make alcoholism a serious health and safety problem. Various types of instructional/educational and intervention programs. F, Sp
406 Death, Dying and Bereavement (3) Aspects of dying, death and handling the trauma of loss. Medical, financial, physical, legal and social implications of death. F, Sp
410 Pre-Internship Seminar (1) Objectives and policies of internship program. Must be completed in the term immediately preceding the internship. Prereq: Admission to Teacher Education Program. Satisfactory/No Credit only. Sp, Su
414 Physical Activity and Fitness (2) (Same as Physical Education 414.)
415 Field Evaluation of Physical Fitness (1) (Same as Physical Education 415.)
420 Sex Education As It Relates to Human Sexuality (3) Science of human sexuality. Emphasis on the trends, issues, content of sex education. E
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 an inappropriate health problem. Assessment, intervention, and prevention techniques. Sp
435 Substance Use and Abuse (3) Drug and alcohol abuse problems and suspected causes: pharmacology of drugs; individuality of drug use; society: strategies for intervention and education. Sp
465 Aging and Health (3) Aging process in a health perspective as it relates to health promotion and wellness of the aged. F, Sp
470 Special Topics (1-3) For advanced students, teachers, school administrators, nurses and other paraprofessional personnel. Lectures, demonstrations, films, field trips, and supervised research in special health/wellness or health promotion issues. May be repeated. Maximum 12 hours. E
475 Directed Independent Studies (1-3) Individual identification and study of a health/wellness or health promotion problem/issue. Prereq: Consent of instructor. May be repeated. Maximum 12 hours. E
481 Internship I: Grades 7-12 (2-6) Methods and techniques 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. Sp
482 Internship II: Grades 7-12 (3-9) 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

483 Field Practice (6) Off-campus health internships or field practice in an educational or other agency with qualified professional. Prereq: Consent of instructor. E
510 Trends and Issues in Health Education (3) History, philosophy, principles, problems, and trends of and in health and health education. F
529 Sex Education and Human Sexuality (3) Educational and health care health issues, theory, techniques, materials to be used in school, community, or health care facility. Sp
530 Curriculum Development for Health Education Programs (3) Current health education curricula for elementary and secondary schools, community and health care settings. Su
540 Evaluation in Health Education (3) Principles of evaluation of health instruction and programs in regard to health knowledge, attitudes, and behavior. Construction of instruments and criticism of existing instruments. Sp

HISTORY
151-152 Development of Western Civilization (3,3) Historical survey of the civilization of the western world from 151-Ancient world to 1715, 152-1715 to present. E
157-158 Honors: Development of Western Civilization (3,3) Consent of department required. 157-F, 158-Sp Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.
161-162 A History of World Civilization (3,3) Historical survey of world civilization, 161-Origins to 1900. 162-1900 to present. 161-F, 162-Sp Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.
195-196 Afro-American History: An Introduction (3,3) 195-Afro-American experience to 1890. Traditional African societies from which Afro-Americans emerged; evolution of prejudice and racism in America; institution of slavery; free Negroes; Civil War and Reconstruction. 196-Afro-American experience from 1890. The Afro-American struggle for political, civil, 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 ghetto; the Civil Rights and Black Power movements.
199 The City in Europe, 1000-1900 (3) Urban growth, emphasizing the relationship between the economic and social foundation of the cities, their political and cultural development and their physical structure.
251-252 History of the United States (3,3) 251-Settlement to 1877. 252-1877 to present. E
253-254 United States History for International Students (3,3) 253-Settlement to 1865. 254-1865 to present. 253-F, 254-Sp
257-258 Honors: History of the United States (3,3) Prereq: Consent of department. 257-F, 258-Sp
307 Honors: Introduction (3) Historical analysis and interpretation, philosophy of history, principles and techniques of research. Required of students working for honors in history. Prereq: Consent of department.
308 Honors: Historical Problems (3) Application of techniques and insights from 307 to selected historical issues to emphasize problems of evidence, interpretation, and objectivity. Required of students working for honors in history. Prereq: Consent of department.
310-311 The Ancient World (3,3) 310-Development of African democracy; its successes and failures; polls crisis of the fourth century B.C.; emergence of hellenistic civilization. 311-Origins of Roman imperialism; its conquest of the empire, socioeconomic changes, constitutional crises, emergence of military and political autocracy.
HUMAN SERVICES

220 Introduction to Human Services (3) Focus on related societal values and contemporary issues in healthy behavior, modification, family systems, settings, and roles as students examine the complexities of human needs and social problems.

320 Peoples and Problems of Appalachia (3) Exploration of life style and institutions from contemporary human services' point of view. Special emphasis placed on political and economic structures of region.

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: Progression to the major.

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.

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.

420 Human Services Methodologies II (3) Includes client-centered and rational emotive therapy. Discussion and role playing of methods and skills that will be used during professional field experience. Prereq: Progression to the major, 220, 330, Coreq: 440.

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. Pr Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

440 Human Services Field Work (5) Practical field experiences in appropriately organized and directed human services settings. Develops specific helping skills; involves roles and functions of social services, and provides direct services in a supervised learning situation. For majors only. Prereq: Progression to the major or consent of instructor. Coreq: 420. Satisfactory/No Credit only.

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 functions 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.

450 Special Topics in Human Services (3) Issues, methods, values, and trends with implications for helping professions, such as art therapy and their ethical issues, and self-awareness education. May be repeated. Maximum 9 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

INTERIOR DESIGN

140 Introduction to Interior Design (2) Orientation to the profession; relationship to allied fields; contemporary developmental concepts; philosophical approaches. Only to majors in interior design and architecture. F

150 Visual Studies (3) Classification and properties of two and three-dimensional visual organization; design principles; visual environmental elements with similar and complex visual systems; role of movement in experiencing scale and volumetric space. Open only to majors in interior design and architecture.

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; mutually exclusive properties of behavior-environment systems. (Same as Urban Studies 200.) F

240 Fundamentals of Interior Design I (4) Principles of spatial organization; creative problem-solving and communication techniques for micro-environmental environments; perceptual aspects of human behavior; model building, experimentation with various media. Prereq: 140, Arch 172.

250 Fundamentals of Interior Design II (4) Problem solving, spatial organization of micro environments; increasingly larger scale communication of total design solution, graphic, audio and photographic techniques. Prereq: 240. Sp

270 History of Interior Architecture I (3) Interior architecture, decoration and decorative arts within cultural context, ancient through seventeenth century. Emphasis on Italy, France and England. Prereq: one semester Art History. Sp

280 Micro-Computers for Interior Design (3) Electronic spreadsheets and data-base organization and management; data-base information to relate anthropometrics to furniture dimensioning and specifications for maximizing design criterion. Computer and product trade-offs in meeting budget constraints. Prereq. or Coreq: 240. Interior Design students only. F

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

315 Survey of Contract Interiors (3) Planning and organizing interior spaces for restaurants and lodging facilities; relation of furnishings to architectural space. Open only to Hotel Restaurant Administration majors. Offered Fall and Spring in even years. F, Sp.

340-350 Intermediate Interior Design I, II (4,4) Studio Problems of intermediate complexity; integrates and extends previous knowledge of working drawings, materials and sources, design methods, spatial organization and planning of micro and macro environments. Prereq: Third year in Interior Design; courses must be taken in sequence. F, Sp.


370 History of Interior Architecture II (3) Interior architecture, decoration and decorative arts within cultural context, seventeenth through the nineteenth centuries; emphasis on France, England and America. Prereq: 270 or consent of instructor. F

400 Proxemics (3) Analysis of spatial behavior; emphasis on cultural basis of spacing behavior. Prereq: 200 or consent of instructor. A, Sp

410 Environment as Code (3) Advanced theoretical issues in environment as a medium of human communication. Prereq: 200, 400 or consent of instructor. A, Sp

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

420 Practicum for Interior Design I (15) Supervised experience in a professional design firm; business practices, acquired in project relating to professional practice, supplemented by theoretical study. Prereq. Third year in Interior Design, 360 and consent of instructor. Sp

430 Computer-Aided-Design (3) Interaction between computer-aided-design process, data-base, spreadsheet software, cost estimating, construction drawings related to space planning. Prereq: 280, 340; Interior Design majors only. Sp

440-450 Advanced Interior Design I, II (4,4) Complex problems, utilizing systematic design methodology, commercial and institutional environments, and/or historic preservation/adaptive reuse of older structures with considerations of governmental policies. Prereq: 350 for 440; 440 for 450 and fifth year in Interior Design.

460 Lighting for Interior Designers (3) Application of elements and principles of lighting and wiring to design of visual environment. Prereq: Third year in Interior Design.

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

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

480 Furniture Design (4) Human factors data applied to design of body support, task support, storage and systems, construction drawings and scale models; advanced millwork design; materials and manufacturing processes. Prereq: 200, 360 and fifth year in Interior Design.

485 Interior Design Synthesis (4-8) Student and instructor initiated advanced research; topics must be approved by supervising Interior Design faculty. Prereq: 450 or consent of instructor.

491 International Study (1-15) Individual or group studio and/or study abroad, academic research, field investigation, or studio experiences. May be substituting for 450 in student's professional curriculum. Determination of credit based on particular international experience. Prereq: Consent of department head.

493 Directed Study in Studio (1-4) Student or staff initiated study for investigation of special topics. Elective credit only. May be repeated. Maximum 8 hours. Prereq: Consent of department head.

ITALIAN

111-112 Elementary Italian (3,3) Introduction to Italian. May not be taken for credit by students with two years of high school or one year college Italian. Must be taken in sequence. Language Laboratory required.

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

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.

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 into Italian and oral; exercises in free composition. 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 Petrarach and Boccaccio (3) Prereq: 212 or consent of instructor. (Same as Medieval Studies 402.)

403-404 Literature of the Rinascimento (3,3) From Pucito 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)

491 Foreign Study (1-15)

JOURNALISM

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

203 Editing (3) Methods and practice in judging news, editorial copy, writing headlines and designing news papers and magazines. Emphasis on precise word use and news display. Prereq: Communications 200. E

270 Public Relations Principles (3) Theories and principles of public relations. Overview of public relations in management of business, government, institutions, and organizations. Case studies and basic public relations projects. Prereq: 201 or Communications 200. 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. Prereq: 201; or Communications 200, or consent of instructor. E

310 Feature Writing (3) Skills of journalism for writing feature articles for newspapers, magazines and company publications. Critiquing of students' work in writing workshops, and writing short in-class pieces as assigned. Prereq: 203, or consent of instructor.


390 Communications Graphics (3) Principles and practice in the visual aspect of communications. Emphasis on graphic design, typographic, illustration, and photography, printing and production techniques and publication design. Lecture and laboratory. Prereq: 201, or Communications 200, or consent of instructor. E

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, economic, and cultural factors. Relation of communication practices to international affairs and understanding. F, Sp

412 Opinion Writing (3) Analysis of editorial positions, practices, and pages. Writing editorials and columns for newspapers, magazines, and company 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. Organizing and presenting material, with attention to problems in areas such as business, science, agriculture, the humanities. Prereq: 203 or consent of instructor.

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

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


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

460 Mass 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) Preparation of communications materials to implement planned public relations programs. Preparation of news releases. Research, planning, communication and evaluation of major public relations projects and campaigns. Prereq: 203, 270, and senior standing. F, Sp

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

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

492 Field Experience (1-3) Approved internships and other supervised practice in journalism and public relations. May be repeated for a maximum of 4 credit hours. Prereq: Senior standing and consent of instructor. E

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

LATIN

111-112 Beginning Latin (3,3) Must be taken in sequence.

251 Intermediate Latin: Grammar Review and Readings (3) Prereq: 112 or equivalent.

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

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

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

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

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

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

LATIN-AMERICAN STUDIES

251-252 Introduction to Latin American Studies (3,3) Societies of Latin America with special emphasis on dominant culture patterns, social changes, and impact of nationalism. 251-Pre-Colonial and Colonial periods through Independence era. 252-Latter 19th century and the Modern period. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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

321 Aspects of Spanish American Literature (3) (Same as Spanish 312.)

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

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

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

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

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

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

401 Cultural Plurality and Institutional Changes in Latin America (3) Value systems, behavioral patterns, political parties, role of the military, the Church, educational institutions, dictatorship and nationalism. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

402 Latin American Studies Seminar (3) Selected topics in Latin American studies. May be repeated. Maximum 6 hours.

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.)

450 20th Century Hispanic Theater (3) (Same as Spanish 450.)

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

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

472 Masterpieces of Spanish American Literature (3) (Same as Spanish 472.)

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.)

LIBRARY AND INFORMATION SCIENCE

310 Finding Information: Resources and Strategies (3) Information as a critical resource for research and decision making, emphasis on planning and executing information searches and using library resources. 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 encouraging reading. Undergraduate credit only. F

340 Books and Related Materials for Young People (3) Materials for teenagers in leisure time or classroom activities; criteria for selecting books, magazines, recordings, films and related materials; book talks and other devices for encouraging reading. Undergraduate credit only. Sp

430 History of the Book (3) History of writing and various methods of bookmaking from earliest times through the 19th century. Sp

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

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.)


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.)

Logistics and Transportation

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 system design and organization.

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

400 Special Topics in Transportation and Logistics (3) Seminar in current problem areas in transportation and logistics. Topic announced prior to offering. May be repeated once for credit. 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.

402 Transportation Operations and Cost Management (3) Freight and passenger carrier operations with the development of carrier costs and their control, considered by each mode individually and in coordination with each other. Prereq: 302.

411 International Transportation and Logistics (3) Multi-national logistics strategy, export-import process, international sea, surface and air operations, comparative transport systems analysis. Prereq: 302, 305.

411 Seminar in Logistics Strategy (3) Senior seminar in development of strategy to logistics management. Major writing requirement. Prereq: 401.


493 Independent Study (1-6) Directed research on subject of mutual interest to student and staff member. 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

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.

303 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.

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 343.)

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.


401 Business Strategy/Policy (3) Strategy and policy which affect the character and success of the total enterprise. Capstone course which integrates all functional areas in the formulation and implementation of 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 major.


431 Personnel Management (3) Theory, methods and issues pertaining to successful personnel management. Prereq: 401.

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

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

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

461 Database Management in Business (3) Application, logical structure, and implementation of database systems. Management of data resources to effectively support information systems in organizations. Prereq: Computer Science 261.

471 International Management (3) Factors significant to the manager in international business activities.


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

Management Science

310 Management Science and Managerial Decision Support Systems (3) Introduction to quantitative decision models and their integration into microcomputer-based decision support systems. Applications to microcomputer-based decision support systems. (Same as Economics 103.)

320 Marketing Research and Information Planning (3) Marketing Research process from its inception to implementation of the study's results. Student should be able to critically evaluate the merit of a research project, as well as possess the ability to design a sound marketing project. Major writing requirement. Prereq: 301 and Statistics 201.

420 Promotion Management (3) Principles and practices of promotion management and their relationship to overall marketing program. Managerial focus emphasizing types of decisions continually confronting promotion executives. Prereq: 301.


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

497-498 Honors I & II (3,3) Topics may include non-business marketing applications, macroenvironmental issues, market segmentation, international marketing, services marketing, marketing strategy and related issues. Prereq: Consent of instructor.

Marketing

301 Marketing Management (3) Institutions comprising the marketing system; principal environmental opportunities and constraints facing the marketing manager. Prereq: Economics 201.

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

320 Marketing Research and Information Planning (3) Marketing Research process from its inception to implementation of the study's results. Student should be able to critically evaluate the merit of a research project, as well as possess the ability to design a sound marketing project. Major writing requirement. Prereq: 301 and Statistics 201.

420 Promotion Management (3) Principles and practices of promotion management and their relationship to overall marketing program. Managerial focus emphasizing types of decisions continually confronting promotion executives. Prereq: 301.


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

497-498 Honors I & II (3,3) Topics may include non-business marketing applications, macroenvironmental issues, market segmentation, international marketing, services marketing, marketing strategy and related issues. Prereq: Consent of instructor.

Mathematics

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 121 should take 110 instead of 110. Prereq: Two years of algebra and one year of geometry. This course should not be taken to remove an entrance requirement.
115 Statistical Reasoning (3) An introduction to proba-
bility and statistics without calculus. Not available for
students majoring in the College of Business Admin-
istration. Prereq: Two years of algebra and one year of
geometry in high school, plus satisfactory place-
ment test score of 109, or 110, or 119, or 130.

119 Precalculus A (3) A review of algebraic functions,
equations, and inequalities for students who satisfy
the course prerequisites for 121 but whose place-
ment test scores indicate additional preparation
is necessary. Students who receive a grade of C
or better in any course numbered 121 or higher may
not subsequently receive credit for 119. Prereq: Two
years of algebra, geometry in high school, plus satisfactory
placement test score of 110, or 119.

121 Calculus A (3) For students not planning to major
in science, engineering, mathematics, or computer
science. Calculus of algebraic, exponential, and loga-
ithmic functions, with applications. No student who
has received credit for Math 141 or 151 with a grade
of C or better may subsequently receive credit for
121. Prereq: Two years of algebra and one year of
geometry in high school, plus satisfactory placement
test scores, or 110, or 130.

122 Calculus B (3) Sequel to 121, including elementa-
ry matrix algebra, multivariable calculus, and optimization.
No student who has received credit for 241 or 251
may subsequently receive credit for 122. Prereq: 121,
or 141, or 151.

130 Precalculus I (4) Review of algebraic, logarith-
mic, 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 141 or 151 may not subse-
quently receive credit for 130. Prereq: Two years of
algebra, a year of geometry, and half a year of trigo-
metry 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.
Credit will not be given for both 141 and 151. Prereq:
two years of algebra, a year of geometry, and half a
year of trigonometry in high school, plus satisfactory
placement test scores, or 130.

143-144 Microcomputer Laboratory (1,1) Optional sup-
plement to the calculus courses, featuring computer
demonstrations and projects, Coreq: Students regis-
tering for one of these lab courses must also be
registered for the corresponding calculus course.

147-148 Honors: Calculus I, II (4,4) Honors version
of 141-142 for well-prepared students. Qualified stu-
dents may subsequently receive credit for 200. Prereq:
two years of algebra, a year of geometry, and half a
year of trigonometry in high school, plus satisfactory
placement test scores, or 130.

200 Matrix Computations (1) Introduction to matrix
calculations, including determinants, eigenvalues and
eigenvectors. For students in the College of Engi-
neering and College of Business Statistics majors
only. Students who have received a grade of C
or better in 251 may not subsequently receive credit
for 200. Prereq: 141-142.

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

231 Differential Equations I (3) First course, empha-
sizing solution techniques. Includes first-order equations
and applications, linear differential equations with con-
tant coefficients, Laplace transforms, and series solutions.
Prereq: 141-142.
261 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 600-1000 A.D., e.g., cultural, religious, rhetorical, lyric, epic, biographical. Includes Augustine's Confessions, Boethius' Consolation, St. Gregory's Life of St. Benedict, The Life of Charlemagne, etc. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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 Songs of Songs, Peter Abelard's History of My Calamities. Should be taken in sequence with 261. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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.)

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

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

402 Petroch and Boccaccio (3) (Same as Italian 402.)

403 Seminar in Medieval Studies (3) Interdisciplinary treatment of selected topics. Content varies. May be repeated. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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.)

MICROBIOLOGY

200 Microbiology for Student Nurses (3) Only for student nurses in diploma program of hospitals affiliated with The University of Tennessee. Microbiological principles as they apply in nursing care of the patient, epidemiology of infection, and principles of immunity and allergy.

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

310 Introduction to Microbiology (3) Introduction to bacteria and viruses including physiology, metabolism, and genetics of bacteria and replication and expression of viruses; bacterial and viral pathogenicity; mechanisms of resistance to disease. Coreq: 319. F, Sp

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

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

410 Physiology and Genetics of Bacteria (3) Modern concepts of the structure and function of the bacterial cell, including metabolism, energy flow, and the transmission and expression of genetic information. Prereq: 310.

419 Bacterial Physiology and Genetics Laboratory (1) Bacterial exercises designed to accompany 410. Coreq: 410.

420 Pathogenic Bacteriology (2) Disease producing microorganisms including bacteria, rickettsia, and chlamydia. Prereq: 310.


430 Immunology (2) Principles of inflammation and immunity; immunoglobulin structure and theories of formation and diversity; complement, hypersensitivities, cell cooperation and recognitions in immune mechanisms; soluble factors. Prereq: Biology 220. (Same as Zoology 430.)

439 Immunology Laboratory (1) Laboratory exercises designed to accompany 430. Coreq: 430. (Same as Zoology 439.)


470 Microbial Ecology (3) Physiologic and taxonomic microbiology from both the natural and the experimental environment. Emphasis on the functional role of microorganisms in natural and simulated ecosystems. Prereq: 310.


480 Mycology (3) Morphology, physiology, genetics, and taxonomy of yeasts and molds; pathogenesis of disease causing fungi. Prereq: 310.

489 Mycology Laboratory (1) Laboratory exercises designed to accompany 480. Coreq: 480.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

495 Senior Seminar (3) In-depth consideration of microbiological problems of current interest requiring an integration of two or more disciplines. Prerequisite: original literature and the experimental basis of current knowledge. Historical background, impact on society, predictions for the future, and the basis of moral and ethical judgements. Written reports required. A capstone course. Prereq: Senior standing. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

MILITARY SCIENCE

110 Basic Military Science (3) Formation and functioning of the American defense establishment, customs and traditions of the army, application of the principles of war, and current military threat faced by the United States. Topics include the history of war and the American military establishment, customs and traditions, and the United States defense establishment. Prereq: United States citizen; freshman or sophomore standing. Students with higher standing required. Letter grade only. F, Sp

120 Leadership Development Techniques (2) Introduction to leadership theory, human motivation theory, and principles of effective and effective communication. Application of theories and principles in individual and group exercises. Prereq: 110 or consent of the Professor of Military Science. Letter grade only. F, Sp, Su

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

210 Basic Military Leadership (2) Previews of the platoons and exercises in leadership, principles and skills. Performance based program. Prereq: 120 or consent of the Professor of Military Science. Letter grade only. F, Sp, Su

220 Basic Officer Skills (3) Small unit operating techniques to include familiarization with military equipment, land navigation, and first aid. Prereq: 210 or consent of the Professor of Military Science. Letter grade only. F, Sp, Su

310 Advanced Military Studies I (4) Applied leadership including operation of the military team, electronic communications, land navigation, small unit leadership, internal defense development, field trip, and leadership laboratory. Philosophy of organization and organization of military in tactical and administrative roles. Prereq: United States citizen; minimum of 30 credit hours passed and have at least two years remaining to complete degree (undergraduate or graduate); physically qualified; cumulative GPA 2.00 or higher; legally qualified; under thirty years age at time of commissioning; or 3 or 4 years of JROTC (or) 110, 120, 210, 220 completion (or) 200 completion (or) Basic training Command into a commissioned officer course of study. 310, 320, 200, 410, 420, 400. Letter grade only. 3 hours and 1 hour lab. F

320 Advanced Military Studies II (4) Applied leadership including operation of the military team, electronic communications, land navigation, small unit leadership, internal defense development, four field trips, and leadership laboratory. Philosophy of organization and organization of military in tactical and administrative roles. Prereq: 310 or consent of instructor. Letter grade only. 3 hours and 1 hour lab. Sp

400 Advance Camp-Practicum (4) 249 contact hours of instruction and evaluation at Ft. Lewis, Washington during the summer between the Junior and Senior year. Prereq: 310, 320. Letter grade only. Su

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

420 Military Ethics and Law (4) Military profession, ethical reasoning, staff operations, military briefings and letters to the system, utilization of military personnel, Law of Land Warfare. Prereq: 310, 320 and 400, 410 or consent of instructor. Letter grade only. 9 hours and 1 hour lab. Sp

430 U.S. Military History, 1754 to the Present (3) (Same as History 451.)

MUSIC EDUCATION

210 Class Woodwind Methods (3) 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

220 Class Brass Methods (3) 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

230 Class Percussion Methods (3) 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, Sp

300 Music for Elementary Teachers (2) Singing, rhythmic activities, instrumental activities, listening, music reading, and creative activities appropriate for the elementary grades. For elementary education majors only. Prereq: Admission to Teacher Education Program. Letter grade only. E

310 Conducting I (3) Basic skills of conducting: baton, time beating of traditional patterns, preparatory beat, cut-offs, cueing. Development of the left hand, fermata, subdividing. Mechanics of full score. Video tapes of great conductors. Conducting "live" groups. Video tapes of each student conductor. Prereq: Two years of music theory or consent of instructor and admission to Teacher Education Program. Letter grade only. F

320 Conducting II (3) Developing advanced baton technique. Multiple rhythms, modern beat patterns and their variations. Studies, analyzing and interpretation of the full score. Achieving complete physical control. Rehearsal techniques. Conducting "live" groups in advanced works. Video tapes of all student conductors. Prereq: Conducting I or consent of instructor and admission to Teacher Education Program. Letter grade only. F

330 Music Methods for the Elementary School (3) Methods and materials for teaching music in the elementary grades. Primarily intended for music education majors. Prereq: Consent of instructor and admission to Teacher Education Program. Letter grade only. Sp

350 Field Experience in Music Education (1) Prereq: Consent of instructor and admission to Teacher Education Program. May be repeated. Maximum 3 hours. Satisfactory/No Credit only. E

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

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

450 Eurhythmics (3) Principles and practice of eurhythmics, as developed by Emile Jaques-Dalcroze. Prereq: Consent of instructor. Letter grade only. F

481 Internship I: Grades K-12 (3-6) Methods and the- ones 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

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

493 Special Topics in Music Education (3) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only. E

483 Independent Study in Music Education (2-5) Prereq: Consent of instructor. May be repeated. Maximum 9 hours. Letter grade only. E

495 Advanced Music Methods for Elementary Teach- ers (3) Continuation and amplification of the concepts and skills covered in Music Education 300, intended for Elementary Education majors. Prereq: 300 or consent of instructor. Letter grade only. Sp

MUSIC ENSEMBLE

301-501 Woodwind Choir (1,1) May be repeated.

302-503 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 Tubas 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.

313-513 Synthesizer 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.

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.

342-542 Opera Workshop (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

100 Fundamentals of Music (3) Theory and practice of basic elements of music. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

110 Music Appreciation (3) Developing listening skills and understanding of Western music from the ancient world through the 20th century. For non-music majors. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

120 History of Rock (3) Study and appreciation of rock music, its origins in blues and rock and roll, its development and cultural dimensions to the present. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

130 Music Performance (3) Individualized course of study combining participation in a University musical ensemble with collaborative study of an instrument or voice. One hour of applied study (Music Performance 103-446) 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.

200 Solo Class (0)

301 Junior Recital (0)
MUSIC HISTORY

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

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

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

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

350 History of Jazz (3) Origin, development, and styles of jazz music and its exponents. Cultivation of special listenting techniques. (Same as Afro-American Studies 350.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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

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

410 Music History Genre (3) Topics vary. May be repeated for credit. Maximum 6 hours.

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

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

440 Music of North America (3) Folk and art music of the United States and Canada from colonial times to the present. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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

460 Music Aesthetics (3) Nature of music and musical experience, sense perception and emotions, music, and role of artist in society. Aesthetic viewpoint of individuals and historical eras through selected writings. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

480 Music in Christian Worship (3) Music traditions in Christian worship, including hymnody.

490 Church Music Methods and Administration (3)

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

MUSIC INSTRUMENT

310 Brass Literature (3) Prereq: Consent of instructor.

320 Woodwind Literature (3) Prereq: Consent of instructor.

330 Percussion Literature (1) Prereq: Consent of instructor.

340-350 String Literature I, II (2,2) 340-Survey of string techniques, issues, research and pedagogies, topical presentations by the applied string faculty and guests. 350-Development of the violin family of instruments and bowing techniques, 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.

410 Band Arranging (3) Study and application of techniques employed in scoring for the marching and concert bands. Prereq: Music Theory 320.

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

495 Suzuki Violin Method (2) Psychology, procedures, and literature of the Suzuki violin method and pedagogy. May be repeated. Maximum 8 hours. Prereq: Consent of instructor.

MUSIC JAZZ

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

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

130-140 Jazz Piano I, II (1.5) 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 composers and performers who have contributed significantly to creation of principal styles of jazz drumming.

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

310 Jazz Composition and Arranging (3) Prereq: Consent of instructor.

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


420 Jazz Pedagogy (1) Methods and materials relating to teaching of jazz, designing and administering jazz programs, and rehearsal techniques for jazz ensembles. Prereq: Studio Music and Jazz major or consent of instructor.

MUSIC KEYBOARD

110-120 Class Piano I, II, III (1,1) Development of keyboard skills in reading, technique, repertoire, harmony, and transcription. Must be taken in sequence.

210-220 Class Piano III, IV, V (1,1) Continuation of 110-120; 220 completes piano competency requirement; must be taken in sequence.

230 Keyboard Harmony (1) Melody harmonization, figured bass realization, and improvisation. Prereq: Music Theory 110-120.

240 Church Service Playing I (1) Practical skills applicable to the use of the organ in church services, including improvisation, hymn playing, and accompanying. Prereq: 230 and organ proficiency at the 200 level.

310-320 Church Service Playing II, III (1,1) Continuation of 240. Prereq: 240.

330 Sight Reading at the Keyboard (1) Prereq: Consent of instructor.

410 Early Keyboard Literature (2) Keyboard music through the baroque period, with primary emphasis on music for the harpsichord. Prereq: Music History 210-220.

420-430 Piano Literature I, II (2,2) 420-From 1750 to middle 19th century. 430-Middle 19th century to the present.

440-450 Piano Pedagogy I, II (2,2) Pedagogical methods and materials related to the development of principles of learning; specific programs based on pupil aptitude and background; collaborative teaching experience. Must be taken in sequence. Prereq: Consent of instructor.

460-470 The Organ and Its Literature I, II (3,3) Development of the organ and organ literature from the Middle Ages to the present; problems of style and interpretation; pedagogical literature and methods; organ design. Prereq or Coreq: Music History 220 and consent of instructor.

480-490 Teaching Class Piano (1,1) Historical survey and evaluation of teaching materials and methodology for college and/or adult beginning piano classes, with collaborative teaching experience. Prereq: Consent of instructor.

495 Suzuki Piano Method (2) Study of the psychology, procedures, and literature of the Suzuki Piano Method. Prereq: Consent of instructor.

MUSIC PERFORMANCE

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.

155-255-355-455-555 Voice (1-4) May be repeated.

160-260-360-460-560 Violin (1-4) May be repeated.

165-265-365-465-565 Viola (1-4) May be repeated.

170-270-370-470-570 Cello (1-4) May be repeated.

175-275-375-475-575 String Bass (1-4) May be repeated.

176-276-376-476-576 Electric Bass (1-4) May be repeated.

179-279-379-479-579 Guitar (1-4) May be repeated.

180-280-380-480-580 Piano (1-4) May be repeated.


190-290-390-490-590 Organ (1-4) May be repeated.

254-394-494-594 Composition (1-3) May be repeated. Prereq: Consent of instructor.
other contemporary music styles. Prereq: Consent of instructor. May be repeated for credit. Maximum 4 hours.

220 Introduction to Music Theatre Technology (2) Stage technology unique to lyric stage.


240-250 Diction I, II (2, 1) Sounds by phonetic symbols. Opera and art song used for examples. Performance practice.

330 Opera Production (1-3) Supervised work on opera productions. Emphasis on the interaction of music and drama. Prereq: Consent of instructor. Maximum 12 hours.

410-420 Song Literature I, II (2, 2) German songs. French, Italian, Russian, Scandinavian, Czechoslovakian, British, and American art songs.

430 Styles in Opera Acting (2) Study and practice of styles in opera acting based on historical and national characteristics. Prereq: 230.

440 Projects in Opera Theatre (1-3) May be repeated for credit. Prereq: Consent of instructor. Maximum 9 hours.

450-460 Pedagogy I, II (1, 1) 450-Concepts and approaches to teaching singing (past and present). 460-Vocal teaching materials; includes collaborative teaching experiences. Prereq: Consent of instructor.

NURSING

214 Integrated Biomedical and Health Sciences (1-3) Examination and application of selected theories from physics and chemistry, microbiology, and nutritional science. Prereq: Consent of instructor. Cannot be used to satisfy other major course requirements.

301 Clinical Pharmacology (3) Biochemical and pharmacological effects of therapeutic drugs on the human body; positive and negative reactions to drugs and interaction effects between and among drugs. Prereq: Chemistry 100-100 and 6 semester hours of anatomy and physiology. F

302 Introduction to Professional Nursing (9) History, philosophy, and scope of nursing practice with emphasis on nursing process; cognitive and psychomotor skills necessary for effective nurse-client interactions. Clinical laboratory experiences emphasize the nursing process and its application to the care of individual whose health problems require in-patient services. 6 lectures, 3 lab. Coreq: 301 and 304. F

304 Nursing Assessment and Wellness Promotion (4) Developmental, psychosocial, cultural, environmental, spiritual, physical, family, and physical dimensions of health assessment. Collection, analysis, and application of assessment data in formulation of wellness-oriented nursing diagnosis and use of the nursing process in promotion of wellness. Evolution and expansion of the nursing role in wellness promotion and education. Laboratory sessions for development of nursing assessment skills. 3 lectures, 1 lab. Coreq: 301 and 304. F

305 Transition to Professional Nursing (6) Current status of professional nursing; utilization of the nursing process in a changing health care delivery system; Philosophy and conceptual framework of the baccalaureate nursing program and selected physiological and behavioral deviations demonstrated by clients whose health problems require in-patient services. 5 lectures, 1 lab. For RN's only. F

311 Acute Care Nursing (10) Continuation of 302 with emphasis on physiological and behavioral deviations which underlie or are associated with more complex and critical illnesses of adults and children. Clinical laboratory experiences in adult and pediatric acute care settings for enhanced knowledge and skill in providing nursing care for a wider range of clinical and critical illnesses. 6 lectures, 4 lab. Prereq: 301, 302, and 304. S

312 Acute Care Nursing Theory (6) Theoretical component of 311. For RN's only. Prereq: 305. Sp

313 Introduction to Nursing Research (3) Language of research, types of research designs, methodological approaches, sampling, data analysis, and significance of findings. Evaluation of existing and ongoing nursing research studies. Prereq: 302 or consent of instructor. Sp

315 Clinical Nursing Practicum (2) Application of nursing theories, principles, and concepts to care of hospitalized clients. Prereq: 305. Prereq: or Coreq: 311. For RN's only. Satisfactory/No Credit only. Sp, Su

317 Wellness and Lifestyle (3) Models of wellness and holistic health within the framework of modern medicine, eastern philosophy, and recent discoveries about the interaction of mind and body. Biopsychosocial interactions 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.

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 Childbearing Client (3) For registered nurses only. Satisfactory/No Credit only. Sp

322 Advanced Placement Credit: Care of the Child (2) For registered nurses only. Satisfactory/No Credit only. Sp

323 Advanced Placement Credit: Care of Client with Menstrual Disorder (4) For registered nurses only. Satisfactory/No Credit only. Su

390 Clinical Practice Elective (1-3) Supervised clinical practicum in acute care settings; further development of clinical practice skills is emphasized. Prereq: 311. Satisfactory/No Credit only. Su

401 Family Health Nursing (5) Nursing needs of families in health and in crisis. Provision of comprehensive care to families in the childbearing and childrearing phase, family therapy, family crisis, and stress. Biopsychosocial theories of family interaction, family communication, and family responses to stress. Nursing care in community or other health care settings for enhanced knowledge and skill in providing care for clients experiencing special health problems or complications. 2 lectures, 1 lab. Prereq: 300 level nursing courses. F

402 Family Health Nursing Theory (3) Theoretical component of 401. For RN's only. Prereq: 312. F

403 Community Health Nursing (4) Application of the nursing process to care of individuals, families, and groups in home and community settings with special emphasis on health promotion, disease prevention, and control of communicable diseases. Epidemiological approach is used to identify aggregates within the population that are at risk for illness, disability, or premature death. Political, social, environmental, and ethical issues related to community health nursing. 2 lectures, 2 lab. Prereq: All 300 level nursing courses. F

404 Nursing Management and Strategies (8) Theories, concepts, and principles of organization, planning, decision-making, and leadership and their application to management of nursing care for groups of clients; exposure to a variety of nursing service organization models and staffing patterns; examination of legal, ethical, political, and social trends and nursing issues with implications for nursing practice; in depth study of a topic of particular interest to the student. 5 lectures, 3 lab. Prereq: 10 credits of 400 level nursing courses. Sp

406 Nursing Leadership (3) Exploration of theories, concepts, and principles utilized to deliver and manage nursing care for clients in community or other health care settings. Prereq: or Coreq: 311. For non-nurse MSN students only. F

411 Psychosocial Long-Term Nursing (6) Nursing needs of clients whose health problems are of a developmental, behavioral, or chronic nature. Equal emphasis on prevention, wellness promotion, and rehabilitation. Nursing laboratory/clinical experiences with a psychiatric and chronic illness emphasis
412 Psychosocial Long-Term Nursing Theory (3) Theoretical component of 411. For RN’s only. Prereq: 312. Sp.

414 Community Mental Health Nursing (6) Nursing needs of clients and groups with psychosocial and/or long-term health problems. Clinical experiences provide opportunities for students to apply the nursing process. This course is offered with a group in a variety of acute, extended care, and community settings. 3 lectures, 3 lab. Prereq: All 300 level nursing courses. For non-nurse MSN students only. F.

415 Family/Community Health Nursing (6) Application of therapeutic nursing processes to individuals, families, and groups in the childbearing/rearing stages of development. Clinical 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. Sp.

450 Physiological Principles (3) Concepts and principles of normal human physiology; tissue and organ physiology as a basis for integration of system physiology and for understanding pathophysiological mechanisms. Prereq: RN status or consent of instructor. No credit for students who have taken 200, 306, 311 or 312. F, Sp.

451 Computers and Nursing Care (3) Computerized information processing with application to patient care, health care administration, nursing education, and nursing research. 2 lectures, 1 lab. Prereq: All 300 level nursing courses or consent of instructor.

453 Oncology Nursing (3) In-depth exploration of cancer problem; relates cellular kinetics to theories of carcinogenesis and metastasis; treatment modalities and nursing interventions employed in all phases of the disease. Interdisciplinary approach analyzed. Prereq: 411 or 412 or consent of instructor.

470 Special Topics (1-3) In-depth study of selected nursing interventions 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 permission of instructor.

NUTRITION AND FOOD SCIENCES

100 Introductory Nutrition (3) Nutritional concepts; current topics; issues in nutrition; nutritional needs throughout life cycle; international nutrition concerns and/or issues. A student who has received credit for NFS 107 or 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. F, Sp.

105 Food for the Next Century (3) Interdependence of people on this planet for food, global perspective from United States point of view. F.

107 Honors: Introductory Nutrition (3) Nutritional concepts; current consumer issues in nutrition; nutritional needs throughout life cycle; international nutrition concerns and/or issues. A student who has received credit for NFS 100 or 300 may not receive credit for this course. F, Sp.

200 Physiological Chemistry (4) Metabolism of carbohydrates, lipids, and nitrogenous compounds; role of essential and nonessential amino acids; enzymes and protein synthesis. Prereq: Chemistry 110 or equivalent. F.

201 Food and Clinical Analysis (4) Principles, procedures, instrumentation for analysis of food and body fluids. 4 lecture, 3 lab. Prereq: 101. 2 majors. 2 hours and 2 labs. Sp.

300 Fundamentals of Nutrition (3) Nutrition in normal and altered health states during life cycle; nutritional analysis of diets. Prereq: Chemistry 110 or equivalent. Zoology 230. A student who has received credit for NFS 100 or 107 may not receive credit for this course. Sp.

301 Nutrition for Educators (3) Principles of nutrition; biochemical and physiological aspects of nutrition during the life cycle; nutrition education concepts and strategies. Prereq: 101 or 102 equivalent, Zoology 230, or consent of instructor. A, Sp.

311 Science of Food (4) Chemical and physical properties of food related to functional and nutritional properties; sensory evaluation and concepts and techniques; effects of processing on food; application of food principles to meal planning and presentation; computer applications. Prereq: 100 or 107, 201, Micro 210. 3 hours and 1 lab. F.

312 Science of Food (4) Chemical and physical properties of proteins and lipids related to functional and nutritional properties; application of food principles to meal planning and presentation; computer applications. Prereq: 100 or 107, 201, Micro 210. 3 hours and 1 lab. Sp.

313 Advanced Nutrition (4) Integrated knowledge of physiological chemistry and physiology applied to understanding human nutritional requirements; computer analysis for dietary adequacy. Prereq: 100 or 107, 201, Zoology 230. F.

410 Professional Issues in Dietetics (1) Dietetic registration, licensure and/or specialty examinations; dietetics; marketing dietetics; internship application preparation; public policy in dietetic practice. Prereq: Senior standing. F.

411 Nutrition in Disease (4) Metabolic processes of disease states and perturbations; management and modifications required. Prereq: 311, 312, 313. F.

412 Food and Nutrition Resources Management (3) Integration of community food and nutrition resources; geographic, social, economic, economic, cultural, historical characteristics associated with food and nutritional problems and the need for services by individuals in community; public policy. Prereq: 411. Sp.

412 Experimental Food Science (3) Individual and group laboratory experiments in food science; microcomputer applications. Prereq: 311, 312, PSSc 471. 1 hour and 2 labs. F.

414 Nutrient-Drug Interactions (2) Nutrient effects on efficacy and toxicity of drugs; drug effects on absorption, metabolism of nutrients. Prereq: 306 or equivalent. A, Sp.

423 Foodservice Systems Design and Equipment (3) Physical facility design; production, delivery system analysis; equipment selection, purchase. Prereq: HRA 380, 321 or consent of instructor. A, F.

450 Special Topics: Nutrition and Food Sciences (1-3) Development, issues and problems in Nutrition and Food Sciences; topics variable. Prereq: Junior or Senior standing. Consent of instructor. 1-3 hours and 2 labs. F.

470 Honors: Nutrition and Food Sciences (1-3) Senior project. Prereq: Junior or Senior standing and consent of instructor. E.

492 Field Experience: Nutrition and Food Sciences (1-3) Prereq: Junior or Senior standing, consent of instructor. Satisfactory/No Credit only. E.

493 Directed Study: Nutrition and Food Sciences (1-3) Individual study, research, issues, data collection. Prereq: Junior or Senior standing, consent of instructor. Satisfactory/No Credit only. E.

ORNAMENTAL HORTICULTURE AND LANDSCAPE DESIGN

110 Environmental Horticulture (3) Basic plant sciences and their relationship 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.

210 Floral Design (2) Principles and techniques of basic floral arranging with emphasis on arrangements for home and special use. Lab fee will be charged. 2 labs. Sp.

220 Basic Landscape Plants (2) Identification, classification, adaptation, culture and landscape design uses of ornamental trees, shrubs, herbs, and vines. Prereq: 8 hours Botany or consent of instructor. 2 labs. E.

230 Interior Plants (2) Identification, culture, design applications, and propagation of foliage plants used in the interiorscape; introduction to interiorscape 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 interiorscape, basic graphic skills and design theory with an emphasis on residential landscape planning. Introduction to construction and basic concepts. Prereq: 110, 220 or consent of instructor. 3 hours and 2 labs. E.

310 Greenhouse Production and Management (3) Management and operation of a greenhouse for commercial purposes, research and institutional use, and home hobby purposes. Culture and management of economically important florists’ crops in the United States; basic plant physiological principles, including photoperiodism, thermoperiodism, growth regulation, and nutritional requirements of crops. Prereq: 110, 220 or consent of instructor. 2 hours and 1 lab. F.

320 Plant Materials (2) Identification, classification and design uses of ornamental trees, shrubs, vines and herbaceous plants and generally excluding those covered in 220. Prereq: 220 or consent of instructor. 2 hours and 1 lab. F.

330 Plant Propagation (3) Physiology, methodology, and environmental requirements for propagation. Prereq: 110 and 6 hours Botany or consent of instructor, 2 hours and 1 lab. F.

340 Turfgrass Management (3) Practical turfgrass management; cultivation and sensitivity to the establishment, basic applied fertilizer programs, mowing, and irrigation practices, and thatch and compaction control. Prereq: 110, 220, Plant and Soil Science 210 and 8 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 trade and design, application of landscape materials, wood, concrete and masonry construction, site drainage, and landscape grading. Prereq: 220, 2 hours Botany. 3 hours. F.

361 Practicum in Landscape Construction (3) Practical experience in implementation of landscape development projects. Directed lab and field instruction; planning and implementation of home landscape construction including interpreting and implementing landscape design drawings and specifications. Prereq: 350. Two 3 hour labs. Sp.

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 (2) Refinement of graphic skills. Sketches, elevations, sections, isometric projections, and perspectives. Lettering, plan graphics, color rendering, and other visual presentation media. Prereq: 280. Two 2 hour labs. F.

410 Nursery Management and Production (3) Management methods as applied to retail and wholesale nurseries and landscape contracting firms. Methods of producing liners, container and field-grown woody ornamental plants. Prereq: 220, 330, and Plant and Soil Science 510, or consent of instructor. 3 hours. 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 water 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, patios, decks, amenities, fountains, and interior landscape construction. Prereq: 350. Two 2 hour labs. F.

460 Professional Practices in Landscape Construction and Management (2) Professionalism, salesmanship, proposals, bidding, estimating, specifications, and contract management in landscape services industry. Course applicable to all landscape construction and contracting industry. Includes presentations by industry representatives. Prereq: 350 or consent of instructor. 2 hours. Sp.

483 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, detailing, estimating, and specifying applicable to a variety of landscape projects. Prereq: 280, 350, and 380. 3 hours and 2 three hour labs. Sp.


492 Off-Campus Internship (1-3) Work experience in applied landscape design or landscaping industry. May be repeated. Maximum of 6 credits. E.

493 Individual Problem Study (1-3) May be repeated. Maximum of 6 credits. E.

PHILOSOPHY

110 The Human Condition: Value and Reality (3) The meaning of life: the existence of God, freedom of the will, human nature and value. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

111 The Human Condition: Knowledge and Reality (3) The place of mind in a material universe and the nature and possibilities of human knowledge. May be taken before 110. Writing-emphasis course: one in-class essay examination and 3000 words of writing outside the classroom.

120 Foundations of Western Thought: Antiquity through 1500 (3) Plato, Late Antiquity and the Medieval Period. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

121 Foundations of Western Thought: 1500 through Early Twentieth Century (3) Development of materialist and empiricist thought, Nineteenth Century and early Twentieth Century Philosophy. May be taken before 120. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

130 Critical Thinking (3) Analysis, evaluation, and construction of reasoning in ordinary language.

135 Formal Logic (3) Introduction to formal deductive systems: propositional and predicate logic.

200 Special Topics (3) When content varies, may be repeated. Maximum 6 hours.

240 Ethics (3) Theories of ethical values. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

290 Social and Political Philosophy (3) Basic problems and concepts of social and political philosophy.

320 Ancient Western Philosophy (3) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

322 Medieval Philosophy (3) Development of medieval thought from St. Augustine to William of Ockam. Secondary and primary sources. (Same as Medieval Studies 322.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

324 Seventeenth- and Eighteenth-Century Philosophy (3) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

326 Nineteenth- and Twentieth-Century Philosophy (3) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

333 Intermediate Formal Logic (3) Metaphor of formal logic and philosophy of logic. Prereq: 135 or consent of instructor.

342 Business Ethics (3) Ethical problems as they confront both business as a social institution and individuals in business.

344 Professional Responsibility (3) Critical analysis of selected classic texts from philosophy, religious studies, and social sciences dealing with responsibility and the nature of professionalism. Theoretical principles and analytical skills applied to selected case studies and other detailed descriptions of professional practice from engineering/architecture, business, accounting, and at least one of law/politics, helping professions (social work, human services, ministry), teaching. (Same as Religious Studies 344.)

345 Medical Ethics (3) Ethical issues in medicine such as abortion, euthanasia, human experimentation, fairness in health care delivery, the doctor-patient relationship. (Same as Religious Studies 345.)

349 War and Morality (3) Moral justification for war (jus ad bellum): legal and moral constraints in war (jus in bello).

350 Aesthetics (3) Philosophical discussion of art.

353 Philosophy and Literature (3) Nature of literature; philosophical assumptions in literary works.

360 Introduction to Philosophy of Science (3) Standard topics in philosophy of science: scientific method, nature of laws and theories, problem of induction, explanation, measurement. No background in logic is presupposed.

363 Conceptual History of Science (3) Historical evolution of thought in astronomy, mechanics, and the study of motion. Concepts and theories of motion through the early twentieth century. Prereq: 8 hours of physical science or consent of instructor.

370 Philosophy of Religion (3) Analysis of basic issues 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 deBeauvoir. (Same as Women's Studies 380.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

382 Philosophy of Feminism (3) Various feminist theories and their application to social issues of concern to women today. (Same as Women's Studies 382.)

390 Philosophical Foundations of Democracy (3) Philosophical problems relating to the nature of justification of the central values, principles, and concepts of democratic society. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

393 Marxism (3) Basic philosophical issues in Marxian 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 human death: a philosophy that begins with Kierkegaard and Nietzsche, and extends to Heidegger and Jaspers, Sartre and Merleau-Ponty.

400 Special Topics (3) When content varies, may be repeated. Maximum 6 hours.

411 Modern Religious Philosophies (3) (Same as Religious Studies 411.)

420 Topics in History of Philosophy (3) One or more figures or movements from antiquity through mid-twentieth century. Prereq: 6 hours of philosophy or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

430 Topics in Logic (3) Prereq: 6 hours of logic or consent of instructor. When content varies, may be repeated. Maximum 9 hours.

425 American Philosophy (3) Colonial to early 20th Century. Prereq: 6 hours of philosophy or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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.)

460 Philosophy of Science (3) Methodological and conceptual issues in the natural and social sciences: patterns of theory modification and replacement, the nature of explanation and causation, the status of theoretical entities. Prereq: 360 and one year of natural or social science, or consent of instructor.

465 Philosophy of History (3) Speculative and critical aspects of philosophy of history. Prereq: 6 hours of philosophy or consent of instructor.

473 Philosophy of Mind (3) Problems of mind and body in relation to consciousness and personal identity. Prereq: 6 hours of philosophy or consent of instructor.

475 Analytic Metaphysics and Epistemology (3) Topics in metaphysics and epistemology in recent Anglo-American tradition. Prereq: 6 hours of philosophy or consent of instructor.

476 Philosophy of Language (3) Survey of issues such as meaning, reference, and truth. Prereq: 6 hours of philosophy or consent of instructor.

479 Studies in Recent Continental Philosophy (3) Selected thinkers or topics from areas such as Existentialism, Phenomenology, Hermeneutics, Structuralism, Post-Structuralism, Feminism. Prereq: 6 hours of philosophy or consent of instructor. When content varies, may be repeated. Maximum 6 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

PHYSICAL EDUCATION

100 Orientation to Physical Education (2) Overview of the professional and disciplinary areas in physical education with special emphasis on introductory field experiences.

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

103 PE Major: Tennis (1) Development of skills, rules and game strategies to an intermediate level in tennis with application to the various techniques of teaching.

104 PE Education Major: Gymnastics (1) Beginning to intermediate skills in tumbling and on selected men’s and women’s gymnastics apparatus. Tumbling skills include forward, backward, and balance skills. Apparatus include vaulting, balance beam, and pommel horse. Special emphasis on teaching techniques, safety, progression, and spotting.
105 PE Major: Folk and Square Dance (1) Basic folk and square dance steps, patterns, and designs with emphasis on skill development, terminology, etiquette and teaching techniques.

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

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

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

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

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

275 PE Major: Ballroom Dance (1) Basic ballroom dance patterns and designs, terminology and etiquette with application to the various techniques of teaching.


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

292 Field Studies I (3) Builds on observational techniques from Physical Education Orientation. Provides opportunities to lead, instruct, manage and test individuals and/or small groups in K-12 physical education settings. Includes peer teaching and video-taped analyses.

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

312 Coaching of Basketball (1) Individual and team fundamentals for the high school coach; conditioning, schedule making, and other business arrangements.

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

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

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.

321 World History of Sport and Physical Education (2) Historical survey of the development of sport and physical education from ancient primitive to twentieth century civilization. Prereq: Admission to Teacher Education Program or progression to the major.

322 Fitness Activities (2) Methods of instructing and leading fitness activities, including jogging, dance, music, water activities, and fitness games. Prereq: At least junior standing and progression to the major.

325 Athletic Training Techniques (2) Prevention of athletic injuries through sound conditioning programs and practices; recognition and immediate treatment of injuries. Prereq: Progression to the major.

326 Practicum in Preschool Aquatics (2) Individualized planning and teaching of aquatic experiences to 3 to 5 year-old children within the context of a broad-based motor development program.

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

332 Applied Anatomy (3) Structure and roles of bones, joints and muscles in human movement and exercise. Prereq: Junior standing and admission to Teacher Education Program or progression to the major.

335 Approaches to Physical Education for Children (3) Techniques and implications of approaches to teaching and movement education. Prereq: Admission to Teacher Education Program.

345 Educational Games, Dance, and Gymnastics for Children (3) Theme approach to games/sports and creative dance for children. Prereq: Admission to Teacher Education Program.

356 Human Growth and Motor Development (3) Evolution of movement patterns in the context of structural and functional development, analysis of changes in motor performance and underlying attributes across the lifespan. Prereq: Admission to Teacher Education Program or progression to the major.

372 Philosophy of Sport and Physical Education (2) Theories of reality and value as they apply to sport with emphasis on ethical issues. Prereq: Admission to Teacher Education Program or progression to the major.

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

391 Psychology of Coaching (2) Major topics and theories dealing with social-psychological factors affecting and relating to sport performance, with practical implications and applications to teaching and coaching. Prereq: Admission to Teacher Education Program or progression to the major.

405 Sociology of Sport (3) Social meaning, organization and process of sport. Difference between sport and play and the evolution of sport. Prereq: 292 or 466 and progression to the major. Coreq: 291 or Sociology 285, or permission of instructor. (Same as Sociology 405.)

409 Measurement and Evaluation of Physical Education (1) Relationship of measurement and evaluation in Physical Education. Critique, selection, and administration of appropriate affective, sport skill, and knowledge assessment instruments for children through adult age group. Prereq: Junior standing and admission to Teacher Education Program or progression to the major.

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

411 Adapted Physical Education (2) Developmental disabilities, other physical/mental handicaps and variant/invariant characteristics of specific syndromes germane to motor development/programming for those with special education needs.

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

413 Special Practicum in Adapted Physical Education (2) Second semester practicum in an adapted physical education program with one-one-one with a 2-5 year-old child who is a high-educational risk and a section with experienced special education teacher, physical or occupational therapist, at a school for the handicapped. May be repeated. Maximum 3 hours.

414 Physical Activity and Fitness (2) Relationship of exercise to cardiovascular fitness, body composition, healthy low back, and stress. Prereqs: 200, 292 and admission to Teacher Education Program or progression to the major. (Same as Health 414.)

415 Field Evaluation of Physical Fitness (1) Measurement and evaluation of cardiorespiratory function, body composition, and healthy low back. Emphasis on tests that can be used in large groups with a minimum of equipment. Prereq: Progression to the major. Coreq: 414. (Same as Health 415.)

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

420 Methods in Physical Education (3) Application of theory and styles of teaching to teaching/learning environment including planning, presenting, and evaluating lessons concerning knowledge, strategies, and skills for sport, physical activity, gymnastics, macro teaching, macro teaching and field experiences. Prereq: Minimum 6 credits in Physical Education Major courses and admission to Teacher Education Program.

422 Applied Kinesiology (3) Human movement with emphasis on biomechanics and principles and their application to movement and neuromuscular fitness. Prereq: 322 and admission to Teacher Education Program or progression to the major.

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

424 Program Planning in Physical Education (2) Curriculum theory, principles, practices and issues specific to physical education with opportunities to develop and evaluate K-12 physical education programs. Prereq: Admission to Teacher Education Program.

426 Practicum for Physical Education Majors (1-10) Experiences in the community to support and clarify career goals. May be repeated. Maximum 10 hours. Prereq: Consent of instructor and progression to the major.

442 Administration of Physical Education and Athletics (4) Topics in co-curricular programming and management strategies as related to physical education programs and athletics in the public schools. Prereq: Admission to Teacher Education Program or progression to the major.

450 Field Studies II (3) For physical education majors to design and implement learning units and evaluation techniques appropriate for K-12 physical education settings. Includes video-taping of learning experiences in the school setting. Prereq: 292 or 466 and admission to Teacher Education Program.

469 Motor Development Laboratory: Preschool or Primary (3) Application of selected perceptual-motor development, movement education, and pedagogical concepts to performance assessment and motor task design and presentation to normally developing preschool or primary grade children. Participation in intra- or inter-disciplinary research projects. Prereq: 100 and admission to Teacher Education Program.

461 Internship I: Grades K-12 (3-6) Methods and theories relevant to student needs with a physical education major. May be repeated. Prereqs: 200, 292 and admission to Teacher Education Program. Coreq: 466. (Same as Health 461.)

481 Internship I: Grades K-12 (3-6) Methods and theories relevant to student needs with a physical education major. May be repeated. Prereqs: 200, 292 and admission to Teacher Education Program. Coreq: 466. (Same as Health 461.)
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>121</td>
<td>121-122 Introductory Physics (3,3)</td>
<td>3,3</td>
<td>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. 122: Electricity, magnetism, light, topics from modem physics including properties of atoms and nuclei. Must be taken in sequence. Prereq: Coreq: Coreq for 121: 231 and Mathematics 231. Coreq for 122: Mathematics 241.</td>
</tr>
<tr>
<td>321</td>
<td>321 Thermal Physics (3)</td>
<td>3</td>
<td>Concepts of temperature and heat laws of thermodynamics; elementary statistical mechanics; applications to physical and chemical problems. Prereq: 311 or 231 and consent of instructor.</td>
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<tr>
<td>340</td>
<td>340 Relativity and the Structure of the Atom (3)</td>
<td>3</td>
<td>Special relativity and the wave model of the atom. Fundamental concepts of modern physics and their applications to atomic systems. Prereq: 231.</td>
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<tr>
<td>341</td>
<td>341-342 Structure of Matter (3,3)</td>
<td>3,3</td>
<td>341-Subatomic physics; including physics of the nucleus and elementary particles. 342-Physics of molecules and condensed matter. May be taken in either order. Prereq: 340.</td>
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<tr>
<td>361</td>
<td>361-362 Electronics Laboratory (3,3)</td>
<td>3,3</td>
<td>Electronic components, circuits and instruments for physicists, with emphasis on application of simple circuits to instrumentation. 361-362: Electronics, including fundamental network theorems, complex impedance and admittance, frequency response and resonance, feedback, operational amplifiers, oscillators, and various semiconductor devices, as applied to scientific instrumentation. 362-Digital electronics, including elementary building blocks of relevance to data acquisition systems, digital to analog conversion, analog to digital conversion, simple applications of state-processors. Prereq: 222 or 232: 6 hours lab per week.</td>
</tr>
<tr>
<td>390</td>
<td>390 Junior Seminar (1-3)</td>
<td>1-3</td>
<td>Topic of current interest. Prereq: Introductory Physics. May be repeated with consent of department. Maximum 6 hours.</td>
</tr>
<tr>
<td>401</td>
<td>401 Background of Physics (2)</td>
<td>2</td>
<td>Historical development and philosophical foundations of natural science. Classical theories of gravitation, electromagnetism, and relativity. Unifying mathematical principles underlying physical applications. Readings from important original papers, thought-provoking problems and order-of-magnitude calculations combining different fields of classical physics. Written report on independent study. Prereq: Senior standing in Physics or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.</td>
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<tr>
<td>421</td>
<td>421 Modern Optics (4)</td>
<td>4</td>
<td>Transmission of light in uniform, isotropic media, reflection and transmission at interfaces; mathematics of wave motion and interference effects. Rudiments of Fourier optics and holography. Prereq: 431 or 232 and consent of instructor. 3 hours lecture, 3 hours lab.</td>
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<tr>
<td>425</td>
<td>425 Principles of Non-Destructive Testing (3)</td>
<td>3</td>
<td>(Same as Engineering Science and Mechanics 425.)</td>
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PLANNING

401 The City in the United States (3) Development and character of United States cities. Contemporary issues and selected case studies. (Same as Urban Studies 401.)

402 Survey of Planning (3) History of city development and of planning with special attention to the United States experience in urban and other levels of planning. State of the art, the process, the comprehensive plan, implementation devices, Planning issues in society. Not for credit for M.S.P. degree. (Same as Urban Studies 462.)

PLANT AND SOIL SCIENCE

210 Introduction to Soil Science (4) Differences in soils; soil genesis; physical, chemical, and biological properties of soil; relation of soils to land use and pollution; soil management relative to tillage, erosion, moisture supply, temperature, aeration, fertility, and plant nutrition. Introduction to fertilizer chemistry and use. Prereq: Chemistry 130 or equivalent. 3 hours and 1 lab. F

230 Introduction to Crop Science (3) Fundamentals of structure, classification, growth and reproduction of plants and their products beneficial to plant science. Principles and methods of growing several of the world's important agronomic, fruit and vegetable crops, detailing their origin and cultural requirements. Prereq: Botany 110, 120 or Biology 110, 120. F

292 Soil Morphology (1) Intensive course involving describing, classifying and interpreting soils in preparation for regional and national soil judging contests. Prereq: 210 and consent of instructor. May be repeated. Maximum 4 hours. 1 hour and 1 lab. F, Sp

311 Soil Fertility (3) Influence of soil properties on plant nutrient availability and uptake. Principles of fertilizer use and their reaction in soils. Prereq: 210. 2 hours and 1 lab. Sp

312 Soil and Water Conservation (3) Principles, practices and control of soil erosion by water and wind; farm practices in soil conservation; erosion knowledge of circularization; minimum and no-tillage farming; forest management; soil-water-plant relationships, Prevention of soil, water, and air contamination in agriculture. Prereq: 210. 2 hours and 1 lab. Sp

331 Field and Forage Crops (3) Agronomic principles of crop production and management. Crop improvement, crop rotations, tillage, fertilization, pest management, harvest and utilization of major field and forage crops. Prereq: 210 or 230. 2 hours and 1 lab. Sp

332 Fruit Crops (3) Fundamentals of site selection, Fruit propagation, tree training, pest control and related management factors for deciduous fruit crops will be emphasized. Prereq: 230. 2 hours and 1 lab. F-A

333 Vegetable Crops (3) Characteristics, economic importance, cultivation, production of vegetables for fresh and processing markets with emphasis on both warm and cool season crops. Prereq: 210 or 290. 2 hours and 1 lab. Sp-A

334 Weed Management (3) Principles of weed interference, integration of management, herbicide selection and behavior, specific recommendations for various crop and non-crop situations. Prereq: 210. 2 hours and 1 lab.

392 Practicum in Agriculture (3-4) Working with agricultural-related enterprises in area of student's career interest. May not be used as 300-level prerequisite for any course in Plant and Soil Science. Prereq: Consent of advisor and faculty committee.

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 inorganic and organic compounds; decomposition of residues; dynamics of soil organic matter. Prereq: 210 and Biochemistry 311 or consent of instructor. F

412 Soil Genesis, Classification and Mapping (3) Soil genesis and formation; observing and describing morphometry of agricultural and forest soils; chemical and physical properties, classification; mapping. Two Saturday field trips required. Prereq: 210 or consent of instructor. Spring. Sp

413 Soil Chemistry (3) Structure and chemical properties of soil materials with emphasis on the colloidal 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

431 Crop Physiology and Ecology (3) Plant physiology and ecology applied to crop production. Effects of environmental factors on physiological processes. Prereq: 230, Botany 321. 2 hours and 1 lab. F-A

432 Agricultural Climatology (3) Interactions between world, regional and local climates and agricultural systems; quantification of macro- and micro-climates, effects of macro- and micro-climatic factors on plant and animal distributions and productivities. 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, forestry and related areas. Prereq: 1 year biological sciences and 1 semester chemistry. 2 hours and 1 lab. Sp

453 Principles of Plant Breeding (3) Genetic principles and techniques used in crop improvement. Prereq: Biology 220 or equivalent. 2 hours and 1 lab. Sp

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 problems for advanced students in soil and plant science. May be repeated. Maximum 6 hours. E

POLITICAL SCIENCE

101 United States Government and Politics (3) Introduction to fundamental institutions and processes of American National Politics. American government, constitution, voting, presidency, congress and the courts.

102 Introduction to Political Science (3) Analysis of politics and political systems in various countries.

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 department for students with at least a B average; entering freshmen accepted on basis of strong placement scores and high school record.

301 Introduction to Political Analysis (3) Nature, character, and functions of research design, data collection, and statistical techniques used in the study of politics.

310 Political Community (3) Examination of a variety of value systems and social and political structures related to political community.

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: at least one in-class essay examination and 3000 words of writing outside the classroom.

312 Popular Culture and American Politics (3) Popular culture related to American politics and government focusing on the role of film, television, fiction, music, drama, art and sports. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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.


322 Minority Group Politics in the United States (3) Content varies. May be repeated with the consent of the department. Maximum 6 hours. (Same as Afro-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: at least one in-class essay examination and 3000 words of writing outside the classroom.

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 administration; 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: at least one in-class essay examination and 3000 words of writing outside the classroom.

355 Latin American Government and Politics (3) Introduction to contemporary political phenomena in Latin America. (Same as Latin American Studies 355.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

361 Politics in Western Democracies (3) Political culture patterns, and institutions of Western democratic systems. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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: at least one in-class essay examination and 3000 words of writing outside the classroom.

366 United States Foreign Policy Process (3) Processes whereby U.S. foreign policies are made and implemented, focusing on interaction within federal bureaucracy and roles of the President, Congress, the courts, and public opinion.

370 Contemporary International Problems (3) Analysis of current international events.

374 American Political Thought (2) Major themes and ideas in American political thought related to the development of American political institutions, values, and policy. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

387-388 Junior Honors Seminar (3,3) Required of honors majors; admission with consent of department.

410 Special Topics in United States Government and Politics (3) May be repeated with consent of department. Maximum 6 hours.


420 Political Attitudes and Opinions (3) Nature, formation, development, and dissemination of politically relevant attitudes and opinions in the American political system.

421 Political Parties and Interest Groups (3) Role of political parties and organized groups in American politics and government.

422 Political Campaigns and Elections (3) Nature of campaigns and elections in the American political process.

430 United States Constitutional Law: Sources of Power and Restraint (3) Judicial review, constitutional powers of President and Congress, federalism, sources of regulatory authority, and constitutional protection of political and economic rights.

431 United States Constitutional Law: Civil Rights and Liberties (3) Current issues in civil rights and liberties including: first amendment freedoms, equal protection, privacy and the 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 processes in government, their policy and administrative implications.

442 Administrative Law (3) Legal dimensions of administrative power and procedures, and constitutional controls over administrators.

452 Black African Politics (3) Recent evolution and current political environment of Black African nations. (Same as Afro-American Studies 452.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

454 Government and Politics of China and Japan (3) Political organization, social structure and political systems in China and Japan. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classrooms.

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: at least one in-class essay examination and 3000 words of writing outside the classroom.

459 Government and Politics of the Soviet Union (3) Origins and development of the Soviet political system, and selected policy areas. (Same as Russian and East European Studies 459.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

460 Revolution (3) Characteristics, theories, and consequences of revolution with particular focus on left-wing revolutions and movements.

461 Policy Making in Democracies (3) Comparative approach to theory and process of making public policies within different democratic systems.

463 Contemporary Middle East Politics (3) Governments and movements in the Middle East, their characteristics, bases, and interrelationships.

464 Special Topics in Comparative Government (3) May be repeated with consent of department. Maximum 6 hours.

469 Soviet Foreign Policy (3) Soviet international behavior since 1917 and selected problems of Soviet foreign policy post World War II. (Same as Russian and East European Studies 469.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

470 International Law (3) Nature and development of international law and compliance with it. Particular attention to function of international law in the context of international conflict.

475 Ancient and Medieval Political Thought (3) Major western political thinkers from Socrates to Marsilius of Padua. (Same as Medieval Studies 475.)

476 Modern Political Thought (3) Major western political thinkers from Machiavelli to Marx.

487-488 Senior Honors Thesis and Seminar (0-6) Required of honors majors; admission with consent of department. Students register for zero hours credit fall semester and six hours credit in spring semester. Credit is granted on completion of thesis.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

PORTUGUESE

111-112 Elementary Portuguese (3,3) Introduction to Portuguese. May not be taken for credit by students with two years of high school or one year college Portuguese. Must be taken in sequence. Language Laboratory required.

211-212 Intermediate Portuguese (3,3) Stress reading, writing, listening, and speaking of Portuguese to prepare for upper division courses in the language. Must be taken in sequence. Language Laboratory required.

300 Portuguese for Spanish Speakers (3) Accelerated class for beginning students of Portuguese with a strong background in another Romance language. Introduction to grammar, reading and culture of Portugal and Brazil. Prereq: 3 hours at 300 level in another Romance language or equivalent.

311 Aspects of Luso-Brazilian Literature (3) Luso-Brazilian literature, with emphasis on contemporary works. Genres may vary. Prereq: 212 or equivalent. (Same as Latin American Studies 311.)

323 Conversation and Composition (3) Development of speaking, listening and writing skills in Portuguese; some review of grammar. Prereq: 212 or 300 equivalent.

341-432 Directed Readings in Brazilian and Portuguese Literature (3,3) May be repeated with consent of instructor. (Same as Latin American Studies 431-432.)

491 Foreign Study (1-15)

PSYCHOLOGY

110 General Psychology (3) Introduction to primary approaches to the study of human behavior and experience.

117 Honors: General Psychology (3) Enriched introduction with extra readings. Prereq: Consent of instructor.

210 Biological Basis of Behavior (3) Survey of theories and research concerning the role of genetic factors, nervous and endocrine systems, and other biological influences on behavior. Recommended: 110 or equivalent.

220 Behavior and Experience: Humanistic Psychology (3) Behavioral and phenomenological analysis of individuals and their development in natural environments.

300 Child Psychology (3) The normal child from conception through infancy, childhood, and adolescence. Physical, cognitive, social, and emotional development. Prereq: 110 or equivalent and 200 or 210.

310 Learning and Thinking (3) Survey of theory and findings of research concerning both humans and nonhumans. Prereq: 110 or equivalent. Recommended: 210, 220.

320 Motivation (3) Survey of theories and related research; discussion of applications. Prereq: 110 or equivalent. Recommended: 210, 220.


359 Laboratory in Human Relations (3) Interpersonal relationships and communication through structured experiences in small groups. Prereq: 110 or equivalent, and consent of instructor. May be repeated. Maximum 6 hours.

360 Social Psychology (3) Theories, methods, and findings of research concerning individual behavior in a social context. Prereq: 110 or equivalent.

370 Ethology and Sociobiology (3) Basic concepts in the evolutionary approach to behavior, including applications to psychology, the social sciences, and the arts. (Same as Zoology 370.

382 Contemporary Topics in Psychology (3) Current issue or problem, such as architectural psychology, impact of technology, artificial intelligence, or stereo-types. Different topic each semester. Prereq: 110 or equivalent. May be repeated. Maximum 9 hours.

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.

395 Methods of Research in Psychology (3) Fundamentals in the design, conduct, and interpretation of research, including systematic observation, experiments, quasi-experiments, and program-evaluations. Focus on both laboratory and natural settings. Prereq: 110 or equivalent.

396 Laboratory in Psychology (2-3) Introduction to techniques used in the laboratory to study different topics is psychology, such as perception, memory, learning, and social behavior. Supervised experience in the use of laboratory techniques, collection and interpretation of data. Different topic each semester. Prereq: 110 or equivalent, 210, 220, 385, 395. May be repeated. Maximum 9 hours.

399 Supervised Research and Field Work (1-3) Field experience in community-based research and service settings. Prereq: 110 or equivalent, 210, 220, 385, 395. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.


409 Group Facilitation (3) Study of theory and techniques employed in small groups. Prereq: 359 and consent of instructor. May be repeated. Maximum 6 hours.


424 Psychology and the Law (3) Psychological aspects of the law. The role of psychology in legal practice and the legal process. Prereq: Consent of instructor, upper-division standing and consent of instructor.

430 Health Psychology (3) Psychological factors related to health and illness, including stress, personality, and environment. Applications of psychological treatment to physical illness. Prereq: 110 or equivalent, 210.

434 Psychology of Gender (3) Biological, psychological, and social factors in gender. Importance of gender roles and stereotypes for behavior and experience. Prereq: 110 or equivalent, 210, 220. (Same as Women's Studies 434.)

440 Organizational Psychology (3) Social-psychological analysis of organizations, emphasizing role-theory and systems theory. Prereq: 360. (Same as Management 440.)


450 Comparative Animal Behavior (3) (Same as Zoology 450.)

459 Comparative Animal Behavior Laboratory (3) Coreq: 450 (Same as Zoology 459.)

461 Physiological Psychology (3) Nervous system and physiological correlates of behavior. Biological basis of emotion, learning and memory. Stress. Prereq: 110 or equivalent, 210, and one year of Biology or Zoology introductory sequences or equivalents.

469 Laboratory in Physiological Psychology (3) Laboratory studies of nervous system and physiological correlates of behavior. Coreq: 461.

470 Theories of Personality (3) Major theories of human personality and their development. Prereq: 220 and 300 or 330.

480 Theories of Learning (3) Classical and current approaches to learning and cognition. Prereq: 310.

482 Topics in Psychology (3) Intensive analysis of special topics, such as Afro-American Psychology or evaluation of programs in the community. Prereq: 110 or equivalent. Recommended: 210, 220, 385, 395. May be repeated. Maximum 12 hours.

489 Supervised Research (1-9) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

491 Foreign Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

492 Off-Campus Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

493 Independent Study (1-15) Prereq: Consent of instructor. May be repeated. Maximum 12 hours in 399, 489, 491, 492, and 493 combined may be applied toward the major.

496 Senior Seminar: Great Ideas in Psychology (3) Key ideas that have shaped conceptions of human kind. Exploration of historical development, scientific evidence, and the social context. Prereq: Consent of instructor and senior standing. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

PUBLIC HEALTH

300 Introduction to Public Health (3) Aspects of public health including discussion of contemporary and controversial health issues. E

305 Communicable and Noncommunicable Diseases (3) Modern concepts of diseases; etiology of common communicable and chronic disease problems including prevention and control. Prereq: 1 year of biological science or consent of instructor. F, Sp

310 Environmental Management and Control (3) Contemporary principles of control of disease-producing agents in our environment. Emphasizes concepts for effective application of control principles to vocational endeavors and/or daily living activities. Includes: Drinking water quality (chemical, physical and biological), waste management (liquid, solid and hazardous), vector control, safe food management, recreational sanitation and safety to include pool management, shelter hygiene (homes, child care, schools, hospitals, etc.), occupational health and safety. F, Sp

490 Consumer Health (3) (Same as Health 400.)

410 Health in the Work Environment (3) Fundamental activities involved in field of industrial health aimed at reducing health problems for employees. Emphasis on workplace health hazards and problems of concern to nurses, medical staff, management, engineers and others involved in industrial health and safety fields. Prereq: Consent of instructor. May not be taken for credit by occupational health concentration (MPH) majors. F, Sp

480 Special Topics (3) Instructional or research topics to be assigned. Prereq: Consent of instructor. May be repeated under different topic. Maximum 6 hours. F, Sp

493 Directed Independent Study (1-3) Individual study of selected issues. Prereq: Consent of instructor. May be repeated. Maximum 6 hours. E

RECREATION AND LEISURE STUDIES

110 Foundations for Leisure Studies and Services (3) Focuses on understanding concepts, principles, and practices relevant to providing leisure service including philosophy, history and theory, programming, economics, leadership, and a survey of leisure services organizations and occupational opportunities. F, Sp

210 Dynamics of Recreation Leadership (3) Theories, practices and concepts as they apply to all roles of recreation leadership. F

220 Introduction to Therapies and Medical Terminology (1-3) Responsible for recreation, occupational, physical, horticulture, art, and music therapists. Basic terminology used in medical environment. Sp


290 Field Practice (1-2) Supervised practice in approved agency offering leisure services. Each hour's credit requires 25 hours of work in field agency. For recreation students only. Prereq: Permission of Instructor. E

310 Leisure Program Development and Evaluation (3) Essential elements and basic principles involved in organization, administration, marketing, evaluation of various types of recreation programs with emphasis on development of program objectives, practical and comprehensive designs and evaluation for population and facility within student's particular area of interest. Prereq: 210 or consent of instructor. Sp

320 Analysis of Leisure and Special Populations (3) Principles, concepts, historical development of recreation, therapeutic recreation, and leisure services to special populations. Exploration of legislation, attitudes, barriers to participants, mainstreaming, advocacy, as related to leisure fulfillment. Prereq: 320 or consent of instructor. F

390 Field Practice (1-2) Supervised practice in approved agency offering leisure services. Each hour's credit requires 25 hours of work in field agency. For recreation majors only. Prereq: 290 and permission of instructor. E

410 Maintenance and Management of Recreation and Sports Related Facilities (3) Principles for operationalizing modern facility maintenance systems and management strategies for recreation and sports related facility maintenance systems and facilities. Cost tracking, inventory systems, specialized maintenance techniques, safety guidelines, insurance and liability concerns. Prereq: 110, 310 or consent of instructor. F

420 Principles of Therapeutic Recreation (3) Principles and practices in therapeutic recreation including activity analysis, activity and program selection adaptation, individual assessment, emphasis on budgeting and fiscal procedures. Prereq: 310 or consent of instructor. F

430 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 fiscal procedures. Prereq: 310 or consent of instructor. F

440 Dimensions of Private and Commercial Recreation Businesses (3) Nature and function of recreation in private, commercial, and industrial settings. Development and management of commercial goods and services offered in leisure market, factors influencing participation and management priorities, development and management of commercial recreation and tourism. Prereq: 110, junior standing or consent of instructor. Sp

450 Specialized Study in Leisure Education (1-6) Special interest leisure activities for developing positive attitudes toward leisure. Contribution of leisure to mental and physical health. May be repeated. Maximum 9 hours. E

490 Practicum in Recreation (12) Full time practice in approved recreation agency. Emphasis on supervisory and administrative procedures. Prereq: 290, 390, senior standing. Satisfactory/No Credit only. E

RELIGIOUS STUDIES

101 World Religions in History (3) Introduction to religion in culture and society, including examination of religious traditions from China, India, and the Mediterranean world. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

102 The Comparison of World Religions (3) Introduction to religion in culture and society, focusing on cross-cultural interpretation and the treatment of common problems and themes within religious traditions. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

211 Ways of Understanding Religion (3) Sources and methods used in the study of religion and religious action. Emphasis on writing in religious studies. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

212 Criticism of Religion (3) Classical and contemporary forms of criticism of western religious thought as in the work of Marx, Freud, Nietzsche, and current feminist and liberation movements. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

232 Varieties of Religious Community (3) How different forms of religious communities (cults, tribes, sects, monastic orders, denomination, family, etc.) have sought to reject, reframe, transform, ignore, or dominate their culture and society. (Same as Sociology 232.)

235 Issues in Religious Studies (1-3) Introduction to the study of religion through selected themes, problems, controversies, or contemporary issues. Variable content. May be repeated. Maximum 6 hours.

301 Religious Myth, Symbol, and Ritual (3) Distinctive models of religious expression. Historical and theoretical approaches appropriate to their particular social and cultural functions in religions.
302 Religion of Primitive Peoples (3) Religions of selected non-literate peoples. Role of religion in their social and cultural systems. (Same as Anthropology 302.)

305 Contemporary Religious Thought (3) Major themes, issues, and thinkers in twentieth-century religion.

309-310 Elementary Classical Hebrew (3, 3) Basic elements of Hebrew phonology, script, morphology and syntax. Introduction to basic elements of text, form, and literary criticism.

311 Ancient Hebraic Religious Traditions (3) Development of ancient Israelite and early Jewish traditions with emphasis on practices concerning the Exodus, Davidic kingship, and Zion in historical, prophetic and apocalyptic material. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

312 Religious Aspects of Biblical and Classical Literature (3) Ways in which contemporary modes of literary study enhance appreciation of biblical and classical material. Ways in which the western literary tradition has appropriated and recast the biblical and classical heritage. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

313 Religious Aspects of Modern Literature (3) Issues raised for religious inquiry in contemporary literature. Religious relevance of moral and ethical considerations to problems of literary analysis; relation between religious language and forms of human expression (symbol, metaphor, image) identified in study of literature. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

315 Reformation Europe, 1500-1650 (3) (Same as History 315.)

316 Topics in Religion and Literature (3) Selected themes that suggest points of intersection between literary art and the religious imagination. Variable content. May be repeated. Maximum 6 hours.

319 Sociology of Religion (3) (Same as Sociology 319.)

321 New Testament Origins (3) Influence of pre-Christian Judaism and Greek culture and philosophy on early Christianity. Motivations and guiding concepts which led to the formation of the New Testament. Victory of the Christian Church over the forces of persecution and the Constantinian settlement (311 A.D.). (Same as History 321.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

322 Christian Thought (3) Principal forms of Christian thought and institutions through the interpretation of representative thinkers and movements from Augustine to Kierkegaard and Kant. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

326 Images of Jesus (3) Major portrayals of Jesus Christ from the first century to the twentieth within the context of the cultural milieu which gave birth to each. Extensive use of slides, video material, recordings, and literature.

329-330 Intermediate Classical Hebrew (3, 3) 329-Readings in narrative material from the Hebrew Bible. 330-Readings in poetic and prophetic material from the Hebrew Bible. Prereq: 326 or consent of instructor.

331 Judaism (3) Comprehensive introduction to the historic traditions, culture, and religious institutions of Judaism, and interactions with modern culture.

332 Islam (3) Comprehensive introduction to the origin and early history of Islam, rapid spread as a missionary religion, and impact on science, law, literature, and art. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

342 Religious Ethics (2) Selected ethical theories and modes of analysis of religious communities and thinkers, their action-guides for individuals and institutions, their application to persons and social problems.

344 Professional Responsibility (3) (Same as Philosophy 344.)

345 Medical Ethics (3) (Same as Philosophy 345.)

351 Introduction to United States Religious History (3) Religion and secular society in the United States, formation of denominations, church and state, American theology, non-protestant traditions, and the meaning of freedom of religious expression. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

352 Afro-American Religion in United States (3) Historical and critical examination of formation and development of Afro-American religious thought and institutions in America. (Same as Afro-American Studies 352.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

353 Topics in Afro-American Religion (3) Selected figures, themes, movements, or problems in the Afro-American religious tradition. Variable content. May be repeated. Maximum 6 hours.

356 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: at least one in-class essay examination and 3000 words of writing outside the classroom.

370 Philosophy of Religion (3) (Same as Philosophy 370.)

371 Eastern Religions and Western Thought (3) Comparative study of selected movements, thinkers, and practices of religious traditions, Asian and Western. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

373 African Religions (3) Religions of the indigenous peoples of Africa, including how myth, rites, and symbols and certain cultural and political movements in Africa have been and are being informed by religious sensibilities. (Same as Anthropology 373 and Afro-American Studies 373.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

374 Philosophy and Religion in India (3) Survey of the development of the major non-Buddhist themes of philosophical and religious thought in India. (Same as Philosophy 374.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

376 Buddhist Philosophy and Religion (3) Survey of the origins of Buddhism in India and further development of Buddhist philosophy and religion in India, China, Korea, Japan, the countries of Southeast Asia, and beyond. (Same as Philosophy 376.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

377 Religion and Philosophy in China (3) Traditional thought and religion of China in its cultural setting as basis for understanding modern China. (Same as Philosophy 377.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

389 Literature of the English Bible (3) (Same as English 389.)
ogy spreads from scientists to change agents and their target, innovation-decision process; communication behavior, mass media, role of professional change agents, opinion leadership and consequences of technological change. Prereq: 380 or consent of instructor. (Same as Sociology 480.)

RUSSIAN

101-102 Elementary Russian (4,4) Must be taken in sequence.

201-202 Intermediate Russian (4,4) Must be taken in sequence.

221-222 Russian Literature in English Translation (3,3) Nineteenth and twentieth-century Russian literature. No foreign language credit. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

226 Russian Philosophical and Theological Thought (3) Development of philosophical and theological thought in Russia from the Middle Ages to the Revolution. Emphasis on explorations of the role of language and literature in Russian literature and literary criticism. No knowledge of Russian required.

301-302 Introduction to Russian Literature (3,3) Russian literature: short stories, novels, and other works. (Same as Russian and East European Studies 301-302.)

311-312 Russian Composition and Conversation (3,3) Practice in writing and speaking; grammar review and vocabulary building. Prereq: 202. Need not be taken in sequence. (Same as Russian and East European Studies 321.)

321 Works of Dostoevsky in English Translation (3) Crime and Punishment, Brothers Karamazov, and other works. (Same as Russian and East European Studies 321.)

322 Works of Tolstoy in English Translation (3) War and Peace, Anna Karenina, and other works. (Same as Russian and East European Studies 322.)

326 Special Topics in Russian Literature in English Translation (3) Topics vary and are announced in advance. Student suggestions for topics are welcome. No foreign language credit. May be repeated once. (Same as Russian and East European Studies 326.)

371-372 Background and Main Currents of Russian Culture (3,3) Historical, philosophical, and other sociocultural factors. No knowledge of Russian required. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

401-402 Advanced Russian Grammar, Conversation and Composition (3,3) Prereq: 312 or equivalent. (Same as Russian and East European Studies 401-402.)

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

426 Introduction to Historical and Comparative Linguistics (3) Same as German 426, French 426, Spanish 426 and Linguistics 426.

451-452 Senior Seminar (3,3) For majors in Russian; full progression. Coreq: Completion of 202.

470 Special Topics (1-3) Study in selected disciplinary or professional areas of safety. May be repeated. Maximum 12 hours.

475 Special Topics (1-3) Study in selected disciplinary or professional areas of safety. May be repeated. Maximum 12 hours.

RUSSIAN AND EAST EUROPEAN STUDIES

301-302 Introduction to Russian Literature (3,3) (Same as Russian 301-302.)

321 Works of Dostoevsky in English Translation (3) (Same as Russian 321.)
tion to major social values. Writing-emphasis course; at least one in-class essay examination and 3000 words of writing outside the classroom.

311 Family (3) Theoretical frameworks and methodological approaches; their application in the study of past and present family forms.

319 Sociology of Religion (3) Interrelationships of society, culture, and religion. (Same as Religious Studies 319.)

320 Interpersonal Communication Processes (3) (Same as Speech 320.)

321 Sociological Theory (3) Survey of contemporary issues in sociological theory with an emphasis on their historical development and their importance for the field. Students are required to form critical appraisals of the topics addressed.

330 Computers and Society (3) History of computing and computer systems; capabilities of computer applications in various fields; social, cultural, and economic impacts.

331 Sociological Research (3) Selected issues in philosophy of social science, research design, sampling, methods of data collection, and interpretation. Requires written research report.

336 Elementary Social Statistics (3) Statistics used in social research; elementary descriptive techniques; measures of central tendency, dispersion, elementary statistical inference; tests of significance for parametric and non-parametric data.

340 Class Structure (3) Class structure and conflict; causes and consequences of structured social inequality. Emphasis on the United States. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

343 Race and Ethnicity (3) Social sources of racial and ethnic cleavages and social, economic, and political consequences. Emphasis on race and ethnicity in the United States. (Same as Afro-American Studies 343.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

344 Power and Society (3) Sociological analysis of the formation and application of nation state policies. Examination of who gets what, why, and how. Emphasis on contrasting explanations of the control of the state and the relative autonomy of the state.

345 Collective Behavior and Social Movements (3) Collective phenomena leading to social change. Focus on roles of leaders, processes of actions, and tests and development, organization, and function of social movements. Emphasis on American cases.

346 Organization of Occupations (3) Occupations and the division of labor. Society-wide and local groupings in work settings and the wider community.

350 Criminology (3) Systemic inquiry into alternative definitions of crime, statistical distribution of different types of crime causation, and responses to crime, primarily by the police.


352 Deviance and Social Control (3) Deviants, their lifestyles, social organization, and social control.

360 Environment and Resources (3) Relationship between natural world-system and society; environmental and social effects of pollution and change in societal beliefs and social structure. Topics include social and physical limits to growth and collective action problems.

363 The City (3) The revolutionary impact of cities and city life as seen from an ecological perspective. The organization of life in cities into communities, neighborhoods, and other territories. Urban planning and problems.

370 Social Psychology (3) Social psychological analysis of social behavior emphasizing its acquisition, its enactment, and its dynamic nature.

375 Gender in Society (3) Exploration of gender in society utilizing various sociological perspectives with special focus on the relationships between social structures, social roles, and gender identities. (Same as Women's Studies 375.)

380 Rural Sociology (3) (Same as Rural Sociology 380.)

400 Special Topics (3) Variable topics. Scope of subject matter determined by student and instructor with consent of department. Prereq: Determined by department. May be repeated. Maximum 6 hours.

405 Sociology of Sport (3) Social meaning, organization, and promotion of sport. Preparations and actions of instructor. (Same as Physical Education 405.)

413 Formal Organization (3) Organizational models, typologies, and theories; hierarchies of authority; communication; interpersonal relations in work settings; organization design.

414 Organization of Medical Care (3) Organization of health care facilities, staff-patient relationships, demographic characteristics, and prevalence of disease.

415 Sociology of Aging (3) How roles and statuses change with age in relation to the major social institutions; the impact of rapidly increasing number of older people on society, the effect of society on older people.

446 The Modern World System (3) Critical examination of the way in which the modern world-system as a social system, its coherence, boundaries, regions, member groups, cleavages, and patterns of conflict. Analysis of who gets what, why, and how in the global political economy. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

451 Criminal Justice (3) A critical assessment of the criminal justice apparatus and its components. Brief examination of the police, with most of the emphasis on the criminal courts and institutions and programs such as the prison, probation, and parole. Analysis of their operation and impacts. Prior completion of 350 is recommended.

455 Society and Law (3) How laws and legal processes are affected by social change, the social impact of legal sanctions, relations between law and social justice. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

459 Organizational and Corporate Crime (3) Crime and deviance committed by organizations. Case studies of corporate and organizational crime, the organizational dynamics of crime, and theories of corporate crime, and organized responses to this type of crime by governmental regulatory agencies.

462 Population (3) Demographic factors and social structure. Factors affecting population growth, distribution, and composition; population policy.

464 Urban Ecology (3) The relation of humans to their urban environment with emphasis on conservation and the use of appropriate technology. (Same as Urban Studies 464.)

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

480 Diffusion of Agricultural Technology (3) (Same as Rural Sociology 480.)

491 Foreign Study (1-15) Prereq: Advance departmental approval of number of hours and topics. May be repeated. Maximum 15 hours.

492 Off-Campus Study (1-15) Prereq: Advance departmental approval of number of hours and topics. May be repeated. Maximum 15 hours.

493 Independent Study (1-15) Prereq: Advance departmental approval of number of hours and topics. May be repeated. Maximum 15 hours.

SPANISH

111-112 Elementary Spanish (3,3) (Introduction to Spanish. May not be taken for credit by students with two years of high school or one year college Spanish. Must be taken in sequence. Language Laboratory required.)

210 Intermediate Spanish Transition (3) A thorough study of the fundamentals of Spanish language for those who have completed two or more years of high school study by writing and speaking basic sentences in Spanish that they are not prepared for the 211-212 sequence. May be repeated for parametric and non-parametric data. May be repeated for credit only.

211-212 Intermediate Spanish (3,3) Reading, writing, listening and speaking of Spanish to prepare for upper division courses in the language. Must be taken in sequence. Language Laboratory required. Prereq: 111-112 or equivalent.

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 performance on the ACT. Classes normally held to a maximum of 15 students. Students follow enriched program with continuing emphasis upon speaking ability and with an introduction to reading literary selections. Students must earn an A in 217 and a B or higher in 218 to receive credit for 300. Prereq: 111-112 or equivalent.

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: at least one in-class essay examination and 3000 words of writing outside the classroom.

292 Spanish American Literature in English Translation (3) Contemporary Spanish American fiction such as Borges, Fuentes, Marquez, Asturias. No foreign language or major credit. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

300 Spanish Transition (3) Development of linguistic skills necessary for satisfactory work in courses above 300. Recommended for students who would benefit from additional training beyond 212 in the skills of speaking, reading and writing Spanish. Particular attention for preparation to read Hispanic literature and other advanced-level material.

311 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: 212, 218 or equivalent.

312 Aspects of Spanish American Literature (3) Introduction to the study of Spanish American literature, with emphasis on contemporary works. Genres may vary. Prereq: 212, 218 or equivalent. (Same as Latin American Studies 312.)

323-324 Intermediate Conversation and Composition (3,3) Designed to improve proficiency in oral and written communication in Spanish.

421 Phonetics (2) Prereq: 212, 218 or equivalent.

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: 212, 218 or equivalent.

423-424 Advanced Conversation and Composition (3,3) Advanced conversational and written skills in Spanish for pre-professionals.

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

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

429 Romance Linguistics (3) (Same as French 429 and Linguistics 429.)
431 Spanish Civilization (3) Major social, political, and cultural achievements of the Spanish people from the origins of their civilization until today. Prereq: 311, 312 or equivalent. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.
432 Cervantes (3) Emphasis upon selections from Don Quixote and study of the shorter Novelas ejemplares. Prereq: 311, 312 or equivalent.
331 Articulation Disorders (3) Prereq: Admission to Teacher Education Program. Writing emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.
410 Pre-Internship Seminar (1) Objectives and policies of the internship program. Must be completed the term prior to internship. Prereq: 482 and Admission to Teacher Education Program. Satisfactory/No Credit only. Sp, Su
423 Communication Processes for the Hearing Impaired (3) Speech and hearing disorders, expressive vocabulary development, and development in sign communication. Fingerspelling and educational applications of sign language.
424 Nature of Hearing Impairments (3) Anatomy and physiology of hearing; nature and causes of hearing loss; methods and instrumentation for assessment of hearing level; interpretation of audiologic services to medical and other rehabilitative disciplines.
425 Introduction to the Psychology and Education of the Hearing Impaired (3) Primarily for those planning to teach the hearing impaired. Research related to psychology, social adjustment, communication methodology, language development and education of the hearing impaired. Survey of literature. Visits to programs.
433-434 Clinical Practice in Speech Pathology (1-4) (Same as Audiology and Speech Pathology 433-434.)
433-434 Clinical Practice in Speech Pathology (1-4) (Same as Audiology and Speech Pathology 433-434.)
433-434 Clinical Practice in Speech Pathology (1-4) (Same as Audiology and Speech Pathology 433-434.)
440 Voice Disorders (3) (Same as Audiology and Speech Pathology 440.)
451 Psychology and Education of the Mildly Handicapped (3) Characteristics of mildly handicapped students with learning disabilities, emotional disturbance, and mental retardation. Instructional approaches, techniques, and evaluation and development of materials. Prereq: Admission to Teacher Education Program. Coreq: 490. F
452 Psychology and Education of the Moderately and Severely Handicapped (3) Nature and characteristics of children and youth with moderate and severe handicapping conditions, and educational strategies necessary to accommodate them. Traditional and innovative trends and approaches. Prereq: Admission to Teacher Education Program. Coreq: 490. Sp
454 Education of the Gifted and Talented Children (3) Psychometric and behavioral studies of giftedness. Analysis of past and present school practices in reference to curriculum and program implementation. Prereq: Admission to Teacher Education Program. Sp
458 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, especially 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: Special Education (3-15) Testing methods and theories of teaching. Internship is completed in local public schools. Application for internship should be made upon admission to the Teacher Education Program. Prereq: 410 and Admission to Teacher Education Program. Satisfactory/No Credit only. F
473 Audiology II (3) (Same as Audiology and Speech Pathology 473.)
480 Field Experience with Mildly Handicapped Students (3) Practicum in teaching mildly handicapped persons in planning, developing, implementing, and evaluating instruction. Prereq: Admission to Teacher Education Program. Coreq: 451. F
481 Policies, Procedures, and Practices in Special Education (3) Comprehensive review of Federal and State laws and regulations which direct implementation of special education programs in all public and private facilities and agencies. Multiple service delivery modalities. Prereq: Admission to Teacher Education Program. Sp
482 Speech and Language Services in the Schools (3) Organization and implementation of speech and language programs. Emphasis on the IEP process as it affects assessment, case-selection, and programing for students ages 4-21. Procedures and materials, group intervention, and classroom consultation. Prereq: Admission to Teacher Education Program.
483 Clinical Practice in Communication Disorders in Schools (3) Supervised practice with children with communication disorders. Prereq: 482 and Audiology and Speech Pathology 433, 434 (80-100 clinical contact hours) and admission to Teacher Education Program.
484 Internship with Hearing Impaired Children (6) Supervised practicum with preschool, day school and residential students. Prereq: Admission to Teacher Education Program.
485 Student Teaching in Special Education (3-10) Intended for students in the four year program or equivalent. Not to be substituted for internship (Educational Curriculum and Instruction 471, 472 or Special Education 474.) Prereq: Admission to Teacher Education Program, permission of Mentoring Team, and educational Curriculum and Instruction 203 (1). Satisfactory/No Credit only.
490 Field Experience with Moderately and Severely Handicapped Students (3) On-site teaching experiences with mild and severe handicapped students and youth. Prereq: Admission to Teacher Education Program. Coreq: 452. Sp
494 Introduction to Aural Rehabilitation (3) (Same as Audiology and Speech Pathology 494.)

SPEECH COMMUNICATION

100 Introduction to Speech Communication (3) Fundamental theories and practices with particular reference to intrapersonal, interpersonal, group, organization, and public communication.
200 Developing Speech Confidence (1) Principles and techniques for coping with apprehension about communicating. Recommended for students who are concurrently enrolled in 200 level speech courses and desire additional work in dealing with their anxiety about speaking.
210 Public Speaking (3) Preparation and delivery of informative and persuasive speeches. Topics include research, organization, adapting to an audience, topic selection, reasoning, and evaluating the discourse of others.
220 Interpersonal Communication (3) Process by which thoughts, feelings, and actions are expressed and understood by face-to-face communication situation. (Same as Sociology 220.)
240 Business and Professional Speaking (3) Basic principles of oral communication within organizations, including such topics as organizational/communication theory, group problem solving, formal presentations, and interviewing.
270 Argumentation and Debate (3) Reasoned decision-making, including emphasis on analyzing, evidence, reasoning, constructing and refuting arguments.
271-272 Intercolligate Forensics (1,1) Supervised work in tournament debate and individual events. Prereq: Consent of instructor.
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: at least one in-class essay examination and 3000 words of writing outside the classroom.
300 Nonverbal Communication (3) Exploration of nonverbal communication from human 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 content, audience characteristics, and rhetorical devices.
320 Interpersonal Communication Processes (3) Social dimensions of interpersonal communication and relationships. (Same as Sociology 320.)
330 Group Communication (3) Small group decisionmaking, evidence, argumentation, leadership, roles, and norms as they affect critical thinking in groups.

350 Communication Theory and Research (2) Survey of contemporary communication theories, their applications in society, and the process by which theories are created, tested, and changed.

360 Topics in Communication and Society (3) Content varies. Studies in social function of such communication forms as posters, speeches, songs, plays, demonstrations. May be repeated with consent of department. Maximum 6 hours.

370 Evidence and Argumentation (3) Concept of evidence in public controversies, uses and sources of evidence, and conditions affecting credibility.

371-372 Intercollegiate Forensics (1,1) Continuation of 271-272. Prereq: Consent of instructor.

380 Oral Interpretation of Prose Literature (3) Individual oral interpretive techniques of fiction and nonfiction; ensemble interpretation including readers and chamber theatre forms. Prereq: 280 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

385 Oral Interpretation of Poetry (3) Individual and group performances of poetry. Prereq: 280 or consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

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 department. May be repeated. Maximum 6 hours. Major credit limited to 3 hours.

420 Communication and Conflict (3) Communication as a significant factor in the development, management, and resolution of conflict at the interpersonal, small group, organizational, or societal levels.

440 Organizational Communication (3) Organizational setting and those variables of the communication process that affect the quality of human interaction both within and outside the organization. May be repeated. Maximum 6 hours.

450 History of Rhetorical Theory (3) Western rhetorical theory from Plato to the present.

465 Studies in Rhetorical History and Criticism (3) May be repeated. Maximum 6 hours.

466 Rhetoric of the Women's Rights Movement (3) Historical and critical study of public address in campaign for women's rights from the 1830's to present. May be repeated. Maximum 6 hours. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

470 Theories of Argumentation (3) Conceptual bases of argumentation from classical to contemporary theorists. Prereq: Consent of instructor.

480 Ensemble Interpretation (3) Study and presentation of literary texts through group performance.

491 Foreign Study (1-15) Study abroad. Prereq: Consent of instructor. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

493 Independent Study (1-15) See description of major concentration.

497 Honors Thesis (5) Undergraduate thesis culminating in a written report and oral defense. Prereq: Invitation of the Department Undergraduate Affairs Committee. Satisfactory/No credit only.

TECHNOLOGICAL AND ADULT EDUCATION

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/or auxiliary views. Drawing, Sketching, dimensioning, board work, 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

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

168 Metals Technology (3) Processes, equipment and products of the metalworking industries. Processes in machine, foundry, forging, heat treat, 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

230 Typewriting and Shorthand Proficiency (3) Proficiency credit for students planning to certify in business education and office technology who have typewriting and/or shorthand courses. Prereq: Department approval. E

251 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; includes general DC/AC theory and application, use of electronic measuring instruments, circuit analysis, introduction to semi-conductors and various laboratory experiences that involve the function of different types of circuits. Prereq: 163 or consent of instructor. Sp

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

266 Machine Tool Processes (3) Function, care, setup, operation and theory of basic machine tools. Prereq: 161 or consent of instructor. Sp

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

350 Related and Applied Theory in Occupations (1-15) Applicants must show evidence of bonafide occupational experiences compatible with State Plan requirements. Written theory tests and the submission of a comprehensive portfolio are used to award variable 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

351 Manipulative Skills in Occupations (1-15) Applicants must show evidence of bonafide occupational experience compatible with State Plan requirements. Written theory tests and the submission of a comprehensive portfolio are used to award variable 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

STATISTICS

201 Introduction to Statistics (3) Descriptive statistics, including bivariate trends and time series analysis, concepts of probability and probability distributions, binomial and normal distributions, linear correlation and regression, estimation and significance tests for means, contingency tables. Prereq: Mathematcs 121. E


252 Probability and Statistics for Scientists and Engineers II (3) Hypothesis testing; Introduction to statistical process control, reliability, analysis of variance. Simple and multiple linear regression. Prereq: 251. Sp

261 Computing for Data Management and Analysis (3) Use of computer operating system commands and packaged programs for managing data files and statistical analysis. Prereq: 251. Sp


361 Introduction to Statistical Computing (3) Use of a scientific computer to simulate and analyze well-managed programs for statistical analysis and file management. Not acceptable for credit for statistics majors. Prereq: 201, 251. E

411 Applied Regression Analysis (3) Linear regression and correlation, multiple regression, polynomial regression, selection of variables, use of dummy variables, and multicollinearity. Use of standard computer packages. Major writing requirement. Prereq: Six hours of statistics or consent of instructor. F, Sp

428 Analysis of Variance and Experimental Design (3) Variance techniques for single and multi-factor models. Post hoc procedures. Design considerations for completely randomized, randomized block, factorial, hierarchical and split-plot experiments. Major writing requirement. Prereq: 252 or 461. Sp


481 Special Topics in Probability (1-3) Topics in probability and stochastic processes. Prereq: Consent of the instructor. May be repeated. Maximum 6 hours.

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

486 Undergraduate Seminar (1) Directed readings and active participation in the Department's undergraduate seminar program. Prereq: Senior standing and consent of Chairperson of Statistics Department Undergraduate Affairs Committee. Satisfactory/No credit only. May be repeated. Maximum 2 hours.

492 Internship (1-8) Supervised off-campus experiences in applied statistics with related 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 or statistics. May be repeated. Two courses in statistics and permission of the Chairperson of the Statistics Department Undergraduate Affairs Committee. Satisfactory/No credit. May be repeated. Maximum 6 hours.
221 Adult Education Program Design and Management (3) Processes of program development and special application to adult training programs.

222 Adult Development and Training (3) Application of adult development concepts to design and management of training programs for adults. Sp

330 Principles and Organization of Business Marketing Education (3) Historical background and development needs of the international marketplace; consumer issues and policies, emphasis on consumer choice, information, consumer protection and current issues. Prereq: 232 and admission to Teacher Education Program. F

331 Word Processing and Office Technology (3) Word processing concepts and applications, methodology for teaching word processing and machines. Prereq: Average typewriting skill and permission of instructor. Sp

412 Methods and Materials in Business and Marketing Education (3) teaching techniques, aids and evaluation in subject matter fields. Prereq: Admission to Teacher Education Program. Sp

423 Methods in Office Technology (3) Materials, methods, evaluation procedures, and recent research in typewriting, shorthand, and other office procedures. F

424 Methods in Accounting and Data Processing (3) Methods, materials, evaluation procedures, and recent research in accounting and data processing. Automated accounting is introduced. Prereq: Admission to Teacher Education Program. F

436 Supervised Occupational Experience (3) Practical field experience, 100-300 hours, in business and industry. Under the supervision of practitioner and departmental representative. May be repeated to a maximum of 9 credits. E

439 Principles 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 8 hours. E

450 Seminar in Educational Leadership (1-3) Current issues, innovations, problems, and other topics associated with technical programs. May be repeated. Maximum 6 hours. A

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 standards and sequence of training techniques. Applied to incumbent worker job performance. Sp

456 Organization and Operation of VICA/HOSA (3) Planning, organizing and implementing youth-club activities in vocational-technical programs. A

459 New Developments in Industrial Education (3) Developments, significant problems and recent trends in industrial education presented by coordinating instructors. Prereq: Admission to Teacher Education Program. F

464 Methods and Mediation in Technology Education (3) Case studies, personal experience, and group interaction related to the effectiveness of training through the development of performance standards and sequence of training techniques. Applied to incumbent worker job performance. Sp

465 Materials and Processes (3) Materials relative to design and application of products in the development of performance standards and sequence of training techniques. Applied to incumbent worker job performance. Sp

466 Course Construction in Technology Education (3) Syllabus and practical experience in course construction and evaluation, instructional objectives, project/product selection, assignments and evaluation. Prereq: Admission to Teacher Education Program. A

469 Plastic Technology (3) Characteristics and applications of thermoplastic and thermosetting materials. Plastics production equipment related product design and processing of plastics. Prereq: 165 and admission to Teacher Education Program. A

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. Sp

471 Principles of Supervision (3) Problems of motivation, communication, interpersonal relationships and leadership. Sp

478 Internship in Human Resource Development (5-10) Assessing, planning, implementing, and evaluating the effectiveness of training programs in an industrial setting. Prereq: 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 direct supervision of a master teacher in the content area. Satisfactory/No Credit only. Prereq: Admission to Teacher Education Program. E

**TEXTILES AND APPAREL**

101 Apparel Construction (3) Garment construction focused on decision making and time management; pattern alterations, fitting and quality of construction. Not available for credit for departmental majors. Sp

120 Textiles I (3) Consumer-oriented textiles: fibers, fabric structure, color, dyeing, finishing and related responsibilities; customer serviceability and care of apparel and household fabrics. E

230 Apparel Evaluation (3) Analysis of construction techniques to ascertain cost/quality relationships; elements and principles of design in relation to garment construction. Prereq: 123. F

232 Design Analysis (3) Apparel design analysis based on flat pattern, draping and drafting techniques; comparison of methods for style variations and costing of garments. Sp

310 Principles of Merchandising (3) Buying policies, procedures, programs, activities, techniques, understanding the merchandising process in relation to consumer behavior and merchandising. Prereq: Accounting 201. F

320 Textiles II (3) Recent developments in fibers, fiber structure, yarn processing, yarn structure and fabric construction; dyeing, finishing and printing; textile performance and evaluation; legislation and standards. Prereq: 120, Chemistry 100-110 or 120-130. F

330 Apparel Production (3) Industrial methods in garment production; focus on stages of production, plant layout, costing and quality control. Prereq: 230. F


345 Fashion in History (3) Development of apparel styles in western civilization from middle ages to present; factors associated with origin, adoption and abandonment including historic, social and economic settings. F

350 Consumers in the Market (3) Consumer decision-making and problems in the domestic and international marketplace; consumer issues and policies, emphasis on consumer choice, information, consumer protection and current issues. Prereq: Economics 201. Sp

390 Introduction to Field Experience (1) Interviews, placement and planning for field experience. Prereq: Approved application for field experience. Sp

410 Retail Management (3) Retail sector of economy from management perspective; decision-making in retail operations; promotion, pricing, location, marketing and related responsibilities; computer application, product mix-strategy. Prereq: 2 semesters Marketing. Sp

415 Fashion Promotion (3) Advertising and special purpose media used to promote fashion merchandise; evaluation of retail sales promotion activities. Sp
420 Textile Microscopy and Physical Testing (3) Microscopic techniques applied to textile fibers, yarns and fabrics. Standard methods and equipment used in testing. Prereq: 320. F

422 Textile Fiber Chemistry (3) Chemistry of textile fibers; emphasis on structure, preparation and reactions; implications relating to dyeing and finishing of fabrics. Prereq: Chemistry 350. Sp

450 Textile and Apparel Economics (3) Economics of the United States textile, apparel and fiber industries; emphasis upon production, distribution, institutions, impact on consumer; international and domestic markets. Prereq: 350 or consent of instructor. Sp


492 Field Experience in Merchandising, Apparel or Textiles (5) Off-campus, cooperative program with business establishments which merchandise or manufacture textiles and/or apparel. Prereq: 350. Coreq: 490. F

493 Directed Study (1-3) Individual problems for Junior and Senior students with special interests in textiles, merchandising or apparel. Prereq: Junior or Senior standing, consent of instructor. E

495 Special Topics (3) Topics in textiles, merchandising, and/or apparel. May be repeated. Maximum of 9 hours. Prereq: Junior or Senior standing, consent of instructor. E

497-498 Honors: Textiles and Apparel (3) Individual problems for Junior and Seniors showing special ability and interest in textiles and apparel. Prereq: Recommendation of Department Head. E

THEATRE

100 Introduction to Theatre (3) Understanding theatre: thought, philosophy, aesthetics, and production practices. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

210-211 Survey of World Drama (3,3) 210-Includes Greek, Roman, Medieval, Elizabethan, and Eastern forms of drama. 211-Covers 19th century, as well as realism through contemporary drama. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

220-221 Acting (3,3) 220-Improvisations, theatre games, acting skills. 221-Use of acting skills in extensive scene work. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

228 Voice and Diction (3) Voice production; attention to individual speech problems.

245 Basic Stage Costuming (3) Costume design and construction; basic theory and technique. Production participation required. Prereq: 100.

250 Introduction to Scenery Technology (3) Techniques of scenery and stage properties construction. Production participation required.

260 Fundamentals of Lighting and Sound Production (3) Survey of practical information on electricity, physics, psychology, and instrumentation as it relates to stage lighting and sound production. Emphasis on hands-on skills in lab. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

310-311 History of the Theatre (3,3) 310-Drama in performance with particular emphasis in theatre architecture, scene design, and acting styles Antiquity to Renaissance. 311-The European and modern theatres.

312-313 History of the American Theatre (3,3) Development of the theatre as social institution in American life. 312-From its beginnings to 1900. 313-From 1900 to present. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

320 Advanced Acting (3) Special problems in contemporary roles. Prereq: 220-221 and consent of instructor.

340 Introduction to Costume Design (3) Development of research and rendering skills. Prereq: 245 or consent of instructor.

345 Costume Construction (3) Study and practice of skills in costume construction. Includes stitching, corsetry, millinery, and crafts. Production participation is required.

355 Introduction to Scenic Design (3) Introduction to art and craft of scenic design.


380 Theatre Practicum: Production (1-3) Supervised work on departmental productions. Available for credit only to theatre majors or with consent of department. Prereq: Consent of instructor. May be repeated. Maximum 3 hours.

381 Theatre Practicum: Performance (1-3) Supervised work on departmental productions. Available for credit only to theatre majors or with consent of department. Prereq: Consent of instructor. May be repeated. Maximum 3 hours.

401 Principles of Theatrical Design (3) Fundamental principles of visual and structural relationships to design, projections. Projects will be assigned to develop understanding and perception.

409 Stage Make-Up (3) Problems in make-up design and application, character analysis, physiognomy and chiaroscuro. Prereq: 100.

410 Dramatic Theory and Criticism (3) Theatre aesthetics from Aristotele to the present.

420 Special Studies in Acting (3) Content varies. Exercises in selected concentrated areas such as styles, techniques, approaches, e.g., Shakespeare, movement, humor. Prereq: 320.

426 Advanced Phonetics (3) Phonetic aspects of contemporary dialects of the English language. Prereq: Consent of instructor.

430 Principles of Play Directing (4) Problems in composition, picturization, rhythm, movement. Prereq: 220, 221 and consent of instructor.


445 Advanced Costume Construction (3) Advanced costume technique, such as tailoring, vacuum forming, plastic molding, and cobbling. Prereq: 345 or consent of instructor.

446 Costume Pattern Making (3) Draping patterns for period costumes. Includes corsery and the study of historic patterns 1500-1900. Prereq: 345 or consent of instructor.

450 Advanced Scenery Technology I (3) Study and practice of theatre woodworking; production participation will be required. Prereq: 250. Graduate credit available to theatre M.F.A. students only.

451 Advanced Scenery Technology II (3) Study and practice of stage wigging and plastics for theatrical productions; production participation will be required. Prereq: 250. Graduate credit to theatre M.F.A. students only.

452 Advanced Scenery Technology III (3) Study and practice of stage rigging for theatrical productions; production participation will be required. Prereq: 250. Graduate credit available to theatre M.F.A. students only.

454 Scenery Painting (2) Introduction to materials, techniques, and principles of the craft. Emphasis on gaining skill and understanding through studio experience. Prereq: Consent of instructor.


460 Advanced Lighting and Sound Technology (3) Projects in lighting and sound coordination. May include opera, dance, musical theatre, and "rock videos". Final projects will be five productions. Emphasis on developing artistic sensitivity and subtleties in control. Prereq: 260.

461 Special Effects in Lighting and Sound (4) Projects in special effects including creative application of technology. Problem solving, drafting, and execution of effects. Prereq: Production participation required. Prereq: 260 or instructor's permission.

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.

463 Sound Design (3) Sound design for the performing arts. Review of equipment and acoustical factors that affect sound production. Sound designs will be picked from selected plays. Final projects will be mixed, edited, and cued for production.

465 Introduction to Lighting Design for Non-Designers (3) Theory and practice of stage lighting design with emphasis on the relationship between designers and non-design practitioners such as directors, actors, choreographers, architects, etc. Not open for option in lighting design.

470-471 Playwriting (3,3) Advanced instruction in the writing of plays. Prereq: Consent of instructor.

480 Theatre Practicum: Production (1-3) Continuation of 381. Prereq: Consent of Instructor. For theatre majors only. May be repeated. Maximum 3 hours.

481 Theatre Practicum: Performance (1-3) Continuation of 381. Prereq: Consent of Instructor. For theatre majors only. May be repeated. Maximum 3 hours.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)

UNIVERSITY HONORS

237, 337, 437 Honors: Concentration in the Humanities (3,3,3) Small group studies of selected topics, issues or problems with a concentration in the humanistic disciplines. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

247, 347, 447 Honors: Concentration in the Social Sciences (3,3,3) Small group studies of selected topics, issues or problems with a concentration in the social sciences. Open to all students with a GPA of 3.25 or greater. Topics vary. May be repeated.

257, 357, 457 Honors: Concentration in the Natural and Applied Sciences (3,3,3) 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.

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.

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. Proposals must be approved in advance. See the Director of University Honors for further information.
UNIVERSITY STUDIES

101 Freshman University Seminar (3) Introduction to university education as an adventure in personal growth and professional development. A/B/C/NC grading. Open only to freshmen, transfer students, and re-entry students, or by permission of instructor.

210-220 Case Studies (4,4) Variable content using case studies and problem-solving approaches to explore interdisciplinary issues. Includes a one-hour learning laboratory. Open only to students enrolled in a University Learning Community.

310-320 Special Topics in University Studies (3,3) Interdisciplinary approaches to issues transcending the boundaries of a single discipline. Topics may be initiated by faculty or students through arrangements with the University Studies Program. Taught by faculty from throughout the University (often team-taught). Extensive use of films, field trips, student discussion. May be repeated. Maximum: 9 hours.

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.

URBAN STUDIES

200 Human-Environment Systems (3) (Same as Interior Design 200.)

250 Introduction to Urban Studies (3) Multidimensional nature of urban studies. Includes lectures by specialists presenting the approach of their disciplines to Urban Studies; application of general approaches to a specific issue; and collaborative teaching involving most faculty of Urban Studies.

321 Urban Politics and Process (3) (Same as Political Science 321.)

323 Behavioral Geography (3) (Same as Geography 323.)

350 Practicum in Urban Studies (3-6) Student and faculty membership 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, 360 and senior by date. Student may not take 460 prior to having taken 450, except with prior permission of the Urban Studies Committee. Writing-emphasis course at least one in-class essay examination and 3000 words of writing outside the classroom.

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

341 Law Enforcement and Public Relations (3) Fundamentals and general principles of local, state and federal laws and regulations governing natural resources and their management. Principles and practices of interacting with the public.

441 Wildlife and Fisheries Techniques (3) Capturing and handling fish and wildlife; population restoration; food habits; habitat; sampling; wildlife damage control; marking techniques; fish culture systems; management plans; track and sign identification. Prereq: Forestry, Wildlife and Fisheries 317, 1 hour and 1 lab. F

443 Fisheries Science (3) Quantification and management of freshwater fisheries including population estimation, age and growth, biological assessment, and stocking. Prereq: Forestry, Wildlife and Fisheries 317 or Biology 230, and 6 hours of mathematics. 2 hours and 1 lab. F

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, 2 hours and 1 lab. F

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 wild bird management. Prereq: Forestry, Wildlife and Fisheries 317 or Biology 230, 2 hours and 1 lab. F

493 Independent Study in Wildlife and Fisheries Science (1-15) Special research or individual problem in wildlife and fisheries science.

WOMEN'S STUDIES

210 Images of Women in Literature: Biography and Autobiography (3) Introduction to women's journals, diaries, biographies and autobiographies. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

215 Images of Women in Literature: Fiction, Poetry, Drama (3) Introduction to the study of women through the roles and stereotypes portrayed in a variety of literary genres (fiction, poetry, and drama), including works from diverse historical periods and cultures. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

220 Women in Society (3) Role played by women in various societies during different historical periods, factors which have limited women's participation in society, social scientists' assumptions about women.

230 Marriage and Family: Roles and Relationships (3) (Same as Child and Family Studies 220.)

310 Emergence of the Modern American Woman (3) Role of women in the development of American civilization and values. Major topics include women's legal and political status, the emergence and development of feminism, women and the creative arts, and women's roles in industrial and post-industrial American society. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

324 Women in French Culture (3) (Same as French 324.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

330 Women in Music (3) (Same as Music History 330.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

332 Women in American Literature (3) (Same as English 332.)

340 Women, Politics, and the Law (3) An examination of recent changes in the law affecting women and a study of the role of women in contemporary American politics.

360 Women in Cross-Cultural Perspective (3) A study of the changing role of women in various contemporary cultures; industrial democracies, developing nations, communist countries. A team-taught course with guest lectures and slide presentations.

375 Gender in Society (3) (Same as Sociology 375.)

380 The Concept of Woman (3) (Same as Philosophy 380.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

382 Philosophy of Feminism (3) (Same as Philosophy 382.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

383 Women in the Greek and Roman World (3) (Same as Classics 383.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

400 Topics in Women's Studies (3) Content varies. May be repeated.

410 Psychology of Sex Role Development (3)

422 Women Writers in England (3) (Same as English 422.)

425 Women's Health (3) (Same as Health 425.)

432 Women in European History (3) (Same as History 432.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

434 Psychology of Gender (3) (Same as Psychology 434.) Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

483 Afro-American Women in American Society (3) (Same as Afro-American Studies 483.)

493 Independent Study (1-15) Registration by consent of chair of Women's Studies.

ZOOLOGY

117-118 Honors: Fundamentals of Zoology (4,4) For superior students in any field, open to students with a minimum ACT composite score of 27 or a minimum college GPA of 3.2, or consent of instructor. Students not achieving at least a B in the first semester must complete the sequence with Biology 120. Must be taken in sequence. 117-Cellular processes, genetics, environment, 118-Physiology, phylogeny, and ecology. 6 hours combined lecture and lab. May not receive credit for 117-118 and Biology 110-120 or Botany 110-120.

210-220 Human Biology (3,3) For non-majors; not available as prerequisite or major credit in Zoology or Biology. May be taken out of sequence. 210-Diversity of life forms, uniqueness of humans, cell biology, genetics, reproduction, prenatal development. 220-Human physiology and ecology.

230 Human Physiology (5) Fundamentals of human physiology, primarily from the perspective of cellular and organ system interaction. Credit may not be applied toward Zoology major. Prereq: One year of college chemistry. 4 hours and one lab.

240 Human Anatomy (3) Gross and microanatomy of the human body. Credit may not be applied toward Zoology major. Prereq: One year of introductory biology or Zoology 230 or equivalent. 2 hours and 1 lab.

301 Special Topics (1-2) Topics of current interest. Consent of departmental listing for topics offered. May be repeated but one 1 credit hour may be applied toward the Zoology major.

302 Zoology Colloquium (1) Weekly discussions of topics of contemporary interest. Intended for life sciences majors. Satisfactory/No Credit only. May be repeated but one 1 credit hour may be applied toward the Zoology major.
310 Bioethics (3) Relationships between biological discoveries and human values. Open discussions of selected dilemmas arising from new knowledge about evolution of behavior, genetics, reproduction, medicine, and environment.

322 Physiology of Reproduction and Lactation (3) (Same as Animal Science 322.)


331 Animal Development and Embryology Laboratory (3) Coreq: 330. 2 labs.

350 Comparative Vertebrate Biology (4) Origins, phylogeny, diversity and functional anatomy of vertebrates. Laboratory involves dissection of shark, cat, and selected other vertebrates. 2 hours and 2 labs.

360 Comparative Invertebrate Biology (4) Origins, phylogeny and functional anatomy of invertebrates with emphasis on diversity of life forms and adaptations to specific local environments. 2 hours and 2 labs.

370 Ethology and Sociobiology (3) (Same as Psychology 370)

380 General Entomology (3) Introduction to insects: basic structure, physiology, behavior, evolution and classification of insect orders. 2 hours and 1 lab.

400 Undergraduate Research (2) Research projects under supervision of faculty. Prereq: Junior or senior standing and prior consent of instructor. May be repeated. Maximum of 4 hours may be applied toward the Zoology major.

402 Practicum in Zoology (2) Participation in individualized practical applications of zoology in community, government, and industry. Prereq: Biology 210, 220, 230 and prior consent of instructor.

403 General Genetics Laboratory (2) Experiments designed to illustrate basic principles of inheritance; primary organism used is Drosophila. Prereq: Biology 210. 220, 230 and prior consent of instructor.

404 Cybtological Technique (2) Practical experience with a variety of techniques including microscopy, embedding and sectioning, chromosome preparations, autoradiography, in situ hybridization, histochemistry, and immunofluorescence. Prereq: Biology 210. 2 labs.

405-406 Minicourse in Zoology (1) Selected advanced topics in zoology, concentrated in time and subject matter. Consult departmental listing for topics offered. Prereq: As announced. May be repeated for credit but a maximum of 3 hours may be applied toward the Zoology major.

409 Perspectives in Zoology (2) Critical analysis of selected readings in biology. Prereq: Senior standing. Writing-emphasis course: at least one in-class essay examination and 3000 words of writing outside the classroom.

410 Advanced Cell Biology (3) Molecular and supramolecular structure and functions of eukaryotic cells including regulatory mechanisms, physiology, behavior, and cellular interactions. Prereq: Biology 210, 220. 2 hours and 1 lab.

415 Parasitology (3) Parasitic relationships: physiological, ecological, evolutionary and economic aspects. Prereq: Biology 230 or consent of instructor. 2 hours and 1 lab.

420 Cell and Tissue Structure and Function (4) Animal cells and tissues at light and electron microscope levels. Prereq: Biology 210. 2 hours and 2 labs.

430 Immunology (3) (Same as Microbiology 430.)

439 Immunology Laboratory (1) (Same as Microbiology 439.)

440 General Physiology (3) (Same as Microbiology 430.)

445 Comparative Animal Physiology (3) Comparison of diverse physiological mechanisms aiding in adaptation to particular habitats and lifestyles. Prereq: Biology 210, 220, 230 or equivalent. 2 years of chemistry recommended. 2 hours and 1 lab.

448 Laboratory in Physiology (2) Prereq. or Coreq: 440 or 445.

450 Comparative Animal Behavior (3) Principles and methods of ethology with emphasis on ecological, developmental, physiological and evolutionary aspects. Coreq: 448. (Same as Psychology 450.)

459 Comparative Animal Behavior Laboratory (3) Introduction to observational and experimental research in ethology. Coreq: 450. (Same as Psychology 459.)

460 Evolution (3) Modern concepts of animal evolution. Prereq: Biology 220.

465 Human Genetics (2) Genetic and molecular principles and problems of human inheritance. Prereq: Biology 220.

470 Aquatic Ecology (3) Introduction to the physiochemical nature of inland waters with description of biotic communities and their interrelationships. Prereq: Chemistry 120-130 and Biology 230. 2 hours and 1 lab.

472 Arachnology (3) Biology of spiders, mites, scorpions and relatives. Prereq: 360 or 380. 2 hours and 1 lab.

473 Herpetology (3) Biology of amphibians and reptiles with emphasis on ecology and adaptive radiation. Prereq: Biology 230. 2 hours and 1 lab.

474 Ichthyology (3) Evolution, classification, collection and identification, distribution and biology of fishes with emphasis on freshwater fauna of Eastern North America. Prereq: Biology 230 or consent of instructor. 2 hours and 1 lab.

475 Ornithology (3) Behavior, ecology, populations, evolution and field identification of birds. Prereq: Biology 230. 2 hours and 1 lab.

476 Mammalogy (3) Evolution, classification, biogeography, ecology, behavior and functional anatomy of mammals. Prereq: Biology 230 or equivalent. 2 hours and 1 lab.

480 Physiology of Exercise (3) Functions of the body in muscular work: physiological aspects of fatigue, training and adaptation to the environment. Prereq: 230 or 440. 2 hours and 1 lab.

490 Comparative Endocrinology (3) Comparative analysis of physiology and morphology of endocrine glands in vertebrates and invertebrates, their role and interaction in maintenance of the organism and species. Prereq: 440 or equivalent.

491 Foreign Study (1-15)

492 Off-Campus Study (1-15)

493 Independent Study (1-15)